



Executive Summary

The Dubai crude oil price has been volatile throughout 2023, with an average price of 82.1 USD/barrel, marking a decrease from the 2022 average price at 96.4 USD/barrel. Despite the production cut extension of Saudi Arabia and Russia, there has still been an increase in oil supply from the U.S. and Africa region (Non-OPEC+). The tensions between Israel and Hamas pose insignificant impact on global oil prices, given that Israel is not a major oil producer. Global oil demand outlook is suppressed by global economic recession concern, together with high inflation, policy interest rate hikes by the Fed and the European Central Bank, and slower-than-anticipated Chinese economic growth, which put pressure on global economic growth. **The expected Dubai crude oil price for the first half of 2024 is projected to be in the range of 70-80 USD/barrel.** Key factors to monitor include the global economic growth and outlook in Western countries, OPEC+ supply cut policies and their compliance, increasing trend of supply from non-OPEC+ countries, and geopolitical risks or tensions, which could have a negative impact on the supply side.

In 2023, PTTEP has made significant progress in its **E&P operations**. Firstly, **G1/61 (Erawan) Project successfully increased production to 400 MMSCFD in late June 2023.** To achieve a production level of 800 MMSCFD by April 2024, additional production wells drilling, and the installation of wellhead platforms are well on track. Secondly, G2/61 (Bongkot) Project completed its transition to the Production Sharing Contract (PSC) regime, maintaining an average production of 825 MMSCFD. PTTEP was also awarded exploration and production rights and signed PSCs for G1/65 and G3/65 exploration blocks in the Gulf of Thailand, where the subsurface studies are currently in progress for further exploration well drilling in 2024-2025. On the overseas projects, **Algeria Hassi Bir Rekaiz has successfully increased its average crude oil production from 13,000 BPD to 17,000 BPD since August 2023.** Additionally, new oil and gas discoveries have been made in three fields from exploration wells in Malaysia SK405B and Malaysia SK438 Projects, and the exploration Block SK325, be opened for bidding in the Malaysia Bid Round 2022, was awarded to PTTEP.

On the new business for energy transition, in 2023, PTTEP, in collaboration with South Korean and French partners, was awarded Block Z1-02 and was granted exclusive rights for the business development and production of a fully integrated Green Hydrogen Project in the Sultanate of Oman. Moreover, PTTEP entered into a Share Purchase Agreement (SPA) for a 50% share capital in TotalEnergies Renewables Seagreen Holdco Ltd (TERSH), which holds 51% of the Seagreen Offshore Wind Farm in Scotland. The completion of this transaction is subject to customary conditions outlined in the SPA, including governmental and regulatory approvals. After the deal completion PTTEP will hold 25.5% indirect investment in the project. Besides, VARUNA, a subsidiary under AI and Robotics Ventures Company Limited (ARV), initiated a Carbon Farming pilot project through "KANNA" application, which offers comprehensive analysis, planning, and advice on farming activities to reduce greenhouse gas emissions and promote sustainable agriculture. Additionally, S2 Robotics Company Limited, a joint venture between ROVULA and Kongsberg Ferrotech (Norway), commercially introduced NAUTILUS, a subsea pipeline repair robot, for pipeline maintenance in the Gulf of Thailand. This innovation enhances efficiency, mitigates risks and minimizes environmental impacts.

For the financial results of 2023, profits from normal operation declined from the previous year according to 10% reduction in average selling price to 48.21 USD/BOE, as well as a slight drop in sales volume to 462,007 BOED. The decrease in sales volume was primarily from Oman Block 61 Project, which had lower sales volume entitlement according to the condition prescribed in the PSC. The sales volume in Thailand, on the other hand, was on the rise supported by G1/61 (Erawan) production ramp-up to 400 MMSCFD in June 2023. PTTEP reported an increase in net profits compared to the previous year. This was mainly driven by a significantly lower losses from non-operating items, including oil price hedging instrument and impairment charges. In addition, PTTEP managed to maintain a competitive unit cost by lowering it to 27.65 USD/BOE in 2023. As at the end of 2023, PTTEP's financial position included total assets of 26,380 MMUSD, and total liabilities of 11,787 MMUSD, of which 3,654 MMUSD was interest-bearing debt. Total shareholders' equity stood at 14,593 MMUSD with debt-to-equity ratio at 0.25, following the company's financial policy.

Table of key financial results

(Unit: Million US Dollar)	2023	2022	Inc. (Dec.) YTD	Q3 2023	Q4 2023	Q4 2022	Inc. (Dec.) QoQ	Inc. (Dec.) YTD
Total Revenues	9,057	9,660	(603)	2,292	2,411	2,697	+119	-286
Revenue from sales *	8,511	9,270	(759)	2,193	2,202	2,469	+9	-267
EBITDA **	6,433	7,103	(670)	1,651	1,662	1,847	+11	-185
Profit for the period	2,208	1,999	209	514	514	417	+0	+97
Basic earnings per share (Unit: US Dollar)	0.54	0.51	0.03	0.13	0.13	0.11	+0.00	+0.02
Profit (Loss) from normal operation	2,322	2,647	(325)	539	603	723	+64	-120
Profit (Loss) from non-operating items	(114)	(648)	534	(25)	(89)	(306)	-64	+217

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

** Excluded gain from disposal of participating interests of AC/RL7 (Cash-Maple) Project, write-off assets of AC/RL12 (Oliver) Project, expense related to Montara incident Class Action settlement and impairment loss on assets and goodwill which were recognized during the period.



Strategies and Business Management

Strategies

PTTEP operates under the concept of “From We to World” and supports United Nations Sustainable Development Goals (UN SDGs) 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:

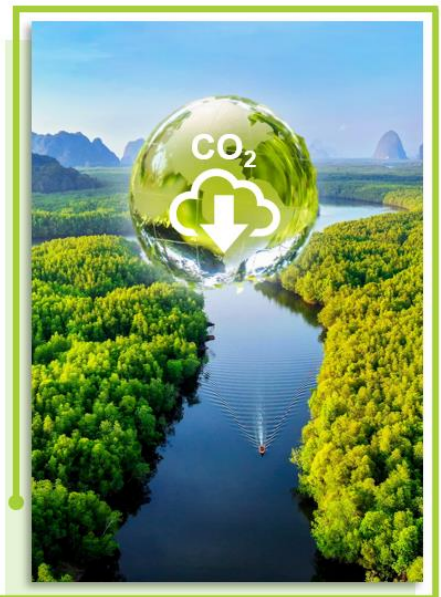


Drive Value

- Strengthen E&P businesses and ensure Thailand energy security, supporting domestic natural gas demand in particular
 - Maximize natural gas and crude oil production from existing projects
 - Expedite development of new projects
 - Accelerate monetization from recent petroleum discovery projects
- Enhance competitiveness of unit cost
- Expand gas-weighted portfolio and LNG, especially in upstream and midstream

Decarbonize

- Manage E&P for lower carbon portfolio to reach Net Zero Greenhouse Gas Emissions target by 2050. This target covers both Scope 1 (direct emissions) and Scope 2 (indirect emissions from energy usage) of the exploration and production business under PTTEP’s operational control. PTTEP has also set up its interim targets to reduce greenhouse gas emissions intensity at least 30% within 2030 and 50% within 2040 from 2020 base year.
- Execute greenhouse gas (GHG) emissions reduction plan through technology application.
- Maximize the use of renewables and explore clean future energy application in operational area.
- Accelerate the development of 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) businesses
- Explore renewable energy opportunity
- Explore the businesses in relation to Carbon Capture, Utilization, and Storage (CCUS), hydrogen, and future energy
- Commercialize the in-house technology

Business Management and Company Activity

PTTEP aims to build sustainable growth encompassing Environmental, Social and Governance (ESG), 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:

1 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. In 2023, the main progresses are as follows:

- Continually implement GRC according to GRC Strategies – Smart Assurance and Mindful GRC which aims to effectively integrate assurance processes, cultivate GRC for employees' awareness and adoption, as well as externally disseminate GRC practices to related parties.
- Conduct GRC Maturity Assessment to reflect GRC adaptation in PTTEP and Malaysia Asset, in order to establish gap improvement plan and level up to the highest GRC Maturity Level following the long-term goals in 2030.
- Conduct PTTEP Enterprise Risk Management (ERM) maturity assessment, which the overall result is comparable to the industry benchmark and shared the result along with recommendations to management and relevant parties. Moreover, we continuously enhance Risk Management System by improvement of the Chatbot to provide solutions corresponding to queries regarding Risk Management and preliminary use Chatbot as a tool to communicate to staff in charge of risk management process of the company.
- Continually develop GRC One Digital System to support management personnel and employee to receive GRC information easily and quickly.
- Enhance ONE BCMS as to improve Business Continuity Management (BCM) management efficiency by centralized the managing activities and combine 5 ISO 22301 BCMS certificates to 1 certificate.
- Building up GRC culture throughout several communication campaigns for both employees in Thailand and overseas i.e., conducting GRC roadshow, e-Learning to obtain the understanding on GRC principle and to ensure the effectiveness of GRC implementation. Moreover, we also promote good GRC practices to external communities, such as the Explorer's Journal, Shareholder Site Visit, Facebook: PTTEP Shareholders Society, as well as sharing the GRC practices to other Thai Listed Companies.

With our strong commitment and solid performance, PTTEP has been acknowledged by various institutions. For example, in 2023 we received awards such as the NACC Integrity Awards for the fifth time. PTTEP also earned an "Excellent" level and received five symbols of recognition, which is the highest level, from the Corporate Governance Report of Thai Listed Companies 2023 (CGR 2023). Such recognitions are our pride and it will motivate PTTEP to carry out business with efficiency, transparency, accountability as well as conscious care for all stakeholders to achieve our vision of the "Energy Partner of Choice".

PTTEP has established its Human Rights Policy and Management System in line with the international best practices to prevent human rights violations from our business operations. The Company also strictly conducts a human rights risk assessment on an annual basis, covering 100% of its operating assets and joint ventures. In 2023, PTTEP engaged an independent human rights specialist to conduct a comprehensive review of PTTEP Human Rights Due Diligence (HRDD) as part of its 3-year review cycle. While the outcome highlighted PTTEP's strong commitment to aligning its policies and practices with key international human rights standards, the Company revised its human rights risk assessment criteria (severity and likelihood), and the risk assessment matrix to ensure a more effective human rights risk assessment. In addition, PTTEP Human Rights Management System Guideline was consequently updated in response to the revised risk assessment methodology and rolled out across the board. Furthermore, PTTEP

has launched an intermediate-level human rights e-learning course designed to enhance employees' understanding so they can proactively prevent human rights violations arising from all operations. The course encompasses a wide range of topics, including employees, safety, security, health, and environment (SSHE), supply chain and surrounding communities.

PTTEP has Safety, Security, Health and Environment Management System (SSHE MS) in place to minimize risks and impacts from its operations. In 2023, PTTEP Lost Time Injury Frequency (LTIF) was 0.10, while the Total Recordable Incident Rate (TRIR) was 0.61 case per 1 million man-hours. The LTIF and TRIR were better than 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.

② *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; with the zero waste to landfill target by 2030. In 2023, PTTEP made a Final Investment Decision (FID) for the wellhead platform (WHP) topside reuse while attempting to study the engineering details for the possibility of reusing the inactive platform jacket. Furthermore, PTTEP focuses on creating value to landfill waste with alternative methods e.g., waste to energy, where the heat generated, from the burning process of such waste, will be utilized for electricity production and the biodegradable organic waste is used to produce compost or biogas. In addition, PTTEP has considered ways for waste management that involve recycling waste materials, thus enabling them to be reused to support sustainable waste management practices.
- 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 long-term 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. In 2023, PTTEP achieved a progress of these two long-term targets by 68.0% and 39.7%, respectively. The performance is divided into three workstreams as follows:
 - 1) Sustainable Ocean-Friendly Operations, focusing on safety assurance and minimizing environmental impacts in the areas where PTTEP has operations: in 2023, PTTEP collaborated with leading government agencies, associations and institutions including the private sectors through the Memorandum of Understanding (MoU) on enhancing academic collaboration in the national maritime interests with Petroleum Institute of Thailand (PTIT), National Research Council of Thailand (NRCT) and Office of the National Security Council (NSC), together with the cooperation from Chevron Thailand Exploration and Production Co., Ltd. Furthermore, a Memorandum of Agreement (MOA) on studying marine habitat development, using petroleum platform jackets as artificial reefs for sustainable fisheries in the Gulf of Thailand from 5 collaborating agencies: Department of Fisheries, Kasetsart University, Prince of Songkla University, Southeast Asian Fisheries Development Center (SEAFDEC) and PTTEP. The project's advisory agencies consist of the Department of Mineral Fuels, Royal Thai Navy, Thai Maritime Enforcement Command Center, Department of Marine and Coastal Resources, Department of Marine and Thai Fisheries Association as well as local fishermen's associations. The aim is to explore suitable approaches to efficiently place artificial reefs (Rig to Reef) for the conservation, restoration, and preservation of marine resources and biodiversity in both coastal and offshore areas.

- 2) Sustainable Ocean Health and Blue Carbon Solutions, focusing on the conservation and restoration of marine resources and the absorption of carbon dioxide by blue carbon: in 2023, PTTEP expanded the project to include two initiatives in G2/61 project. These projects involve the installation of meteorological and oceanographic data monitoring station. The measured parameters include meteorological data (air temperature, relative humidity, atmospheric pressure, wind speed and wind direction) and oceanographic data (seawater temperature, dissolved oxygen, turbidity, chlorophyll-a concentration, transparency, salinity, water level and seawater currents). Additionally, PTTEP installed underwater cameras at the jacket legs of its offshore petroleum platforms. Currently, the software can identify 7 marine species including *Caranx ignobilis* (Giant trevally), *Abudefduf vaigiensis* (Indo-pacific sergeant) and *Elagatis bipinnulata* (Rainbow runner), etc. with confidence level of 85%. Both projects display their data on PTTEP Ocean Data Platform. Furthermore, various projects were undergone continuous monitoring, such as coral bleaching and biodiversity monitoring in coral reef areas using drone's multispectral imaging application, now in its 3rd year and offshore microplastic monitoring in the Gulf of Thailand. These efforts contribute to the integration of marine science research and align with PTTEP's commitment to the concrete conservation and restoration of marine and coastal resources for sustainability, in support of the Company's goals and Thailand's Ocean Health Index (OHI).
- 3) Sustainable Community around the Ocean through implementing corporate social responsibility projects with stakeholders around our operational areas covering 17 provinces around the Gulf of Thailand: in 2023, through the Company's continuous promotion of juvenile aquatic animal aquaculture, PTTEP was able to release over 7,000 million juvenile aquatic animals back to the nature. Additionally, 4 fish homes were also installed in marine conservation areas, enabling 14.8 square kilometers of coastal conservation areas. Furthermore, PTTEP collaborated with local universities to develop innovative buoys made of plastic waste for experimentation in coastal conservation areas and planned to perform buoy testing with Department of Marine and Coastal Resources (DMCR). As part of the Company's efforts to increase the income of focused communities participating in the projects, PTTEP successfully established 11 sea products development groups. In addition, PTTEP organized 17 networking events to support marine resource conservation, with a total of 1,815 accumulated participants.

3 Finance

PTTEP places great importance on effective financial management by focusing on building financial discipline and maintaining a robust capital structure and providing effective capital allocation. This will ensure an appropriate return to shareholders. As at the end of 2023, company's debt-to-equity ratio was at 0.25, which is in line with the Company's financial policy.

In April and August 2023, PTTEP paid the dividend from the result of the second half of 2022 and an interim dividend for the first-half of 2023 at Baht 5.00 and 4.25 per share, totaling of 604 MMUSD and 495 MMUSD, respectively. This payments account for 53% and 42% payout ratio, respectively. This is in line with the Company's policy of not less than 30% of net income after tax.

In May 2023, PTTEP Treasury Center Company Limited (PTTEP TC), a wholly-owned subsidiary of PTTEP Group issued 3-year senior guaranteed debentures with a bondholders' representative to institutional investors amounting to 1,500 million baht, carrying the coupon rate of 2.51% per annum which is fully guaranteed by PTTEP.

In June 2023, PTTEP exercised liability management of US Dollar denominated debentures which consisted of a transfer of all outstanding Senior Debentures due in 2042 (2042 Notes) issued by PTTEP Canada International Finance Limited (PTTEP CIF) to PTTEP TC, and an offer to partially repurchase US\$ 31,894,000 of the 2042 Notes and US\$ 50,000,000 of the Senior Debentures due in 2059 which was issued by PTTEPTC. After the liability management exercise, the remaining outstanding principal amount of each Note is US\$ 458,106,000 and US\$ 600,000,000, respectively with PTTEP TC as an issuer of all USD Bonds to ensure efficiency in financial management of PTTEP Group.

After a distribution of shareholders' return in form of Dividend payment, and the liability management program, PTTEP still maintains its robust financial position to withstand the oil price and global economic fluctuation. Furthermore, the Company retains its adequate liquidity to support company's operations as planned, as well as for expansion into new businesses for the Energy Transition according to the company's strategies.

④ *Research and Development of Technology*

PTTEP encourages the development of technology and innovation. As of 2023, there are 62 projects under research and development and the progress of highlight projects are as follows;

- The development of technology for the removal of contaminants from condensate is currently in the process of development and testing. This includes technologies such as the separation of contaminants in water, technology to extend the lifespan of absorbents. These advancements will aid in enhancing efficiency and reducing costs for the additional removal of contaminants from condensate, building upon the technologies that have already been successfully implemented and are in use.
- The technology to support pipeline decommissioning activities such as;
 - The intelligent sampling PIG for collecting pipeline surface sample is currently being used for the decommissioning of subsea pipelines in the Gulf of Thailand. The development team is continually developing the equipment for better efficiency and supporting additional pipe sizes so that they can be used at all PTTEP production sites.
 - The development of methods for production wells plugging and abandonment through thermite reactions is currently in the preparation stage for pilot testing in PTTEP's production fields.
- The development of an autonomous robot for performing operating tasks in wellhead platforms and an unmanned aerial vehicle for production platform inspection and equipment delivery has conducted prototype testing at offshore petroleum production sites. The testing will continue and is expected to complete in Q1/2024.
- The development of surface coating technology for carbon steel and stainless-steel with diamond-like material to extend the service life of equipment has successfully developed a prototype coating machine. There will be tests to evaluate the performance of this prototype, and trials will be conducted in 2024 on coating surfaces of equipment used in petroleum production processes.
- The development of technology to reduce Greenhouse gas emissions includes:
 - The low heating value flare tip to reduce greenhouse gas emissions is currently in the preparation stage for pilot testing at the G2/61 field in 2024
 - The Carbon-dioxide fixation by artificial reef development is currently in the stage of testing prototype artificial reefs to assess environmental impacts in collaboration with the Department of Fisheries. The project is also in the design phase of developing a prototype machine for curing concrete artificial reefs with carbon dioxide.
 - The development of technology for capturing carbon dioxide from the exhaust stacks of internal combustion engines used in petroleum production processes has completed the feasibility study and is currently under consideration for further study in the Front End Engineering Design (FEED) phase.
 - The development of renewable energy use in production fields to reduce greenhouse gas emissions: The feasibility study is ongoing for various electricity generation technologies such as wave energy, floating solar for offshore operations.
 - The direct air capture (DAC) technology development: There are two technologies that are currently being developed which are a solid adsorbent DAC in prototype scale and electrochemical DAC in lab-scale.

- The project to develop a clean energy technology test field has completed testing the operation of energy storage equipment along with renewable energy technology and has prepared the area, making it ready for the installation of hydrogen production equipment that will commence operations in the year 2024.
- The flare gas conversion to Carbon Nanotubes project is currently in the Front End Engineering Design (FEED) phase for a pilot carbon nanotube production unit, which is expected to be completed by Q1/2024. The project is also considering collaborations with companies in the PTT Group as well as external companies across various industries, to explore opportunities for scaling up the production technology into a business and utilizing the produced carbon nanotubes for commercial implementation.

PTTEP's strong commitment and concrete performance have been recognized by both domestic and international institutions, which can be seen from the awards received in 2023 such as;

- Received 3 awards from IAA Awards for Listed Companies 2022-2023, which was held by the Investment Analysts Association (IAA) and the Stock Exchange of Thailand, namely Outstanding CEO Award, Outstanding CFO Award and Best IR Award for the 2nd consecutive year. The IAA Awards for Listed Companies have covered listed companies in 11 industries that were nominated and voted by investment analysts and granted based on management excellence, communication to external parties on accurate, clear, complete information, with ethical business operations, and good governance.
- Received a SETA Energy Awards 2023 in the Carbon Reduction category, which was granted in recognition of PTTEP's implementation of strategies in pursuit of EP Net Zero 2050 goal as well as its development of relevant technologies and innovations. SETA Energy Awards are organized by the Ministry of Energy in cooperation with GAT International Co., Ltd., and awarded on an annual basis to honor accomplishments for individuals, companies, and organizations in the energy sector.
- Received the HR Excellence Awards 2023, Excellence in Hybrid Working at the HR Excellence Awards 2023 Thailand. The award presentation was organized by Lighthouse Independent Media and demonstrates PTTEP Human Resources management operational excellence for embedding efficient and flexible hybrid work modes into the organization which is the benchmark for all leading companies in Thailand.
- Selected as a member of the 2023 Dow Jones Sustainability Indices (DJSI) for the 9th time in the DJSI World Index and listed in the S&P Global Sustainability Yearbook for the 10th consecutive year in the Oil and Gas Upstream & Integrated Industry. Additionally, PTTEP was rated at A Level by the MSCI ESG Ratings and maintained membership in the FTSE4Good Index Series for the 8th consecutive year as well as being recognized as an ESG Industry Top-rated Company in Oil & Gas Producers by Morningstar Sustainability.
- Received 4 awards at the SET Awards 2023 by the Stock Exchange of Thailand (SET). The awards are Outstanding Company Performance Awards for listed company with exceptional operational performance, good corporate governance, and compliance with SET's criteria; Sustainability Award of Honor for the 2 consecutive year, also achieving the highest AAA rating in the SET ESG Rating along with other 34 companies; SET Award of Honor: Best Investor Relations, which is granted to companies that excel in Investor Relations and have won Best Investor Relations Award for at least 3 consecutive years. PTTEP also won Best Innovative Company Awards for Flare Gas Conversion to Carbon Nanotubes project, an initiative to reduce greenhouse gas (GHG) emissions by turning it into other valuable products/materials.
- Received the top tier award for 2023 Role Model Organization on Human Rights in State Enterprise sector for the 5th consecutive year from the Department of Rights and Liberties Protection, Ministry of Justice. PTTEP is committed to the principles of good corporate governance and social responsibility including respecting diversity and fundamental human rights in all operational sites. The company has established guidelines aimed at proactively preventing human rights

violations while prioritizing the implementation of grievance and remediation process for individuals affected by PTTEP operations. The Company is also committed to fostering shared responsibility on human rights across the organization.

- Received the International Green Apple Awards for Environmental Best Practice 2023 in the Environmental Improvement category with gold level from the Green Organisation, for implementing the PTTEP Reforestation Project. The awards recognize organizations that have significantly enhanced and promoted environmental best practices around the world. The Green Organization was established as an international, independent, non-profit, environmental organization.
- Received the Steward Leadership 25 (SL25) award. PTTEP was ranked among 25 organizations in Asia to earn this honor thanks to its Ocean for Life strategy implementation. The awards are conferred by the Stewardship Asia Centre CLG Limited, which is a non-profit organization, INSEAD Hoffmann Global Institute for Business and Society, WTW and The Straits Times, to honor businesses, leaders, investors, and individuals who have set value-creating guidelines through exemplary practices by taking into account the needs of stakeholders, society and environment.
- Received the ESG Initiative of the Year award from the Asian Oil and Gas Awards. The recognition underlines PTTEP's commitment to striking the balance among economic, social and environmental dimensions in line with its sustainability framework together with its implementation of various initiatives under Ocean for Life strategy. The Asian Oil and Gas Awards honors outstanding organizations in Asia's oil & gas industry, hosted by Asian Power Magazine.

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 2023

Crude Oil Price

The key factor that impacts the Company's performance is the oil price. The oil market was volatile throughout the year with the average price of Dubai crude oil in 2023 at 82.1 USD/barrel, indicating a decline compared to the previous year at 96.4 USD/barrel. The reasons that pushed down Dubai price include the continuous rise in oil output from the non-OPEC+ countries, concerns on a global economic recession, inflation, and policy interest rate hikes by the Central Banks of Western countries such as the United States, European Union, and United Kingdom, which are profoundly impacting global economic growth.

In Q1/2023, the average Dubai crude price reached 80.3 USD/barrel, down from 84.8 USD/barrel reported in Q4/2022, primarily attributed to apprehensions regarding the crisis in the US banking sector. Following the US government's order to close Silicon Valley Bank (SVB) and Signature Bank (SB), the failure of these banks pressed concerns to equity investors around the world and triggered risks to other banks. Moreover, the fact that the U.S. Federal Reserve (Fed) might continue with its interest rate hikes to control inflation, which could possibly lead to an economic recession, eventually reduced future oil demand outlook.

During Q2/2023, the U.S. Federal Reserve and the EU central bank still continued with the interest rates increase to tame inflation, which created concerns on global economic recession. Together with the lower-than-expected growth in Chinese economy, the oil demand was put under pressure with a decline of the average Dubai crude price to 77.8 USD/barrel.

In Q3/2023, the average price of Dubai crude price soared to 86.6 USD/barrel, a significant increase from the preceding quarter. This increase was primarily influenced by a tightening of oil supply, as Russia and Saudi Arabia extended production cuts. On the demand side, there was the seasonal surge in demand for oil during the summer in Western countries, driven by travel and increased tourism.

In Q4/2023, oil supply from the U.S. and Africa increased, alongside a decrease in demand for fuel in the U.S. due to flooding in several states. As a result, the average crude oil price dropped to 83.8 USD/barrel. The conflict between Israel and Hamas slightly pushed oil prices up in October. However, by the end of the quarter, oil prices had dropped again. This was because the conflict did not impact crude oil supplies from the Middle East, as Israel is not a major oil producer and there are no oil-producing field in Palestine. Additionally, the conflict happened in only small areas.

Liquefied Natural Gas (LNG) Price

The average Asian Spot LNG price for 2023 was 14 USD/MMBTU. This marked a decrease from the 2022 average of 34 USD/MMBTU. In Q1/2023, the price significantly dropped from the Q4/2022, from the average of 30 USD/MMBTU to 16 USD/MMBTU, attributed to lower-than-expected LNG demand resulting from milder winter weather across Europe and Northeast Asia countries, leading to a sharp increase in inventory levels. Prices continued to decline in Q2/2023 to approximately \$11 USD/MMBTU. In Q3/2023, a union strike at LNG plants in Australia, along with LNG plant maintenance in Russia, Europe, and the U.S., caused the price to increase to approximately 13 USD/MMBTU. The price continued its upward trend to 15 USD/MMBTU in Q4/2023 due to anticipated impact from the conflict between Israeli-Palestinian and the uncertainty of other geopolitical situations in the Middle East. For the global LNG market in 2023, the total supply capacity was 408 million tons per annum (MTPA) (compared to 393 MTPA in 2022), while LNG demand remained at approximately 413 MTPA (compared to 395 MTPA in 2022). (Source: FGE as of January 2024).

Thailand's Energy Demand

The Energy Policy and Planning Office (EPPO) of the Ministry of Energy reported that domestic energy demand from January to October 2023 increased by 1.8% compared to the same period in 2022, or approximately 2 MMBOED. The upsurge in energy consumption was primarily driven by the higher usage of natural gas and LNG for electricity generation, in response to the increased demand for electricity.

Exchange Rates (Thai Baht against US Dollar)

Overall, in 2023 Thai Baht (THB) appreciated against US Dollars (USD), starting the year at 34.40 THB and concluding at 34.22 THB, with high volatility throughout the year, from its bottom at 32.69 THB to the peak of 37.14 THB, mainly from consecutive Fed's interest



rate hikes, to 5.50% which is the highest level since 2001, which caused USD to strengthened compared to other currencies. Moreover, THB was impact by negative sentiment of Thai economic outlook, together with slow recovery in tourism and export sectors. In addition, world economic activity remains uncertain from on-going Russia-Ukraine war and Israel-Hamas tension. However, towards the end of 2023, THB regained strength in response to the Fed's signal for an interest rate cut in 2024, following a gradual decline in inflation rates.

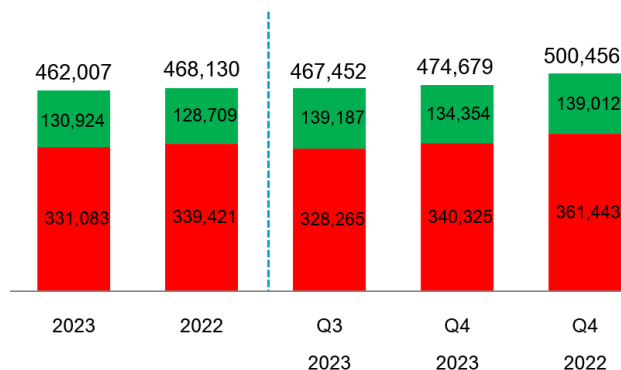


Financial Performance

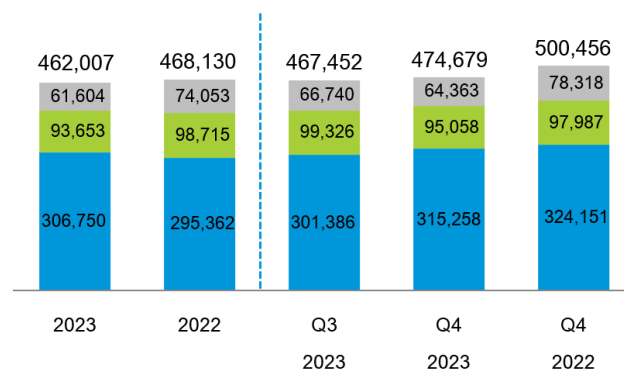
Average Sales Volume and Selling Price

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			Inc. (Dec.)	Q3	Q4	Q4	Inc. (Dec.)	Inc. (Dec.)
Dubai crude oil price			YTD	2023	2023	2022	QoQ	YoY
(Unit : US Dollar)								
Average selling price (/BOE)	48.21	53.39	-5.18	48.62	48.41	52.76	-0.21	-4.35
Liquid price (/BOE)	79.09	94.89	-15.80	81.89	81.95	85.40	+0.06	-3.45
Gas price (/MMBTU)	6.00	6.27	-0.27	5.75	5.86	6.70	+0.11	-0.84
Average Dubai crude oil price (/BBL)	82.09	96.38	-14.29	86.63	83.75	84.77	-2.88	-1.02

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

For 2023 compared with 2022

In 2023, the average sales volume of PTTEP and its subsidiaries (the "Group") decreased to 462,007 barrels of oil equivalent per day (BOED) or 1% when compared with 468,130 BOED in 2022, primarily from Oman Block 61 Project due to lower contractor entitlement and shutdown in this year, along with Bongkot Project end of concession in March 2023. However, it was offset with G1/61 Project and G2/61 Project due to full year recognition of sales volume, also G1/61 Project has successfully ramped up the natural gas production since the end of June 2023. Additionally, the average selling price decreased by 10% to 48.21 USD/BOE (2022: 53.39 USD/BOE).

For the Fourth quarter of 2023 compared with the Third quarter of 2023

In Q4/2023, the average sales volume increased to 474,679 BOED or 2% when compared with 467,452 BOED in Q3/2023, primarily from fewer shutdown of G2/61 Project when compared to the previous quarter, offset with Malaysia Project due to shutdown at Block H and lower crude sales from Block K. However, the average selling price slightly decreased to 48.41 USD/BOE (Q3/2023: 48.62 USD/BOE).

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

When comparing the average sales volume of Q4/2023 to Q4/2022 of 500,456 BOED, the average sales volume decreased by 5%, primarily from Oman Block 61 Project due to lower contractor entitlement and shutdown in this quarter, along with Bongkot Project end of concession in March 2023. However, it was offset with G2/61 Project due to higher gas nomination from buyer and G1/61 Project has successfully ramped up the natural gas production since the end of June 2023. Additionally, the average selling price decreased by 8% to 48.41 USD/BOE (Q4/2022: 52.76 USD/BOE).

Overall Operating Results

For 2023 compared with 2022

In 2023, the Group had a net profit of 2,208 MMUSD. An increase of 209 MMUSD or 10% from a net profit of 1,999 MMUSD in 2022, despite of lower revenue from sales, was primarily due to lower loss from oil price hedging instruments and impairment loss on assets, couple with gain from disposal of participating interests of AC/RL7 (Cash-Maple) Project in 2023. The net profit of 2,208 MMUSD in 2023 can be separated as following.

The profit from normal operation in 2023 was 2,322 MMUSD. A decrease of 325 MMUSD, compared with a profit of 2,647 MMUSD in 2022, was primarily from a decrease in revenue from sales of 759 MMUSD from lower average selling price and average sales volume. Moreover, operating expenses increased by 115 MMUSD, primarily from non-cash accounting transactions at the end of concession of Bongkot Project in Q1/2023, as well as higher sales volume from G1/61 Project and G2/61 Project. However, royalties decreased by 238 MMUSD mainly from a higher portion of sales revenue from projects under production sharing contracts in Thailand and lower sales revenue from projects in Malaysia. Income taxes decreased by 224 MMUSD mainly from projects in Thailand and Oman due to lower profits. In addition, interest income increased by 108 MMUSD from higher outstanding cash balance and interest rates.

Loss from non-operating items in 2023 was 114 MMUSD. A decrease of 534 MMUSD, compared with a loss of 648 MMUSD in 2022, was primarily from lower loss from oil price hedging instruments of 182 MMUSD due to less upward trend of oil price compared to the previous year, along with a change of execution strategies (2023: loss 4 MMUSD and 2022: loss 186 MMUSD). In addition, impairment loss on assets decreased by 180 MMUSD as the Group recognized loss on Mozambique Area 1 Project amounting to 120 MMUSD (2022: recognized loss on Mozambique Area 1 Project, Block 17/06 Project (Angola) and PTTEP BL). Gain on foreign exchange rate, net of loss on foreign exchange forward contracts, amounted to loss of 5 MMUSD, reflecting lower loss of 87 MMUSD when compared to the previous year. Nevertheless, Australia Asset reported gain from disposal of participating interests of AC/RL7 (Cash-Maple) Project 73 MMUSD, offset with write-off assets of AC/RL12 (Oliver) Project 50 MMUSD. Meanwhile in 2022, the Group had recognized the expense related to Montara incident Class Action settlement amounting to 129 MMUSD, offset with other income from an adjustment of contingent liabilities of Oman Block 61 Project amounting to 71 MMUSD while no such transaction in 2023.

For the Fourth quarter of 2023 compared with the Third quarter of 2023

In Q4/2023, the Group had a net profit of 514 MMUSD. No change from a net profit in Q3/2023, despite of impairment loss on Mozambique Area 1 Project in Q4/2023, due to decreases in another expenses e.g. operating expenses and income taxes. The net profit of 514 MMUSD in Q4/2023 can be separated as following.

The profit from normal operation in Q4/2023 was 603 MMUSD. An increase of 64 MMUSD, compared with a profit of 539 MMUSD in Q3/2023, was primarily from an increase in revenue from sales of 9 MMUSD from higher average sales volume while the average selling price slightly decreased. Moreover, operating expenses decreased by 57 MMUSD, primarily from

lower decommissioning costs than provision of Contract 4 Project, together with lower sales volume from Malaysia Project. In addition, income taxes decreased by 53 MMUSD mainly from projects in Oman and Malaysia.

The loss from non-operating items in Q4/2023 was 89 MMUSD. An increase of 64 MMUSD, compared with a loss of 25 MMUSD in Q3/2023, was primarily from impairment loss on Mozambique Area 1 Project amounting to 120 MMUSD (Q3/2023: no recognition). However, gain from oil price hedging instruments of 13 MMUSD was recognized in this quarter (including unrealized gain from mark-to-market of 12 MMUSD) due to a downward trend of forward oil price, while loss of 20 MMUSD in the previous quarter (including unrealized loss from mark-to-market of 10 MMUSD) from an upward trend of forward oil price. In addition, Australia Asset reported gain from disposal of participating interests of AC/RL7 (Cash-Maple) Project 73 MMUSD, offset with write-off assets of AC/RL12 (Oliver) Project 50 MMUSD.

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

In Q4/2023, the Group had a net profit of 514 MMUSD. An increase of 97 MMUSD or 23% from a net profit of 417 MMUSD in Q4/2022, despite of lower revenue from sales, was primarily from lower impairment loss on assets, as well as the expense related to Montara incident Class Action settlement was recognized in Q4/2022. The net profit of 514 MMUSD in Q4/2023 can be separated as following.

The profit from normal operation in Q4/2023 was 603 MMUSD. A decrease of 120 MMUSD, compared with a profit of 723 MMUSD in Q4/2022, was primarily from a decrease in revenue from sales of 267 MMUSD from lower average selling price and average sales volume. However, income taxes decreased by 68 MMUSD mainly from projects in Thailand due to lower profits. Royalties decreased by 65 MMUSD mainly from a higher portion of sales revenue from projects under production sharing contracts in Thailand and operation expenses decreased by 41 MMUSD mainly from lower decommissioning costs than provision of Contract 4 Project.

The loss from non-operating items in Q4/2023 was 89 MMUSD. A decrease of 217 MMUSD, compared with a loss of 306 MMUSD in Q4/2022, was primarily from a decrease in impairment loss on assets of 85 MMUSD as the Group recognized loss on Mozambique Area 1 Project amounting to 120 MMUSD (Q4/2022: recognized loss on Mozambique Area 1 Project and Block 17/06 Project (Angola)). Moreover, loss on foreign exchange forward contracts, net of gain on foreign exchange rate, reflecting lower loss of 43 MMUSD due to less appreciation of THB against USD in Q4/2023 when compared to Q4/2022. In addition, Australia Asset reported gain from disposal of participating interests of AC/RL7 (Cash-Maple) Project 73 MMUSD, offset with write-off assets of AC/RL12 (Oliver) Project 50 MMUSD. Meanwhile in Q4/2022, the Group had recognized the expense related to Montara incident Class Action settlement amounting to 129 MMUSD, offset with other income from an adjustment of contingent liabilities of Oman Block 61 Project amounting to 71 MMUSD while no such transaction in Q4/2023.

Operating Results by Segments

Net Profit (loss)	2023	2022	Inc. (Dec.) YTD	Q3 2023	Q4 2023	Q4 2022	Inc. (Dec.) QoQ	Inc. (Dec.) YoY
(Unit: Million US Dollar)								
Exploration and production	2,513	2,489	+24	640	585	567	-55	+18
Thailand	1,608	1,843	-235	375	436	524	+61	-88
Other Southeast Asia	669	783	-114	187	145	205	-42	-60
Middle East	223	292	-69	59	57	118	-2	-61
Australia	22	(164)	+186	-	23	(131)	+23	+154
America	(8)	(110)	+102	(2)	-	(3)	+2	+3
Africa	(6)	(167)	+161	19	(78)	(148)	-97	+70
Others	5	12	-7	2	2	2	-	-
Head office and others	(305)	(490)	+185	(126)	(71)	(150)	+55	+79
Profit for the period	2,208	1,999	+209	514	514	417	-	+97

For 2023 compared with 2022

For 2023, the Group reported a net profit of 2,208 MMUSD. An increase of 209 MMUSD from a net profit of 1,999 MMUSD in 2022, was primarily due to a lower net loss of 185 MMUSD from Head Office and Others segment, as well as a higher net profit of 24 MMUSD from Exploration and Production segment.

The Head Office and Others segment reported a net loss of 305 MMUSD in 2023. A decrease of 185 MMUSD from a net loss of 490 MMUSD in 2022, was primarily from lower loss on oil price hedging instruments due to less upward trend of oil price compared to the previous year.

The Exploration and Production segment reported a net profit of 2,513 MMUSD in 2023. An increase of 24 MMUSD from a net profit of 2,489 MMUSD in 2022, was primarily from Australia with an increase of 186 MMUSD arising from gain on disposal of participating interests of AC/RL7 (Cash-Maple) Project, offset with write-off assets of AC/RL12 (Oliver) Project while the expense related to Montara incident Class Action settlement was recognized in 2022. Africa reported a net loss decrease of 161 MMUSD, primarily from an increase in revenue from sales since Algeria Hassi Bir Rekaiz Project started its first crude oil sales in October 2022, as well as lower impairment loss on Mozambique Area 1 Project and Block 17/06 Project. America reported a net loss decrease of 102 MMUSD, primarily from impairment loss on PTTEP BL in 2022 while no such transaction in 2023. However, Thailand reported a net profit decrease of 235 MMUSD, primarily from a decrease in revenue from sales from lower average selling price, offset with higher sales volume from G1/61 Project and G2/61 Project. Meanwhile, operating expenses increased from non-cash accounting transactions at the end of concession of the Bongkot Project. Other Southeast Asia reported a net profit decrease of 114 MMUSD, primarily from a decrease in revenue from sales from Malaysia Project. Middle East reported a net profit decrease of 69 MMUSD, primarily from other income decreased from the adjustment of contingent liabilities of Oman Block 61 Project in 2022 while no such transaction in 2023.

For the Fourth quarter of 2023 compared with the Third quarter of 2023

For Q4/2023, the Group reported a net profit of 514 MMUSD, no change when compared with a net profit in Q3/2023. The Head Office and Other segment reported a lower net loss of 55 MMUSD, while there was a lower net profit of 55 MMUSD from Exploration and Production segment.

The Head Office and Others segment reported a net loss of 71 MMUSD in Q4/2023. A decrease of 55 MMUSD when compared with a net loss of 126 MMUSD in Q3/2023, was primarily from gain on oil price hedging instruments due to a downward trend of forward oil price, while Q3/2023 recognized loss due to an upward trend of forward oil price.

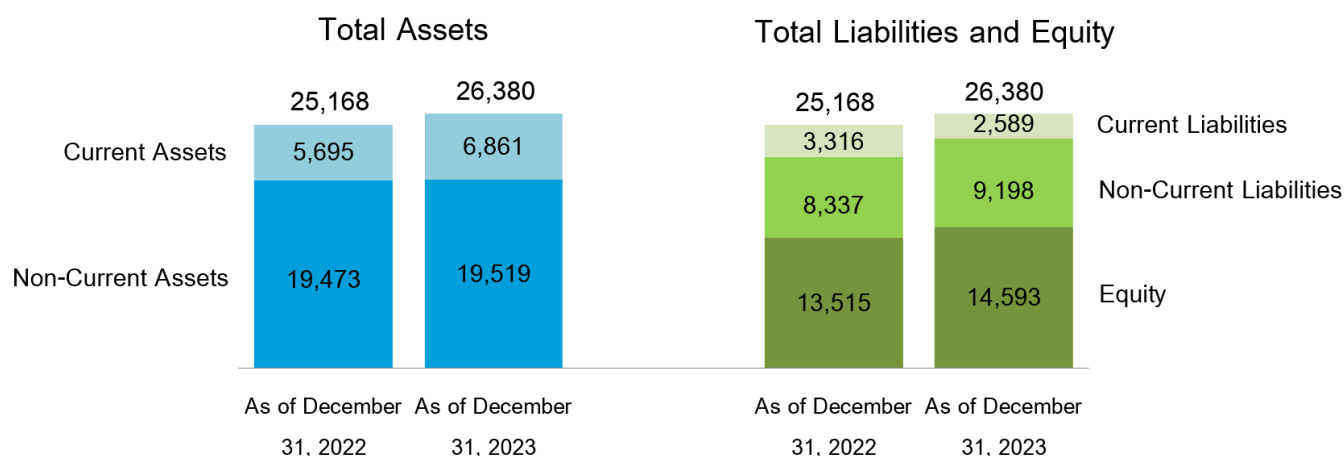
The Exploration and Production segment reported a net profit of 585 MMUSD in Q4/2023. A decrease of 55 MMUSD when compared with a net profit of 640 MMUSD in Q3/2023, was primarily from Africa with a decrease of 97 MMUSD due to the impairment loss on Mozambique Area 1 Project in Q4/2023, while there was an increase in revenue from sales due to higher sales volume from Algeria Hassi Bir Rekaiz Project. However, Thailand reported a net profit increase of 61 MMUSD, primarily from an increase in revenue from sales, while operating expenses decreased from lower decommissioning costs than provision of Contract 4 Project.

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

For Q4/2023, the Group reported a net profit of 514 MMUSD. An increase of 97 MMUSD from a net profit of 417 in Q4/2022, was primarily from a lower net loss of 79 MMUSD from Head Office and Other segment, as well as a higher net profit of 18 MMUSD from Exploration and Production segment.

The Head Office and Others segment reported a net loss of 71 MMUSD in Q4/2023. A decrease of 79 MMUSD from a net loss of 150 MMUSD in Q4/2022, was primarily from lower loss on foreign exchange forward contracts according to less appreciation of THB against USD in this quarter compared to Q4/2022.

The Exploration and Production segment reported a net profit of 585 MMUSD in Q4/2023. An increase of 18 MMUSD from a net profit of 567 MMUSD in Q4/2022, was primarily from Australia with an increase of 154 MMUSD from gain on disposal of participating interests of AC/RL7 (Cash-Maple) Project, offset with write-off assets of AC/RL12 (Oliver) Project in Q4/2023 while the expense related to Montara incident Class Action settlement was recognized in Q4/2022. This was offset with a net profit decrease of 88 MMUSD from Thailand, primarily from a decrease in revenue from sales from lower average selling price while higher sales volume from G1/61 Project and G2/61 Project. Middle East reported a net profit decrease of 61 MMUSD, primarily from other income decreased from the adjustment of contingent liabilities of Oman Block 61 Project in Q4/2022 while no such transaction in Q4/2023.

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

As at December 31, 2023, the Group had total assets of 26,380 MMUSD. An increase of 1,212 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 1,166 MMUSD, primarily from higher trade and other receivables of 599 MMUSD, together with cash and cash equivalents increased by 480 MMUSD and short-term investments increased by 200 MMUSD. However, it was offset with other current assets which decreased by 169 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 and exploration and evaluation assets, increased by 46 MMUSD, primarily from property, plant and equipment, net of depreciation, increased by 984 MMUSD mainly from G1/61 Project, G2/61 Project, Zawtika Project and S1 Project. However, deferred tax assets decreased by 395 MMUSD and goodwill decreased by 195 MMUSD, primarily from the non-cash accounting adjustments at the end of concession of Bongkot Project and impairment loss on Mozambique Area 1. In addition, exploration and evaluation assets decreased by 316 MMUSD mainly from PTTEP Australasia Project.

Liabilities

As at December 31, 2023, the Group had total liabilities of 11,787 MMUSD. An increase of 134 MMUSD from total liabilities as at December 31, 2022 of 11,653 MMUSD was primarily due to;

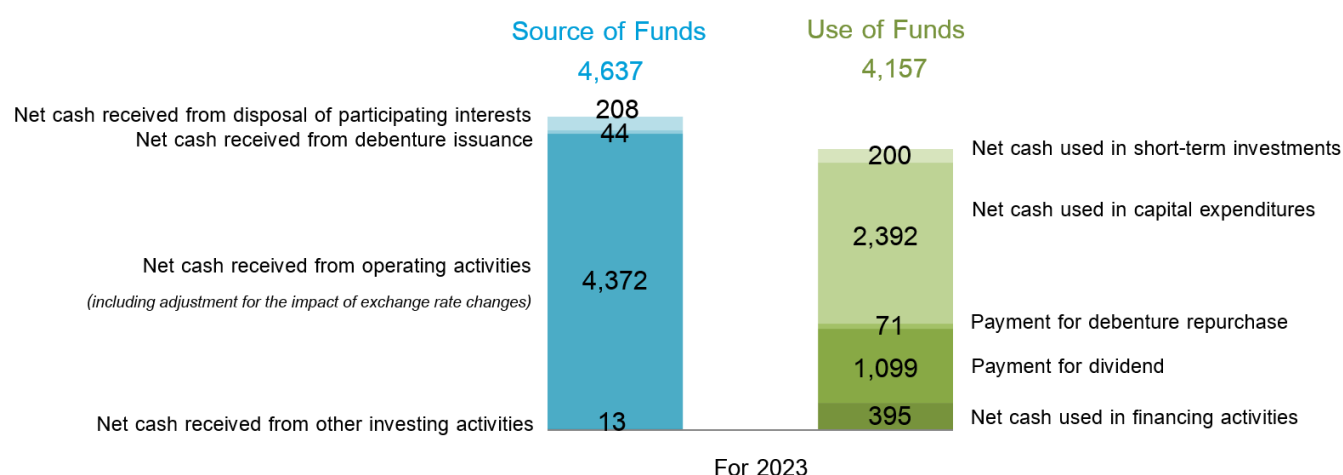
- (1) Current liabilities, which were primarily comprised of trade and other payables and income tax payable, decreased by 727 MMUSD, primarily from short-term provisions decreased by 385 MMUSD, mainly from provision for decommissioning costs at the end of concession of Bongkot Project and provision for the Class Action settlement from Montara incident. In addition, income tax payable decreased by 305 MMUSD primarily from a higher portion of sales revenue from projects under production sharing contracts in Thailand after Bongkot Project end of concession.
- (2) Non-current liabilities, which were primarily comprised of debentures, deferred tax liabilities and provision for decommissioning costs, increased by 861 MMUSD, primarily due to higher provision for decommissioning costs of 1,052 MMUSD, mainly from G1/61 Project and G2/61 Project while lease liabilities decreased by 134 MMUSD.

Equity

As at December 31, 2023, the Group had equity of 14,593 MMUSD. An increase of 1,078 MMUSD from equity as at December 31, 2022 of 13,515 MMUSD. This was primarily due to the net profit for the year 2023, offset with dividend payments in April and August 2023. The equity included non-controlling interest of 3 MMUSD from an issuance of authorized share capital of subsidiary companies under AI and Robotics Ventures Company Limited to the external investors.

Cash Flows

Unit: Million US Dollar



As at December 31, 2023, the Group had cash and cash equivalents of 4,019 MMUSD. An increase of 480 MMUSD when compared with December 31, 2022 of 3,539 MMUSD.

Source of funds amount of 4,637 MMUSD, primarily came from net cash received from operating activities of 4,372 MMUSD as a result of the positive net cash flow from revenue from sales, offset with cash paid for expenses and income taxes, together with net cash received from disposal of participating interests of AC/RL7 (Cash-Maple) Project of 200 MMUSD and Block 17/06 Project (Angola) of 8 MMUSD. In addition, there was net cash received from the issuance of senior guaranteed debentures of 1,500 MMTHB (equivalent to 44 MMUSD).

Uses of funds amount of 4,157 MMUSD, primarily came from net cash used in additional capital expenditures in exploration and production assets of 2,392 MMUSD, mainly from G1/61 Project, G2/61 Project, Zawtika Project and S1 Project, together with cash paid for dividends of 1,099 MMUSD for the second half of 2022 and the first half of 2023. Moreover, there were payments for lease liabilities and interests during 2023, as well as net cash used in short-term investments and the repurchase of unsubordinated debentures from PTTEP Canada International Finance Limited and PTTEP Treasury Center Company Limited.

Key Financial Ratios

	2023	2022	Q2 2023	Q4 2023	Q4 2022
Profitability Ratio (%)					
EBITDA margin *	74.47	75.39	74.24	74.48	73.48
Return on equity	15.71	15.41	15.55	15.71	15.41
Net profit margin	24.38	20.69	22.51	24.38	20.69
Leverage Ratio (Times)					
Debt to equity	0.25	0.28	0.26	0.25	0.28
Debt to EBITDA *	0.58	0.56	0.59	0.58	0.56

* EBITDA was excluded gain from disposal of participating interests of AC/RL7 (Cash-Maple) Project, write-off assets of AC/RL12 (Oliver) Project, expense related to Montara incident Class Action settlement 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

In 2023, PTTEP Group has over 50 projects with domestic and international operations in 12 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 2023, the average sales volume from projects in Thailand was 306,750 BOED, accounting for 66% of total sales volume. Average sales volume from other countries in this region is 93,653 BOED, accounted for 20% of total sales volume.



Projects	Participation Interest	Operator	Activities
Projects in Thailand			
Production Phase			
1. S1	100%	PTTEP	The project is producing crude oil, natural gas and liquefied petroleum gas (LPG). Currently, the project is in the process of accelerating drilling development wells to maintain its production level. The environmental impact assessments are also undertaken in both existing and new production areas.

Projects	Participation Interest	Operator	Activities
2. Arthit	80%	PTTEP	The project is producing natural gas and condensate. In 2023, the project produced gas from the new production well and was able to continuously produce gas with an average production level of 327 MMSCFD.
3. Contract 4	60%	Chevron	The project is producing natural gas, condensate, and crude oil. In 2023, the project continued to drill additional development wells aiming to maintain production plateau.
4. B8/32 & 9A	25%	Chevron	The project is producing natural gas and crude oil located offshore in the Gulf of Thailand. In March 2023, the buyer's vessel faced an accident during maintenance, leading to an unplanned shutdown. The project resumed operation at the beginning of October 2023.
5. G12/48	66.67%	PTTEP	The project is producing natural gas and condensate located offshore in the Gulf of Thailand. On September 1, 2023, the Company entered into a Sale and Purchase Agreement (SPA) to acquire additional participation interest of 33.3333% from TotalEnergies EP Thailand, resulting in the PTTEP's interest increasing to 100% after the completion of SPA.
6. G1/61 (Erawan field)	60%	PTTEP	The project is producing natural gas, condensate, and crude oil. The project has produced natural gas at an average of 400 MMSCFD since June 2023. It is in the process of accelerating well drilling and installing 3 additional wellhead platforms, with the aim to increase production level to 800 MMSCFD by April 2024.
7. G2/61 (Bongkot field)	100%	PTTEP	The project is producing natural gas and condensate. Currently, the project is producing natural gas at an average level of 825 MMSCFD and also continuously constructing and installing production platforms and drilling development wells.
8. Malaysia-Thailand Joint Development Area (MTJDA)	50%	CPOC	The Project is producing natural gas. In 2023, the project continuously drilled production wells to maintain production levels. In addition, the project is in the process of planning the drilling of exploration and development wells in preparation for the development of next phase.
<i>Exploration Phase</i>			
9. G1/65	100%	PTTEP	The project is located in the north of the Gulf of Thailand. On June 1, 2023, PTTEP Group signed the PSC, which has a 6-year exploration period and a 20-year production period. The project's annual work program and budget was approved by the Department of Mineral Fuels, and will start the exploration well drilling in 2025.
10. G3/65	100%	PTTEP	The project is located in the south of the Gulf of Thailand. On June 1, 2023, PTTEP Group signed the PSC, which has a 6-year exploration period and a 20-year production period. The project's annual work program and budget was approved by the Department of Mineral Fuels, and will start the exploration well drilling in 2024.
<i>Projects in Myanmar</i>			
<i>Production Phase</i>			
11. Zawtika	80%	PTTEP	The project is natural gas field located in the Gulf of Moattama. In 2023, the project operated according to development plan. Currently, it is in the process of accelerating the drilling of development wells of phase 1D to maintain the production level.

Projects	Participation Interest	Operator	Activities
12. Yadana	37.1%	PTTEP	The project is producing natural gas. Currently, the project is able to produce as planned.
<i>Exploration Phase</i>			
13. Myanmar M3	100%	PTTEP	The project is located offshore in the Gulf of Moattama and is currently pending for the development.
<i>Projects in Malaysia</i>			
<i>Production Phase</i>			
14. Malaysia Block K	7.2 - 56%	PTTEP	The project is oil producing field located in the deep water of offshore Sabah consisting of Kikeh, Siakap North-Petai (SNP), and Gumusut-Kakap (GK) fields. In 2023, the project had a shutdown about 1.5 months in the second quarter to clean and inspect the vessel's cargo tank and extend certification. The project resumed operation in June 2023.
15. Malaysia SK309 and SK311	42 – 59.5%	PTTEP	The projects are oil, condensate, and gas producing fields located in the shallow water, off the coast of Sarawak. In the 2H2023, the project had annual shutdown activities, which was smoothly completed, and was able to resume production as planned.
16. Malaysia Block H	42 – 56%	PTTEP	The project is gas producing field located in the deep-water, off the coast of Sabah. In 2023, the project produced natural gas lower than plan, caused by a 1-month shutdown in Q1/2023, due to the technical issues of buyer's vessel (PFLNG 2).
<i>Exploration Phase</i>			
17. Malaysia SK410B	42.5%	PTTEP	The project is located off the coast of Sarawak and in the Front-End Engineering Design (FEED) at Lang Lebah field which completed in October 2023, together with commercial negotiations with relevant parties. The 1 st gas production is expected in the 1H2028.
18. Malaysia SK417	80%	PTTEP	The project is located in shallow water, off the coast of Sarawak and in the preparation process for drilling at Nangka field to evaluate petroleum potential, along with preparation for appraisal and exploration well drilling. In addition, the project has started a development study for another field at Dokong.
19. Malaysia SK405B	59.5%	PTTEP	The project is located in shallow water, off the coast of Sarawak and has discovered petroleum potential which a suitable development plan will further be established, which is expected to be completed within 2025.
20. Malaysia SK438	80%	PTTEP	The project is located in shallow water, off the coast of Sarawak. In 2023, the project completed 2 exploration wells as planned. The result showed massive sweet gas sandstone reservoirs with thickness up to 200 meters, considered as another sizable field which PTTEP has discovered in Malaysia, following the earlier achievement at the Lang Lebah field.
21. Malaysia SK314A	59.5%	PTTEP	The project is located in shallow water, off the coast of Sarawak. In 2023, the project completed one exploration well (Mong Merah-1). Currently, the project is in progress of remaining petroleum potential evaluation for further exploration campaign.

Projects	Participation Interest	Operator	Activities
22. Malaysia PM407	55%	PTTEP	The project is located in shallow water, off the coast of Peninsular. In 2023, the project has completed the first committed exploration well, Simpoh Beludu-1. Currently, the project is in progress of petroleum potential evaluation for further exploration campaign.
23. Malaysia PM415	70%	PTTEP	The project is located in shallow water, off the coast of Peninsular. In 2023, the project completed minimum commitment and post-drilling evaluation for petroleum potential. The project was already relinquished to the Malaysia Government.
24. Malaysia SB412	60%	PTTEP	The project is located in shallow-deep water, off the coast of Sabah. In 2023 the project was undergoing for 3D seismic reprocessing activity and performing the prospect evaluation for decision making to enter Phase 2 exploration in early 2024.
25. Malaysia SK325	32.5%	PCSB	The project is located in shallow water, off the coast of Sarawak. In 2023, the project is currently in the preparation process for the geophysical study, 3D seismic data acquisition and evaluate petroleum potential to further drill the committed exploration wells in 2024-2026 campaign.
Projects in Vietnam			
Production Phase			
26. Vietnam 9-2	25%	HV JOC	The project is producing natural gas and crude oil located offshore southeast of Vietnam. Currently, the average sales volume is approximately 9 MMSCFD of natural gas and 4,460 BPD of crude oil.
27. Vietnam 16-1	28.5%	HL JOC	The project is producing natural gas and crude oil located offshore southeast of Vietnam. Currently, the average sales volume is approximately 5 MMSCFD of natural gas and 11,500 BPD of crude oil.
Exploration Phase			
28. Vietnam B & 48/95 and the Vietnam 52/97	8.5% 7%	Vietnam Oil and Gas Group	The projects are located offshore of 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 gradually ramp up to 490 MMSCFD, combining the production from Vietnam B & 48/95 & 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 and Midstream</i>			
29. 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+ output agreement.
30. Oman Block 61	20%	BP	The project is producing natural gas and condensate. Currently, the project has a full production capacity of natural gas and condensate at 1,500 MMSCFD and 56,000 barrels per day (BPD), respectively.
31. Oman LNG	2%	OLNG	Oman LNG is a liquefied natural gas (LNG) processing plant located near Sur, Oman. On October 23, 2023, PTTEP Group entered into a Shareholder Agreement to extend for an additional 10 years to December 2034.
<i>Exploration Phase</i>			
32. 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 a plan to drill 2 exploration wells in 2024.
Project in United Arab Emirates (UAE)			
<i>Exploration Phase</i>			
33. Abu Dhabi Offshore 1	30%	Eni	The project is located in offshore northwest of Abu Dhabi. The project has completed the preliminary Geological and Geophysical study reports. Currently, it is in progress of full study preparation.
34. Abu Dhabi Offshore 2	30%	Eni	The project is located in offshore northwest of Abu Dhabi. The project has successfully made significant gas

Projects	Participation Interest	Operator	Activities
			discovery, in a deeper zone, of the exploration well XF-002. Currently, it is in progress of Geological study and further evaluation of petroleum potential for drilling another exploration well. The first gas production is expected to start in late 2025.
35. Abu Dhabi Offshore 3	30%	Eni	The project is located in offshore northwest of Abu Dhabi. Currently, it is in progress of Geological study and further evaluation of petroleum potential for the preparation of appraisal well and exploration well which will be drilled in 2024-2025.
36. Sharjah Onshore Area A	25%	Eni	The project is located onshore in the central part of Sharjah. Currently, The project is in progress of Geological and Geophysical study reports to assess its petroleum potential.
37. Sharjah Onshore Area C	25%	Eni	The project is located onshore in the central part of Sharjah. The 3D seismic survey has completed in 2023. It is in the process of data processing to assess its petroleum potential.
Projects in People's Democratic Republic of Algeria (Algeria)			
<i>Production Phase</i>			
38. Algeria 433a & 416b	35%	GBRS	The project is crude oil producing located onshore in the eastern part of Algeria. In 2023, the average crude oil production was approximately 15,600 BPD and it is in the process of accelerating the drilling of new production wells, along with preparing the existing wells to increase production capacity.
39. Algeria Hassi Bir Rekaiz	49%	GHBR	The project is located onshore in the eastern part of Algeria. In 2023, the project achieved crude oil production increase from 13,000 barrels per day to 17,000 barrels per day. Moreover, it is currently conducting the study and plan for the second phase development to increase production to 30,000 and 60,000 barrels per day by 2027 and 2030 respectively.
Project in Republic of Mozambique (Mozambique)			
<i>Development Phase</i>			
40. Mozambique Area 1	8.5%	TotalEnergies	The project is a large LNG project located in offshore Mozambique. From April 2021, all construction activities were suspended due to Force Majeure resulting from unrest near the project site. However, the current situation has continuously improved, and the project is currently in the process of evaluating the possibility and preparing to return to the area in the 1H2024.

Projects	Participation Interest	Operator	Activities
Project in Republic of Angola (Angola)			
<i>Development Phase</i>			
41. 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 was finalized and effective on December 22, 2023.

Projects in Australia

Projects	Participation Interest	Operator	Activities
Projects in Commonwealth of Australia (Australia)			
<i>Exploration Phase</i>			
42. PTTEP Australasia	100%	PTTEP	<p>This Project is located in Australia, consist of the Oliver Field (AC/RL12), which is in progress of evaluation of commercial potential.</p> <p>Moreover, on February 27, 2023, PTTEP Group was approved by the Government of Australia to transfer its interests in Katandra Field (AC/RL10) to Bengal Energy Ltd. On July 27, 2023, PTTEP Group was approved by Australian government to return Tenacious Field (AC/RL4), which expired on June 15, 2023. On August 18, 2023, PTTEP Group entered into a Sale and Purchase Agreement (SPA) to sell its total interests in AC/RL7 to INPEX Cash Maple Pty Ltd and TotalEnergies Exploration Australia Pty Ltd. The sale transaction was completed on December 22, 2023.</p>

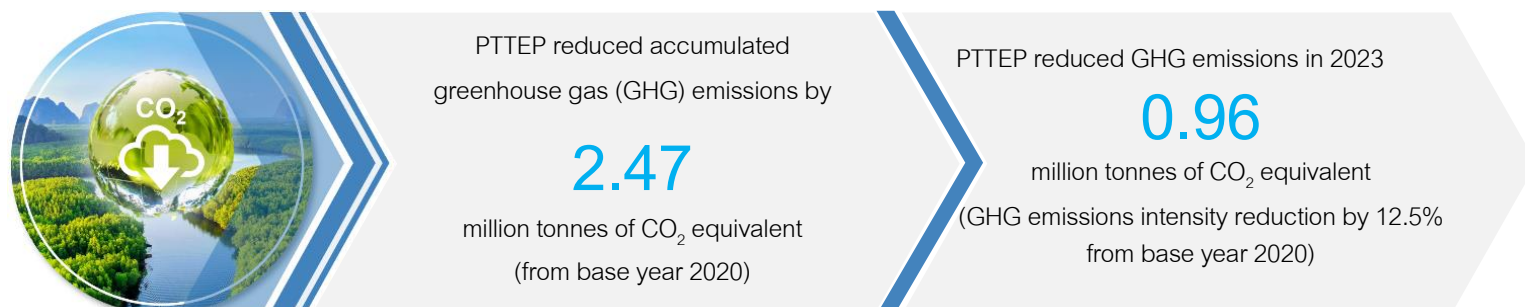
Projects in the Americas



Projects	Participation Interest	Operator	Activities
Projects in Canada			
<i>Exploration Phase</i>			
43. Mariana Oil Sands	100%	PTTEP	The project is located in Alberta, Canada and had completed the block relinquishment in August 2023.
Project in United Mexican States (Mexico)			
<i>Exploration Phase</i>			
44. 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. Currently, the project is in the process of block relinquishment to the Mexico Government.
45. Mexico block 29 (2.4)	16.67%	Repsol	The project is located in the Campeche basin, southern part of Gulf of Mexico. Currently, the project is currently undergoing a pre-development study of Polok and Chinwol fields and evaluation of further petroleum potential.

Decarbonize

For our decarbonization efforts, we have made progress in 2023 as follows:



The reduction was through exploration and production portfolio and appropriate well management. In addition, PTTEP has made efforts to drive the reduction of greenhouse gas emissions through various initiatives in 2023 as follows:

CCS Carbon Capture and Storage	The Front-End Engineering Design (FEED) for the CCS project at Arthit was completed. The Final Investment Decision (FID) of Arthit's CCS is expected to be in 2024 and 1 st injection is going to start the operation in 2027. Total CCS capacity is expected to be approximately 0.7 – 1 million tonnes of CO ₂ equivalent or MTCO ₂ annually.
OGMP 2.0 The Oil & Gas Methane Partnership 2.0 for the Oil & Gas Sector	PTTEP has signed an MOU to participate in the Oil & Gas Methane Partnership 2.0 (OGMP 2.0) under the United Nations Environment Programme (UNEP) in October 2023. The project aims to reduce methane emissions, enhance the accuracy and transparency of emission measurements, and improve methane emissions reporting.
OGDC Oil & Gas Decarbonization Commitment	PTTEP has declared its commitment to the Oil & Gas Decarbonization Charter (OGDC) along with other oil and gas organizations around the world. The three pivotal objectives of this commitment include achieving net zero operations by 2050, near-zero upstream methane emissions by 2030, and zero routine flaring by 2030 (according to World Bank's Zero Routine Flaring by 2030". This commitment is part of COP28.

Moreover, PTTEP joined force in combatting climate change at COP28, which took place from November 30 to December 12, 2023. This includes its participation in the Business & Philanthropy Climate Forum alongside 500 leaders from several business sectors, environmental and social organizations worldwide. The aim is to exchange opinions and explore opportunities for tangible climate action. Additionally, PTTEP demonstrated its climate initiatives at Thailand Pavilion, organized by the Department of Climate Change and Environment. Aligned with PTTEP's EP Net Zero 2050 concept to achieve Net Zero Greenhouse Gas Emissions by 2050. These initiatives include Carbon Capture and Storage (CCS), methane management, Smart Forest Solution for green area management and the development of a carbon credit marketplace. PTTEP executives also shared their visions and perspectives at the side event of the Thailand Pavilion, expressing ambitions to achieve net zero emissions. This involves highlighting Carbon Capture, Utilization and Storage (CCUS), as a significant approach against global warming, harnessing renewable energy in its operations, developing new forms of future energy such as hydrogen, acknowledging the conservation and restoration of biodiversity as a nature-based solution in tackling global warming and undertaking other activities to mitigate greenhouse gas emissions.

PTTEP has foreseen an opportunity to support greenhouse gas offsetting through initiatives to absorb greenhouse gas from the atmosphere. The progress of the projects in 2023 is as follows:

<p><i>Mangrove Forestation</i></p>	<p>PTTEP has achieved mangrove forestation covering 4,007.15 rai of land and is in the process of gathering information for registration under the Thailand Voluntary Emission Reduction Program (T-VER) with the Thailand Greenhouse Gas Management Organization (Public Organization) or TGO. Furthermore, PTTEP has consistently maintained and preserved the previously initiated mangrove forestation from 2021 for the second year, covering 1,000 rai of land.</p>
<p><i>Land Forestation</i></p>	<p>PTTEP has completed forestation on 20,000 rai of land for carbon credits in collaboration with the Mae Fah Luang Foundation under Royal Patronage. The company is also preparing to acquire an additional forestation area, covering over 21,000 rai of land. This includes 6,730 rai of land under the National Park, Wildlife and Plant Conservation Department and 14,345 rai of land under the Royal Forest Department. Recently, PTTEP has completed forestation under the Department of National Parks, Wildlife, and Plant Conservation, covering 5,530 rai of land. The detailed information has been prepared for registration under the T-VER with Thailand Greenhouse Gas Management Organization (Public Organization).</p>
<p><i>Regulations for the T-VER and Premium T-VER Methodologies</i></p> <p>for peatland conservation and restoration</p>	<p>PTTEP, in collaboration with Pid Thong Lang Phra of the Royal Initiative Discovery Foundation and Kasetsart University, submitted the Standard T-VER and Premium T-VER methodologies for peatland conservation and restoration to TGO. The methodologies were officially approved and now available for further application on the TGO website. Currently, preparation of information for the pilot project on peatland conservation and restoration in Bacho District, Narathiwat Province covering 5,500 rai of land is underway.</p>

Diversify



AI and Robotics Ventures Company Limited (ARV)



AI and Robotics Ventures Company Limited (ARV) is a Venture Builder with two key groups of operations:

- 1) **ARV-Core Business** 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
- 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 2023 are as follows:

AI & Robotics Ventures (ARV) - Core Business

Received two awards at the Asian Technology Excellence Awards 2023, which included the Thailand Technology Excellence Award in the Robotics category, recognizing the pioneering use of the "Horrus" - unmanned aerial vehicle (UAV) for practical applications, which is an unprecedented achievement in Thailand. This technology assists the Department of Highways in efficiently managing traffic conditions during long holidays. Additionally, ARV was honored with the Thailand Technology Excellence Award in the Oil and Gas category for the development of the Offshore Robotics Ecosystem. This innovative system seamlessly integrates various robotic technologies to enable comprehensive offshore operations.



ARV signed a Memorandum of Understanding (MOU) with Stanford Research Institute (SRI International), aiming to strengthen Thailand's deep technology development by leveraging the PTTEP Technology and Innovation Center (PTIC) and the Eastern Economic Corridor of Innovation (EECi) situated in Rayong province. The partnership's focus is on fostering an innovation engine to create step changes in the translation process of taking cutting-edge innovations from the laboratory to the market, ultimately propelling Thailand towards becoming a Deep Technology Innovation Hub of ASEAN.

ARV partnered with various entities to drive pioneering innovations. Notably, the collaboration with Advanced Info Service Public Company Limited (AIS) resulted in the development of the 5G AI Autonomous Drone System (Horrus 5G). This marks the first instance of an unmanned aerial vehicle autonomously conducting remote operations over the 5G network in Thailand. This advancement significantly enhances operational efficiency. Additionally, ARV collaborated with Energy Complex Company Limited (EnCo) to elevate the management quality of the Energy Complex area. By integrating artificial intelligence technologies with Closed-Circuit Television (CCTV), the AI-CCTV system can monitor various activities within the premises.



ARV's Start-ups

ROVULA

ROVULA

Specializes in intelligent underwater inspection, maintenance, and repair

Zeaquest, a joint venture between ROVULA and Mermaid Subsea Services Company Limited (Thailand), has made significant strides in expanding its continuous service offerings. In 2023, Zeaquest achieved a remarkable revenue growth of over 60%, engaging in operations across various major projects. Notable endeavors include inspection and maintenance projects for subsea structures in both the Gulf of Thailand and the Gulf of Mottama, Myanmar and the Marine Growth Cleaning Project which is a part of the platform decommissioning project in the Gulf of Thailand.

S2 Robotics Company Limited, a joint venture between ROVULA and Kongsberg Ferrotech (Norway), is focusing on commercializing NAUTILUS, the world's first subsea pipeline repair robot. Following successful Technology Readiness Level-7 testing the preceding year, NAUTILUS has recently made its commercial debut, repairing a petroleum pipeline in the Gulf of Thailand. This innovation not only boosts efficiency but also mitigates risks and lessens environmental impacts.



ROVULA achieved significant milestones by successfully launching its developed products into commercial operations for the first time. These products include: 1.) XSPECTOR Platform, a system integrated with artificial intelligence technology to detect abnormalities of subsea pipelines 2.) XPLOER, an autonomous underwater inspection robot, successfully completed an inspection mission beneath floating solar panels. 3.) XGATEWAY, an unmanned smart vessel, participated in inspection and maintenance missions for subsea structures in the Gulf of Mottama, Myanmar.

SKYLLER

SKYLLER

Specializes in the inspection of critical infrastructures through robotics and artificial intelligence



SKYLLER has achieved the development of the Skyller Platform, an intelligent analysis and processing platform designed for infrastructure inspection in the oil and gas industry. This platform enhances data management and operational efficiency through an integration of artificial intelligence technology to detect abnormalities such as cracks and corrosion in the flare system. Additionally, it automatically generates reports and displays results online, aiding in further maintenance planning.

SKYLLER and Indrachit holding Co., Ltd. (a subsidiary of Tipco Asphalt Public Company Limited) established a joint venture called Nila Solutions Company Limited to develop an integrated platform combining robotics and artificial intelligence designed for inspection and management of road infrastructure and construction. This advanced software leverages computer vision AI for data analysis, monitoring work progress and control the quantities of construction materials. This innovation enhances cost efficiency and improves project management effectiveness.



SKYLLER carried out various infrastructure inspections projects, including 1) The Dehydrator, Flare & Equipment Aerial Inspection by Unmanned Aerial Vehicle (UAV) project in the Gulf of Mottama, Myanmar. 2) An internal inspection project of oil storage tanks using specialized drones in onshore petroleum production areas and 3) an Aerial Survey and Mapping project for an oil and gas company in Thailand.



VARUNA

Focusing on Smart Agriculture, Forestry and Nature-based Carbon Technology

VARUNA initiated a pilot project in Carbon Farming to reduce greenhouse gas emissions and promote sustainable agriculture. Through the “KANNA” application, farmers access comprehensive analysis, planning, and advice on farming activities, including guidance on low-carbon crop cultivation. Remote sensing technology also aids in land management and tracking the reduction of greenhouse gas emissions. This initiative not only enhances production efficiency and mitigates global warming but also enables farmers to earn additional income by trading carbon credits generated from their farms.



VARUNA continues its dedication to developing Forest Carbon Projects by employing Smart Forest Solution technology, which manages various aspects of forestry projects, encompassing planting site selection, tree growth monitoring, wildfire prevention, and carbon credit assessment. This technology assists project developers in tracking and analyzing changes in green areas, enabling informed decisions throughout project development. Moreover, it provides carbon credit buyers with confidence through real-time monitoring of project progress, enhancing transparency in the carbon credit marketplace.

VARUNA successfully closed its Series A fundraising round. The increased capital and strategic investors contribute to the development of technology and tools for managing carbon credit projects in both forestry and agriculture, as well as the creation of a digital platform for carbon credit trading. VARUNA's fundraising success will strengthen its position as a leader in end-to-end nature-based carbon credit solutions.



CARIVA

Dedicated to personalized digital health solutions leveraging data, networks, and DeepTech



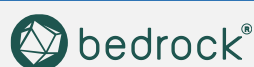
for the modern lifestyle, it emphasizes self-care and on-demand access to medical experts through a reliable platform.

CARIVA, in partnership with Health Plaza Company Limited (a subsidiary of Bangkok Dusit Medical Services Public Company Limited, BDMS), completed the development and launched the BeDee application. This health platform offers Thai individuals convenient and efficient access to high-quality healthcare services. Tailored

CARIVA signed a Memorandum of Understanding (MOU) with the Faculty of Medicine Siriraj Hospital, Mahidol University, to advance Thailand's medical industry by integrating artificial intelligence (AI) innovations and specialized health expertise. These initiatives aim to enhance healthcare efficiency, modernize the Thai medical industry, and strengthen Thailand's position as a global medical hub.



CARIVA concluded negotiations for its Series A funding round, solidifying its leadership in Medical AI. The funding will strengthen CARIVA's capacity to advance digital health solutions, develop applications, and deploy artificial intelligence technology for personalized healthcare services and precise medical applications.



BEDROCK

Empowering transformation and success with location intelligence



Bedrock is positioning itself as a leading developer of geospatial data infrastructure and platforms by leveraging geospatial and machine learning technologies. Bedrock has signed Memorandums of Understanding (MOUs) with various municipalities, local governments, and foundations nationwide to develop and disseminate the City Digital Data Platform (CDDP). The goal of these collaborations is

to enhance public services and operational efficiency through the integration of technology and innovation.

BEDROCK has implemented Smart City management technologies, including the CDDP, the smart building permit solution, the smart municipal tax solution, and the online incident reporting system, across more than 100 municipalities nationwide. These initiatives aim to improve convenience and elevate the quality of life in these communities, contributing to the goal of sustainable development and the creation of livable Smart Cities.

BEDROCK, in collaboration with Cariva Thailand (CARIVA), together developed a Dependent Person Map, which displays the locations and vital details of dependent patients. The system is integrated with fall detection tools and basic health monitoring devices (Care kit), enabling responsible individuals or agencies to effectively provide care and assistance to patients, thereby contributing to the elevation of standards in community healthcare management.



BIND

Focused on bringing Digital Identity for Corporations and juristic entities

BIND has consistently improved the Digital Corporate Identity (DCID) system and its features, with a strong focus on sales and servicing banking groups in Thailand and Southeast Asia, including local commercial banks and world-class financial institutions based in Thailand.

Other Updates on Beyond E&P Businesses

Green Hydrogen Project



PTTEP's subsidiary, FutureTech Energy Ventures Co., Ltd. (FTEV) and its partners, consisting of POSCO Holdings, Samsung Engineering Co., Ltd., Korea East-West Power Co., Ltd., Korea Southern Power Co., Ltd., and ENGIE's subsidiary MESCAT Middle East DMCC, have been awarded the Green Hydrogen Concession Block in Oman and entered into the Project Development Agreement and Sub-Usufruct Agreement with Hydrogen Oman SPC (Hydrom) for the exclusive business development and production rights of green hydrogen project in Block Z1-02 for 47 years. The awarded block is located in Duqm, the eastern part of Oman, covering area approximately 340 square kilometers. The consortium will carry out the feasibility and technical studies in order to finalize the total capital expenditure required for the project. The project is expected to commence production in 2030 with a capacity of approximately 220,000 tons of green hydrogen per year, generated from 5 gigawatts (GW) of installed renewable energy from solar and wind. Majority of green hydrogen production output will be converted into green ammonia with the capacity of 1.2 million tons per year for exporting to South Korea. Currently, FutureTech Energy Ventures Co., Ltd. and its partners have signed a Shareholders' Agreement and are in the process of establishing a joint venture in Oman



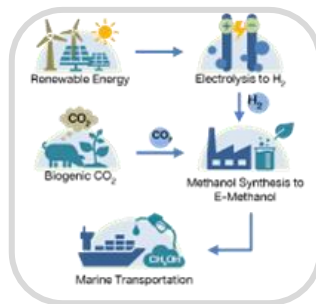
Offshore Wind Farm



On 21 December 2023, PTTEP has entered into a Share Purchase Agreement (SPA) to acquire 50% share capital in TotalEnergies Renewables Seagreen Holdco Ltd (TERSH) from TotalEnergies Renewables UK Ltd (TERUK), a subsidiary in TotalEnergies SE group company (TotalEnergies) for a total estimated consideration of approximately GBP 522 million (approximately USD 689 million equivalent). Presently, TERSH invests in a 51% stake in the Seagreen Offshore Wind Farm (the Project), situated 27 kilometers off the coast of Scotland, United Kingdom, in the North Sea. The Project has 114 turbines with a total generating capacity of approximately 1.1 GW, the largest offshore wind farm in Scotland. The Project started its full operation in October 2023. SSE Renewables Services (UK) Ltd., an experienced renewable energy company from Scotland, is the operator and holds the remaining 49% stake in the Project. This acquisition is a major milestone for PTTEP in expanding investments into clean energy business. It reinforces the company's commitment towards Energy Transition and builds upon the company's experiences in offshore project management and network of partnerships. This first step is underlined by the investment in an operational asset with stable cashflow, in partnership with global experienced players and in the country with supportive policies to

propel continuous development of the offshore wind market. Concurrently, PTTEP also signed the Memorandum of Understanding with TotalEnergies for further collaboration between the two companies in offshore wind investments, as well as to exchange knowledges and experiences in support of their future operations. The completion of transaction is subject to customary conditions precedent as prescribed in the SPA, including applicable governmental and regulatory approvals. Upon the completion, PTTEP group will indirectly hold 25.5% investment in the Project via TERSH.

Green e-methanol Project



PTTEP and another 5 multinational companies have signed a 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, of which regulatory frameworks and standards have been developed, 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 will utilize its knowledge and experiences to conduct a study and assessment of carbon capture potential of the geological structure in the Northern Gulf of Thailand, together with INPEX CORPORATION, a Japanese counterpart, under an international collaboration between the Thai Department of Mineral Fuels (DMF) and Japan Organization for Metals and Energy Security (JOGMEC). The study will form a foundation for potential development of Carbon Capture and Storage (CCS) Hub in the Eastern Economic Corridor (EEC) of Thailand.

PTTEP 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.



Solar Power Project (Lan Sang Arun)



The Solar Power Project "Lan Sang Arun" 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. The project has supplied the electricity to S1 Project since 29 June 2023.



Business Outlook

Energy Outlook

The breakout of geopolitical tension across the globe and increasing impact from global warming cause global energy shortage and lead to the significantly higher price of energy. According to the inflation and global economic slowdown, if not a full recession, balancing between Energy Security and investment in renewable energy will be predominant objective and goal of several countries to achieve Energy Transition and Net Zero commitment.

In the Southeast Asia (SEA) region, S&P Global Commodity Insights reports the growth of natural gas demand. As a transition fuel, natural gas will replace coal commonly used for the power generation in the region during the period of growing renewables supply. As a result, gradual energy transition in this region including Thailand will align with the following strategic frameworks. In the near-term (Current – 2030), the key focuses would be the coal-to-gas switching since gas is relatively lower carbon dioxide emission, the use of renewables fuel for power generation, the biofuels in transportation sector as well as energy efficiency improvement and recycling/material substitution. In addition, commencement of Carbon Capture Utilization and Storage (CCUS) to reduce carbon dioxide emission is also emphasized. In the medium to long term (after 2030), it will be a transition to the low carbon fuels which are the technology and innovation relevant to renewables, the CCUS, and the hydrogen which will play an important role in all business sectors, e.g., industries, power generation, transportation, etc.

Oil Price Outlook

On the demand side, it is expected that in 2024, there will be an average increase in demand for crude oil by 1 - 1.2 MMBPD, driven by the economic growth of developing countries in Southeast Asia, China and India to continue to import crude oil at the high levels. However, economic growth in developed countries, such as the U.S., Europe, and United Kingdom, is likely to slow down due to the high level of policy interest rates, affecting the economic growth. This may also raise concerns on an economic recession, putting pressure on crude oil demand forecasts. Nevertheless, analysts predict that interest rates are currently at their peak and anticipate a reduction in 2024.

On the supply side, it is forecasted that in 2024 there will be an average increase in crude oil production of 1 - 1.2 MMBPD from Non-OPEC+ members, such as the U.S., Canada, Brazil, Norway, and Guyana, which are likely to gradually increase their outputs. However, OPEC+ members agreed to collectively reduce production more than 1.7 MMBPD for Q1/2024. 1 MMBPD from Saudi Arabia reducing, 0.3 MMBPD from Russia and 0.4 MMBPD from other member countries. Nonetheless, the geopolitical conflicts between Russia and Ukraine, and Israel-Hamas, are currently limited in scope and do not impact the supply from crude oil-producing countries.

PTTEP expects that in 2024, the price of Dubai crude oil in the first half of the year is likely to remain stable at 70 - 80 USD/barrel due to economic concerns in Western countries, where interest rates remain high, and the production of crude oil from non-OPEC+ members is expected to continue increasing after the voluntary oil output cuts for Q1/2024. In the third and fourth quarter of 2024, the price of Dubai crude price is forecasted to increase to 75 - 85 USD/barrel mainly from seasonal demand. However, there are factors to be closely monitored, including global economic growth, OPEC+ policies and their members' compliance, geopolitical tensions which may impact the global oil supply.

LNG Market Outlook

For the year 2024, the LNG market is expected to achieve more balance of supply and demand. The total production capacity from existing and new projects will increase by 14 MTPA from 2023, to a total volume of 422 MTPA (approximately 4% growth), with additional supply mainly from the U.S and Indonesia, while demand of LNG is expected to be around 430 MTPA (Source: FGE as of January 2024).

Despite the resolution from the 28th UN Climate Change Conference of the Parties (COP28) in 2023, many countries are on track to achieve “Net Zero” greenhouse gas emissions by 2050, while maintaining the energy security is still top priority in their energy policies. Accordingly, the global LNG demand will continue to increase. Moreover, declines in domestic gas production in many

countries will lead to more demand of LNG import. However, a mild winter and high inventory levels in the European and Northeast Asian regions will cause a slowdown in demand. Factors to watch in the near term include China's recovery and tension in the Middle East. The average 2024 Asian Spot LNG price is expected to be around 14-18 USD/MMBTU (Source: Woodmac as of December 2023, Platts as of November 2023 and FGE as of January 2024).

Environmental, Social, and Governance (ESG)

PTTEP is committed to conducting our business with responsibility, reflecting the Company's aspirations and Sustainability Framework. This commitment also aims to prepare the organization for the challenges that may arise from our journey to embrace the energy transition, with the ambition to achieve Net Zero Greenhouse Gas Emissions by 2050. PTTEP recognizes the importance of building sustainability including fostering strong business performance on a robust business foundation. The goal is to create long-term value for all stakeholders while contributing to the well-being of society as a whole (From We to World), aligned with our vision to become the "Energy Partner of Choice". PTTEP Sustainability Framework comprises: 1) High Performance Organization (HPO) 2) Governance, Risk Management, and Compliance (GRC) and 3) Sustainable Value Creation (SVC). In addition, PTTEP has extended our scope of implementation and its long-term targets to support the United Nations Sustainable Development Goals (UN SDGs), focusing on 3, 7, 8, 9, 12, 13, 14, 15 and 16, aligned with PTTEP materiality issues. The Company also prioritizes our business operations to ensure sustainability covering Environmental, Social and Governance (ESG) dimensions.

PTTEP assessed and reviewed materiality issues on sustainability encompassing Environmental, Social and Governance (ESG) issues based on Double Materiality approach, considering the significance of issues in terms of impact on PTTEP and impact on environment, society (including impacts on human rights) as well as governance and economy. The assessment process follows the Global Reporting Initiative Standards: GRI Standards (2021) and AA1000AccountAbility Principles: AA1000APS (2018). The materiality issues reflected the perspectives of key stakeholders (both internal and external) including national and international sustainability trends. In 2024, PTTEP's materiality issues comprise 13 issues: (1) Energy Transition and Business Model Resilience (2) Climate Change and Net Zero (3) Technology Development, Innovation and Digitalization (4) Safety, Security and Occupational Health (5) Governance, Risk Management and Compliance (6) Human Resource Management (7) Human Rights (8) Environmental Management and Operational Eco-efficiency (9) Contribution to Communities and Society (10) Biodiversity and Ecosystem Services Management (11) IT Security, Cybersecurity and System Availability (12) Supply Chain Management (13) Stakeholder Management. The materiality assessment results served as part of the crucial inputs for shaping and improving corporate strategies. These results were also integrated into the Enterprise Risk Management process, empowering PTTEP to proactively address any risks related to the Company's sustainability materiality issues. PTTEP has an overview of sustainability management as mentioned above, in the Strategies as well as Business Management and Company Activity.

Thai Economy and Foreign Exchange Outlook

The Bank of Thailand expects the Thai economy to expand at 3.8% (including Digital Wallet campaign) in 2024, supported by strong tourism recovery and recovery in export and private consumption. However, slower-than-expected global economic growth remains a key downside risk to Thailand's economic condition. In terms of monetary policy, the Bank of Thailand deems the current policy interest rate appropriate for supporting long-term sustainable growth.

In 2024, the Thai Baht (THB) is expected to appreciate against US Dollars due to economic recovery, particularly from tourism sector following global economic recovery. THB may also be supported by the U.S. Federal Reserve's monetary policy which signaling an interest rate cut in 2024 to lower inflation rate. However, it is expected that THB will experience a degree of volatility due to a number of uncertainties such as digital wallet policy of Thai government, the U.S. election in 2024, and potential of slower-than-expected global growth, on-going Russia-Ukraine conflict and Israel-Hamas war.

PTTEP's performance outlook for the first quarter and the year 2024

PTTEP's performance depends on three major factors including sales volumes, gas price and unit cost with guidance as follows.

Sales Volume (Thousand BOED)	Gas Price (USD/MMBTU)	Unit Cost (USD/BOE)	EBITDA Margin (% of sales revenue)
<div>Q1 2024</div> <div>~473</div> <div>FY2024</div> <div>~505</div>	<div>Q1 2024</div> <div>~5.8</div> <div>FY2024</div> <div>~5.7</div>	<div>Q1 2024 and FY2024</div> <div>~28-29</div>	<div>Q1 2024 and FY2024</div> <div>~70-75%</div>

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

2. The assumption is based on average Dubai price in 2024 of 70-75 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:

The average sales volume for the first quarter and full year of 2024 are expected to be approximately 473,000 and 505,000 barrels of oil equivalent per day, respectively, increasing when compared to the previous year, mainly as a result of the production ramp-up of G1/61 (Erawan) Project as planned to 800 MMSCFD.

Selling 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 2024 is estimated at approximately 5.8 and 5.7 USD/MMBTU, respectively, lower than the previous year. This reflects higher sales volume contribution from the G1/61 (Erawan) Project under Petroleum Sharing Contracts, which the gas price is lower, compared to the previous concession regime. Additionally, the lagged time adjustment following global oil price also affects the gas price.
- The Company has entered into oil price hedging contracts, where the outstanding volume as at the end of 2023 was 3.6 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 first quarter and full year 2024, PTTEP expects to be able to maintain unit cost in the range of 28 – 29 USD/BOE, slightly higher than the reported unit cost of 2023. This increase is primarily attributed to higher depreciation and higher operating expense per unit resulted from the production ramp-up of G1/61 (Erawan) Project. Additionally, there is a rise in oil field service costs due to increased drilling rig demand in E&P business sectors.