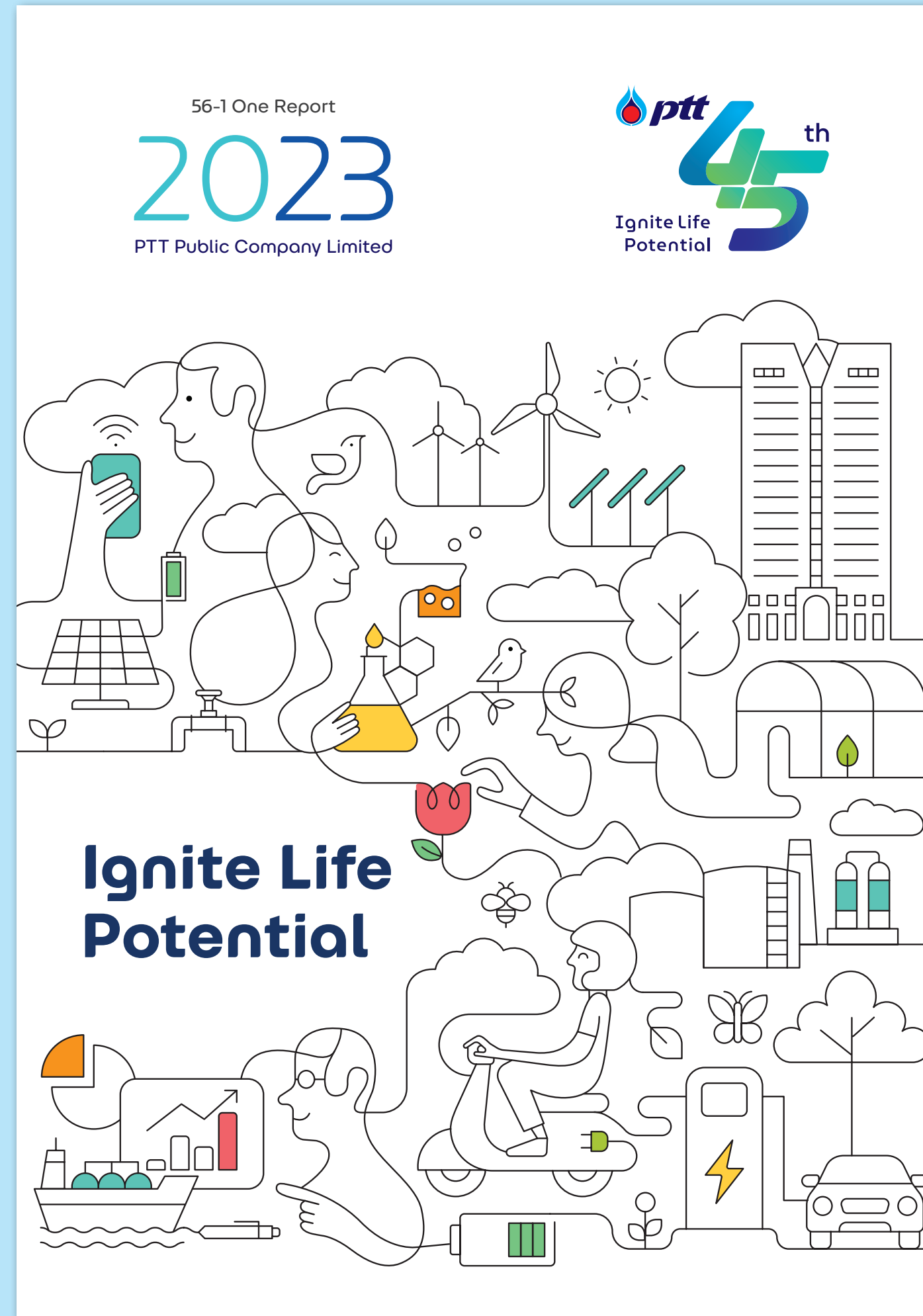




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Ignite Life Potential...

Over the last 45 years, PTT has developed hand in hand with Thai society, unwavering through pivotal moments, solidifying PTT as the country's national energy company, committed to the mission of ensuring energy security for Thai people as always.

Believing in the strength of PTT and Thai people, we strive to "Ignite Life Potential", ensuring a prosperous future for our children and sustainability for Thai society.



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VISION

Powering Life with Future Energy and Beyond

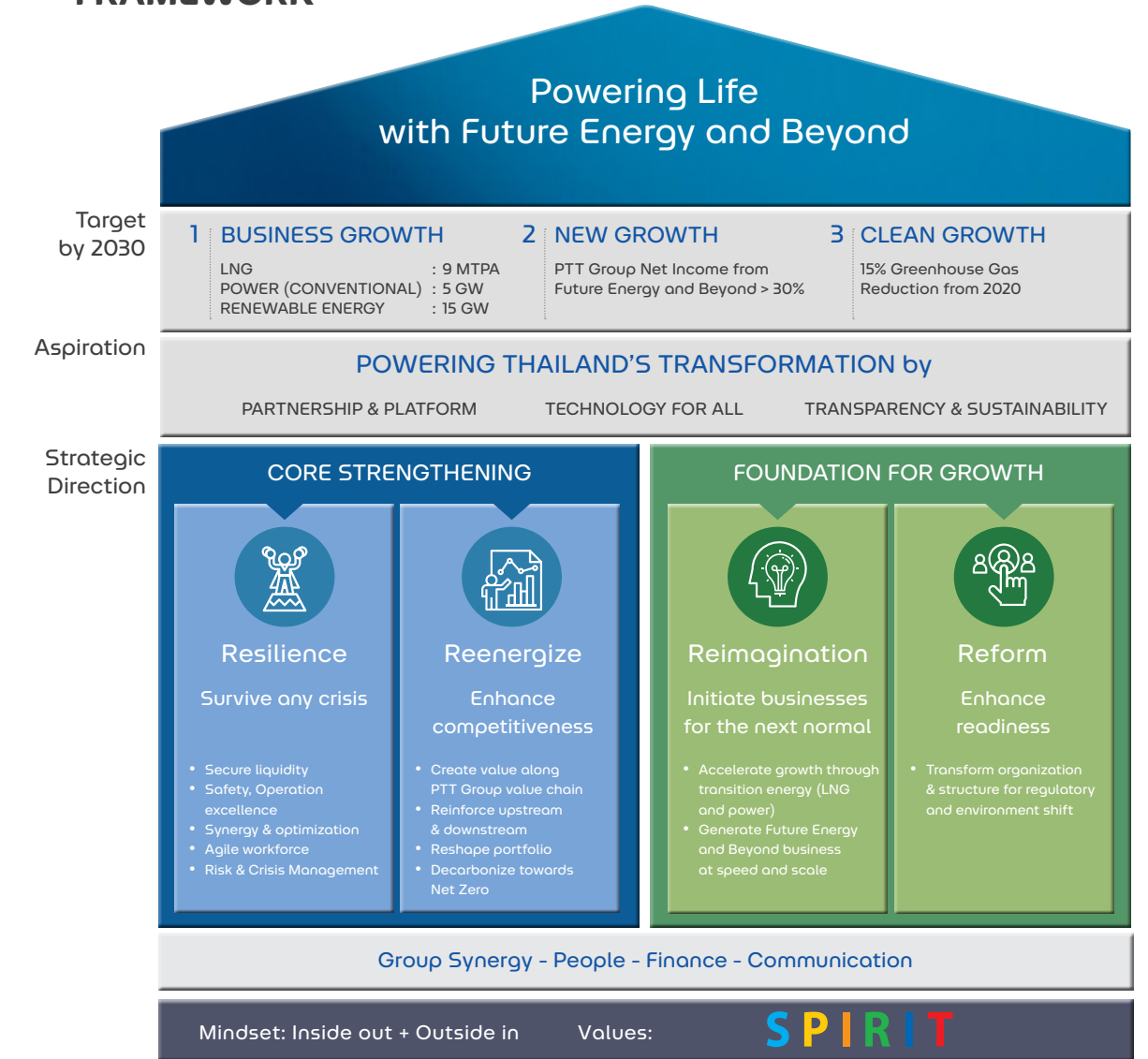
MISSION

To conduct integrated energy and petrochemical business as the nation's energy company whose mission to equally respond to all stakeholders through the following aspects

STAKEHOLDERS



STRATEGIC FRAMEWORK



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PTT VALUES





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PTT Public Company Limited

PTT Information



Name
PTT Public Company Limited

Abbreviation
PTT

Registered Number
0107544000108



Type of Business

The Company's operated businesses consist of natural gas, gas transmission, international trading, new business and infrastructure business; the rest are invested through subsidiaries, joint arrangements and associates, and PTT Group, namely exploration and production, liquefied natural gas, petrochemical and refining, oil and retail, power and utilities, and service businesses.

Registered Capital
THB 28,562,996,250

comprising 28,562,996,250 ordinary shares whose value is THB 1 per share (as of December 31, 2023)

Issued and Fully Paid-up Capital
THB 28,562,996,250

comprising 28,562,996,250 ordinary shares whose value is THB 1 per share (as of December 31, 2023)



Head Office

555 Vibhavadi Rangsit Road,
Chatuchak, Chatuchak,
Bangkok 10900, Thailand
Telephone: 66 (0) 2537-2000
Fax: 66 (0) 2537-3498-9
Website: www.pttplc.com

Corporate Communications

Telephone: 66 (0) 2537-2150-1
Fax: 66 (0) 2537-2171
E-mail: pttcorporatecommu@pttplc.com

Investor Relations

Telephone: 66 (0) 2537-3518-9
Fax: 66 (0) 2537-3948
E-mail: ptt-ir@pttplc.com

Office of the President

Telephone: 66 (0) 2537-3855
Fax: 66 (0) 2537-3883, 66 (0) 2537-3887
E-mail: corporatesecretary@pttplc.com

References

Securities Registrar

Thailand Securities Depository
Company Limited
1st Floor, The Stock Exchange
of Thailand Building,
93 Ratchadaphisek Road, Din Daeng,
Din Daeng, Bangkok 10400, Thailand
Telephone: 66 (0) 2009-9999

Auditor

EY Office Limited
193/136-137, 33rd Floor,
Lake Rajada Office Complex,
Ratchadaphisek Road, Klong Toei,
Klong Toei, Bangkok 10110, Thailand
Telephone: 66 (0) 2264-9090
Fax: 66 (0) 2264-0789

THB Debentures Registrar

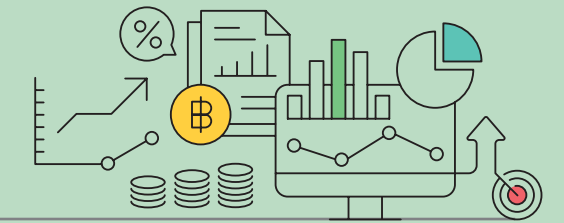
Siam Commercial Bank
Public Company Limited
Registrar 1
17th Floor, Zones B&C, SCB Head Office,
9 Ratchadaphisek Road, Chatuchak,
Chatuchak, Bangkok 10900, Thailand
Telephone: 66 (0) 2777-6784
E-mail: registrar1@scb.co.th

Bank of Ayudhya Public
Company Limited
Security Services Operations Department,
AA Floor, 1222 Rama III Road,
Bang Phongphang, Yannawa,
Bangkok 10120, Thailand
Telephone: 66 (0) 2296-2000 ext. 50604

Legal Consultant for Debenture Issuance and Sales Offering

Allen & Overy (Thailand)
Company Limited
23rd Floor, Sindhorn Tower III,
130-132 Wireless Road, Lumpini,
Pathumwan, Bangkok 10330, Thailand
Telephone: 66 (0) 2263-7600
Fax: 66 (0) 2263-7699

Financial Highlights



	2021	2022	2023
Statement of Income (THB million)			
Sales and service revenue	2,258,818	3,367,203	3,144,551
Earnings before interest, taxes, depreciation and amortization (EBITDA)	427,956	491,288	426,895
Profit attribute to equity holders of the company	108,363	91,175	112,024
Statement of Financial Position (THB million)			
Total assets	3,071,384	3,415,632	3,460,462
Total liabilities	1,598,444	1,881,939	1,835,486
Non-controlling interests of the subsidiaries	466,244	481,102	503,778
Equity attributable to owners of the company	1,006,696	1,052,591	1,121,198
Shares or Information about Common Shares			
Issued and paid up share capital (Million Shares)	28,563	28,563	28,563
Book value per share (THB)	35.24	36.85	39.25
Earnings per share (THB)	3.79	3.20	3.92
Dividend per share (THB)	2.00	2.00	2.00
Dividend payout ratio (%)	52.8	62.5	51.0
Share price at the end of period (THB)	38.00	33.25	35.75
Financial Ratios			
Net profit margin (%)	6.73	3.63	4.94
Net profit margin (only equity holders of the company) (%)	4.80	2.71	3.56
Return on equity (%)	11.47	8.85	10.31
Return on total assets (%)	5.41	3.76	4.52
Debt to equity ^{1/} (Times)	0.64	0.78	0.71
Net debt ^{2/} to equity (Times)	0.40	0.55	0.44
Net debt ^{2/} to EBITDA (Times)	1.37	1.71	1.67
Interest coverage (Times)	12.54	13.25	9.41

Remarks:

^{1/} Debt to equity = Interest bearing debt divided by Total shareholder's equity

^{2/} Net debt = Interest bearing debt (IBD) - Cash and cash equivalents - Short-term investments in financial assets

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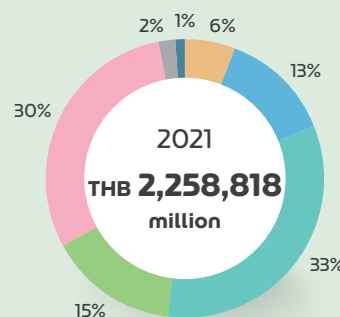
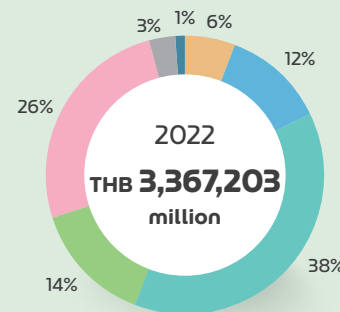
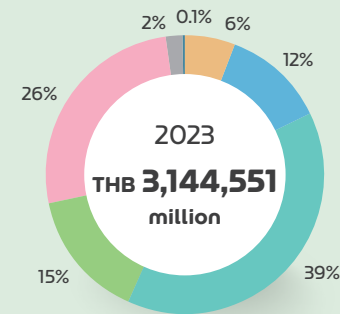
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Financial Highlights

Sales and Service Revenue

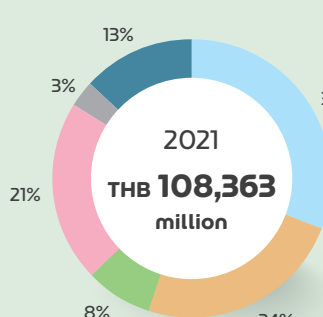
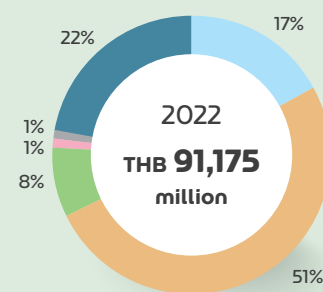
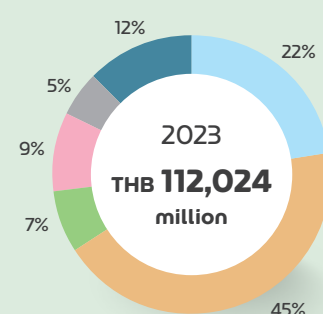
THB 3,144,551
million



- Exploration and Production Business
- Gas Business
- International Trading Business
- Oil and Retail Business
- Petrochemical and Refining Business
- New Business and Infrastructure Business
- Others^{1/}

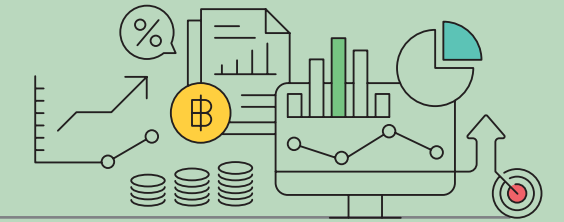
Net Income

THB 112,024
million



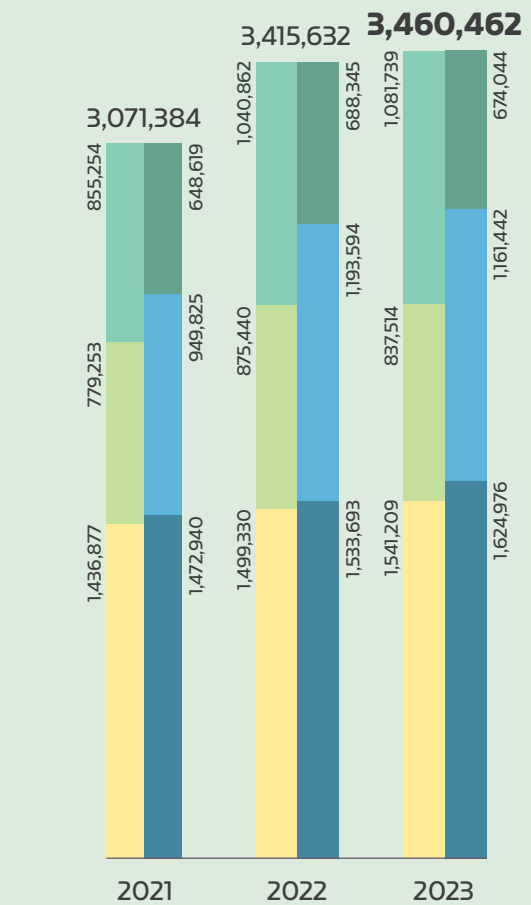
- PTT
- Exploration and Production Affiliates
- Oil and Retail Affiliates
- Petrochemical and Refining Affiliates
- New Business and Infrastructure Affiliates
- Others^{1/}

Remarks:
1/ Others such as coal business
2/ Excluding short-term investment



Statement of Financial Position

THB 3,460,462
million



- Current Assets
- Other Non-current Assets
- Net Property, Plant, and Equipment
- Account Payable and Other Liabilities
- Interest Bearing Debt (IBD)
- Shareholder's Equity

Statement of Cash Flows

Net cash provided by operating activities (THB million)

2023	382,045
2022	191,700
2021	322,425

Net cash used in investing activities (THB million)

2023	(161,245)
2022	(186,690)
2021	(385,308)

Net cash provided by (used in) financing activities (THB million)

2023	(142,159)
2022	50,668
2021	46,190

Cash and cash equivalents at the beginning of year^{2/} (THB million)

2023	340,054
2022	312,730
2021	332,032

Cash and cash equivalents at the end of year^{2/} (THB million)

2023	417,134
2022	340,054
2021	312,730

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Achievement Highlights

BUSINESS GROWTH

Enhance competitiveness and foster growth from the current business

The pipeline connecting LMPT1 and LMPT2 was completed

in March 2023 for more flexibility in natural gas management and enhancing Thailand's energy security.



PTT and its subsidiaries procured 87 cargoes of Spot LNG, totaling

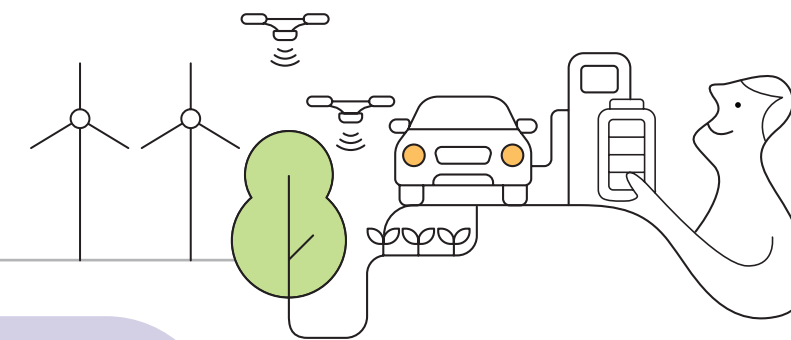
6 million tons

out of 92 cargoes of Spot LNG that Thailand imports in total 6.3 million tons.

Ensure Thailand's energy security

Achievement Highlights

Achievement Highlights



NEW GROWTH

Future Energy

Accelerating renewable energy and electric vehicle businesses and Beyond

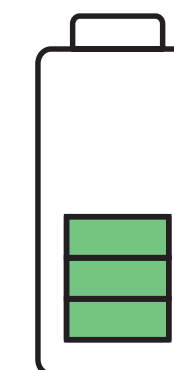
Penetrate new businesses beyond energy, drive new ventures, and improve livelihoods of Thai people

EV Value Chain

ARUN PLUS and CATL signed a contract

to establish a Cell-To-Pack battery factory with a production capacity

6 GWh/year, aiming to start production in 2024.



ARUN PLUS, in collaboration with KYMCO Group has established a joint venture company called Aionex

to distribute electric motorcycles. It is expected to commence sales in the year 2024 with a target of

5,000 units.



NUOVO PLUS and Gotion formed NV Gotion,

a joint venture company, completed the construction of a 2 GWh battery production plant, with plans for future expansion to reach a capacity of 8 GWh.



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Life Science

Lotus Pharmaceutical's revenue in 2023 grew by 16% from 2022,

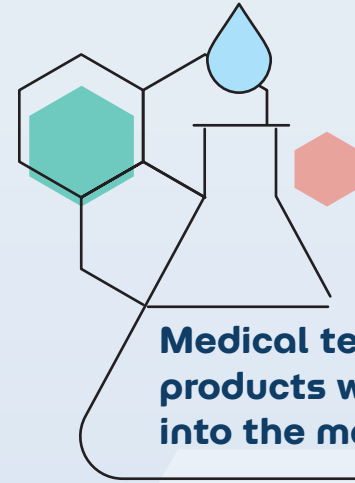
due to the substantial market growth of Buprenorphine/Naloxone and Lenalidomide in Asia and the United States of America.



Revenue in 2023 grew by **16%** from 2022



Achievement Highlights



Medical technology products were launched into the market

7 products



1. Saliva Mouth Care
2. Luvena Feminine Care
3. Colotect
4. Longest DVT
5. Sterilization Wraps
6. Oil Absorbent
7. HPV DNA Testing Kit



Achievement Highlights

Innobic Nutrition (INNT) launched

6 products

to promote good health for Thai people i.e.

1. Innourish High Protein Plus+
2. Probiotics LD
3. Pro Salmon Oil
4. Gummy Triphala
5. Stevia Syrup
6. Daily Nutrigen



Plant & Bean (Thailand) completed the construction and commissioning of Plant & Bean plant produce plant-based protein.



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Logistic and Infrastructure



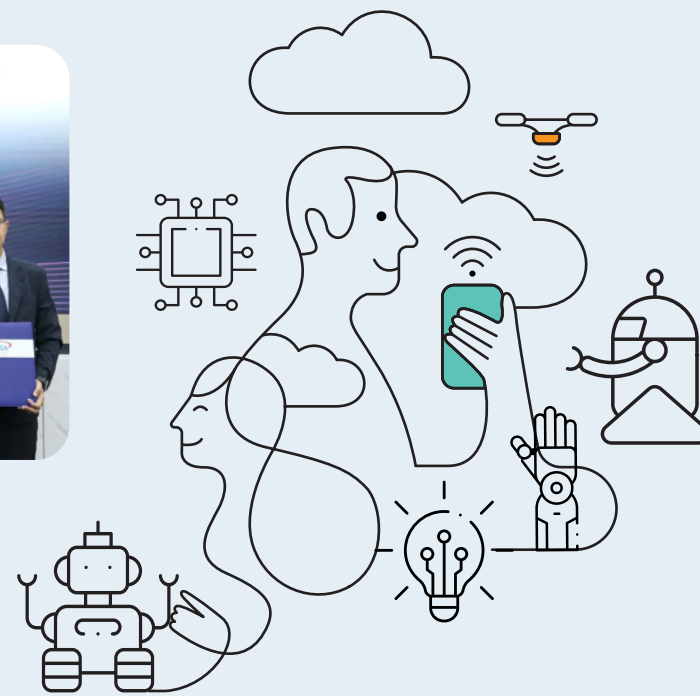
GML offers reliable rail freight services to transport goods both domestically and internationally comprising total of

47 trains
1,205 containers

AI, Robotics and Digitalization



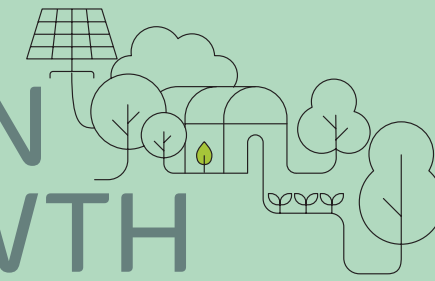
Mekha V, in collaboration with WHAUP and Sertis, has established a joint venture company - RENEX TECHNOLOGY to provide a peer-to-peer power trading platform.



Achievement Highlights

Achievement Highlights

CLEAN GROWTH



Drive greenhouse gas emission reduction towards **Carbon Neutrality** and **Net Zero Emissions**



Driving the "Climate Neutral Now" Initiative

Driving the "Climate Neutral Now" Initiative through the Thailand Carbon Neutral Network (TCNN) by formulating policy recommendations, enhancing T-VER standards, and aiming to become "Thailand's Leading Network towards Carbon Neutrality and Net Zero Emissions".

Net Zero Emissions



Initiated Carbon Credit Trade Transactions

PTT commenced the procurement of carbon credits to offset the International Trading Business Unit's business operations and activities, thereby signing a carbon credit-linked derivatives agreement with Krung Thai Bank.

Carbon Neutrality

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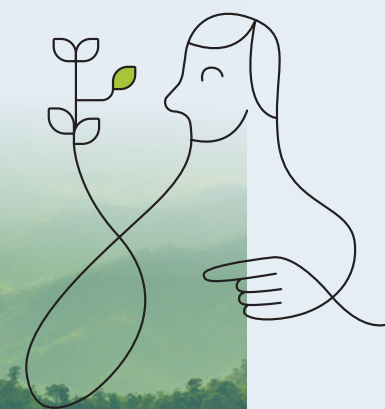
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"Ignite Life Potential: Turning 1 Seedling into 2nd Million Forest" Initiative

PTT Group signed MOU to reforest an additional 2 million rai by initiating the "Ignite Life Potential: Turning 1 Seedling into 2nd Million Forest" initiative and kick off project on August 8, 2023.



PTT planted **86,173** rai of forest in 25 provinces in Thailand in 2023.





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Awards and Recognition



PTT focuses on operating sustainable business in all sectors, aiming for a three-dimensional balance:

Environmental

Environmental management aims to strike a balance between business growth and efficient resource consumption.

Social

Social management applies PTT Group's expertise, innovation, and collaboration in creating model communities of wisdom and expanding nationwide in support of the well-being of people and communities in a sustainable manner.

Governance

Conducting business under good governance principles.

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In 2023,
PTT garnered 54 domestic and international awards, prestigious rankings, and certifications from a total of 31 entities.





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Award from a Leading Institution

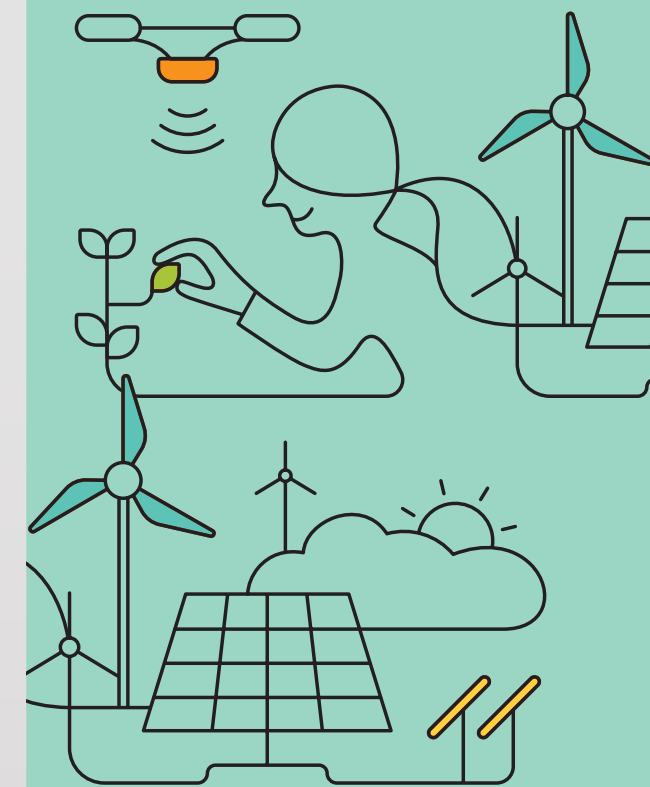


PTT is proud to be globally ranked among the top 5 DJSI

Awarded:	Awarded by:
December 9, 2023	S&P Global

PTT was selected as a DJSI member for the 12th consecutive year in the World Index group and Emerging Market Index group. Also, it was listed among the leading organizations in the Oil & Gas Upstream & Integrated (OGX). With this accomplishment, PTT is proud and can reassure investors globally that it will continue to operate profitably in all three ESG dimensions (Environmental, Social, and Governance).

Environmental



Climate Action Leading Organization

Awarded:	Awarded by:
October 7, 2023	Thailand Greenhouse Gas Management Organization (Public Organization)

Mr. Auttapol Rerkpiboon, President & CEO, received a plaque of honor of Climate Action Leading Organization (CALO) Award.



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Plaque of Honor in Forest Resource Restoration and Development

Awarded: September 18, 2023
Awarded by: Royal Forest Department

PTT received a plaque of honor in Forest Resource Restoration and Development on the occasion of the 127th anniversary of the Royal Forest Department.



The 14th Thailand Tourism Awards or Kinaree Awards 2023

Awarded: September 27, 2023
Awarded by: Tourism Authority of Thailand

PTT received the 14th Thailand Tourism Awards or Kinaree Awards 2023 as follows:

1. The Metroforest Learning Center by PTT Reforestation and Ecology Institute: Thailand Tourism Gold Awards in the Learning & Doing Attraction category
2. Princess Maha Chakri Sirindhorn Herb Garden and Wang Chan Forest Learning Center by PTT Reforestation and Ecology Institute: Thailand Tourism Silver Awards in the Learning & Doing Attraction category
3. Sirinart Rajini Mangrove Ecosystem Learning Center: Thailand Tourism Certificate in the Low Carbon & Sustainability category.



Social



Thailand Best Employer Brand Awards 2023

Awarded: January 10, 2023
Awarded by: World HRD Congress

PTT received Thailand Best Employer Brand Awards 2023 in Thailand - Cambodia Best Employer Brand Awards 2023. This reflects PTT's operations that prioritize employees as the organization's most important resource.



Plaque of Honor from the Senate Education Fund project

Awarded: February 28, 2023
Awarded by: The Senate

PTT received a plaque of honor from the Senate Education Fund project by supporting computers to promote digital distance teaching and learning for 147 schools under the Education Fund project.



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Royal Dragonfly Book Award

Awarded: March 2023	Awarded by: Story Monsters Book Awards
-------------------------------	--------------------------------------------------

"Giving Breath Journal" won the 1st Place Winner Royal at the Royal Dragonfly Book Award.



Zero Accident Campaign 2023

Awarded: July 13, 2023	Awarded by: Thailand Institute of Occupational Safety and Health (Public Organization)
----------------------------------	--------------------------------------------------------------------------------------------------

PTT Group received Zero Accident Campaign Award 2023 at the 35th National Occupational Safety and Health Fair. Rayong Gas Separation Plant received the honorary award for the "Zero Accident Campaign".



Exemplary Network Organization for Promoting Gender Equality

Awarded: March 31, 2023	Awarded by: Ministry of Social Development and Human Security
-----------------------------------	-------------------------------------------------------------------------

Sustainable Power Foundation received a plaque of honor of "Exemplary Network Organization for Promoting Gender Equality" at Gender Fair 2023.



Human Rights Awards 2023

Awarded: September 22, 2023	Awarded by: Rights and Liberties Protection Department, Ministry of Justice
---------------------------------------	---------------------------------------------------------------------------------------

PTT received the Outstanding Role Model Organization "Human Rights Awards 2023" in the State Enterprise sector for the 3rd consecutive year.



Prachabodee Award

Awarded: September 28, 2023	Awarded by: Department of Social Development and Welfare
---------------------------------------	--------------------------------------------------------------------

Mr. Uttapol Rerkpiboon, President & CEO, was awarded the 2023 Prachabodee Award for his achievement in the category of social contribution at the ceremony for the years 2022 and 2023.



Safety, Occupational Health, and Work Environment Award 2023

Awarded: October 10, 2023	Awarded by: Ministry of Labor
-------------------------------------	-----------------------------------------

Rayong Gas Separation Plant received the Outstanding Model Award for safety, occupational health, and work environment at the Platinum level for the 11th consecutive year.



Honor for Medical Equipment

Awarded: October 8, 2023	Awarded by: Candlelight Club for Education
------------------------------------	------------------------------------------------------

PTT received a plaque of honor for medical equipment support to Thammasat University Hospital.



Plaque of Honor for the Organization with Outstanding Social Activities on National Social Welfare Day 2023

Awarded: October 21, 2023	Awarded by: Ministry of Social Development and Human Security
-------------------------------------	-------------------------------------------------------------------------

PTT received a plaque of honor for the organization with outstanding social activities on National Social Welfare Day and Thai Volunteer Day 2023.

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Governance



The Role Model Ethical Organization Award

Awarded: February 28, 2023
Awarded by: National Moral Promotion Committee

PTT won the Role Model Ethical Organization Award for the 3rd consecutive year.



Women of the Year 2023

Awarded: March 2023
Awarded by: Bangkok Post

Miss Pannalin Mahawongtikul, CFO, was selected by Bangkok Post editorial staff and qualified persons as one of the “Women of the Year 2023” as a key player in driving corporate and social sustainability through financial management.



Thailand Top Company Awards 2023

Awarded: March 15, 2023
Awarded by: BUSINESS+ Magazine collaboration with the University of the Thai Chamber of Commerce

PTT received “Thailand Top Company Awards 2023” in the Energy Industry Sector for the 4th consecutive year.

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Thailand Quality Class (TQC)

Awarded: March 22, 2023
Awarded by: Office of Thailand Quality Award

Gas Business Unit received Thailand Quality Class (TQC) Award at the 21st Thailand Quality Award Ceremony. This award is the result of the collaborative efforts of the Gas Business Unit’s management and staff, who are dedicated to enhancing the processes in accordance with the TQA standards, which have been used as an implementation framework for over 15 years.



Thailand Top CEO of the Year 2023

Awarded: June 20, 2023
Awarded by: BUSINESS+ Magazine by ARIP Plc. and Faculty of Commerce and Accountancy, Thammasat University

Mr. Auttapol Rerkpiboon, President & CEO, received “Thailand Top CEO of the Year 2023” in the Energy Industry Sector.



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Asian Excellence Awards 2023

Awarded: June 26, 2023
Awarded by: Corporate Governance Asia Magazine

PTT received 7 Asian Excellence Awards 2023 (13th Asian Excellence Award) as follows:

1. Asia's Best CEO: Mr. Auttapol Rerkpiboon, President & CEO
2. Asia's Best CFO: Miss Pannalin Mahawongtikul, CFO
3. Asia's Best CSR
4. Best Investor Relations Professional: Mr. Tanapon Prapapan, Investor Relations Vice President
5. Best Environmental Responsibility
6. Best Investor Relations Company
7. Best Corporate Communications



Plaque of Honor from the Anti-Corruption Foundation 2023

Awarded: July 7, 2023
Awarded by: The Anti-Corruption Foundation

PTT received a plaque of honor for its excellent support to the Anti-Corruption Foundation in 2023 from Professor Vicha Mahakun, Chairman of the Board of Anti Corruption Foundation.



Chief Innovation Officer Honorary Award

Awarded: July 13, 2023
Awarded by: National Innovation Agency (Public Organization) (NIA)

Dr. Buranin Rattanasombat, Chief New Business and Infrastructure Officer, received the Chief Innovation Officer Honorary Award at the Chief Innovation Officer (CIO) Honorary Event as a key player in driving organizational innovation and Thailand's innovation ecosystem.



Excellent CG Scoring

Awarded: November 15, 2023
Awarded by: Thai Institute of Directors (IOD)

PTT received Excellent CG Scoring or 5 badges for the 15th consecutive year. It has been ranked among the Top Quartiles of listed companies with a market value of not less than THB 10,000 million by the Corporate Governance Report of Thai Listed Companies (CGR) 2023.



Commendation Award

Awarded: November 20, 2023
Awarded by: The National Anti-Corruption Commission (NACC)

PTT received the plaque of Commendation Award in the 11th NACC Integrity Awards. PTT received NACC Integrity Awards for 5 consecutive years: NACC Awards twice and Commendable Awards 3 times, an honorable award for good governance and transparency.

SET Awards 2023

Awarded: November 21, 2023
Awarded by: The Stock Exchange of Thailand and Money & Banking Magazine

PTT received the highest level of AAA of "Thailand Sustainability Investment" (THSI) and won awards of honors from the SET Awards 2023 as follows:

1. Sustainability Awards of Honor
2. Innovative Company Awards of Honor
3. Outstanding Investor Relations Awards



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Macquae Awards “Best Treasurer-Corporates”

Awarded: November 21, 2023	Awarded by: The Corporate Treasurer Magazine
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PTT received “Best Treasurer-Corporates” from The Corporate Treasurer Awards 2023 organized by The Corporate Treasurer, a leading business magazine trusted by financiers and investors in the Asia-Pacific region at Singapore Marriott Tang Plaza Hotel. The award is considered for outstanding performance in corporate financial management.



Sustainable Development Excellence Award

Awarded: November 28, 2023	Awarded by: Thailand Management Association and Sasin Graduate Institute of Business Administration of Chulalongkorn University
--------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------

PTT received the Sustainable Development Excellence Award at the Thailand Corporate Excellence Awards 2023 ceremony organized by the Thailand Management Association in collaboration with Sasin Graduate Institute of Business Administration of Chulalongkorn University. The award was graciously endowed by Her Royal Highness Princess Maha Chakri Sirindhorn to organizations with excellence in management in various fields.



Outstanding Engineer Award (OEA)

Awarded: November 29, 2023	Awarded by: IEEE Power & Energy Society (Thailand)
--------------------------------------	--------------------------------------------------------------

Mr. Uttapol Rerkpiboon, President & CEO, received the IEEE PES Outstanding Engineering Award 2023 (OEA) as an outstanding and commendable engineer in the engineering profession. This includes his contribution to society and his advocacy for energy and electricity-related education.



Prime Minister Awards: Thailand Cybersecurity Excellence Awards 2023

Awarded: December 25, 2023	Awarded by: Ministry of Digital Economy and Society
--------------------------------------	---------------------------------------------------------------

PTT received 3 Prime Minister Awards: Thailand Cybersecurity Excellence Awards 2023

1. Commendation Award in Cybersecurity Performance Excellence Awards 2023, Critical Information Infrastructure Category (CII)
2. Commendation Award in Best Cybersecurity Performance Awards, Critical Information Infrastructure in Energy and Public Utilities
3. Best Cybersecurity Performance Awards 2023, Critical Information Infrastructure in Cybersecurity Cooperation

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2022 Awards Announced or Awarded in 2023



State Enterprise Awards (SOE Awards)

Awarded: March 24, 2023
Awarded by: State Enterprise Policy Office (SEPO)

PTT was honored with 7 State Enterprise Awards (SOE Awards) in 2022, reflecting its potential for excellent operations in all dimensions.

1. Excellent State Enterprise Award 2022
2. Outstanding Board of Directors Award (Honorable Acclaim)
3. Outstanding Organizational Management Award
4. Outstanding Sustainable Development State Enterprise Award
5. Outstanding Social and Environmental Implementation Award
6. Outstanding Creativity and Innovation Award (Creativity Category)
7. Outstanding Creativity and Innovation Award (Innovation Category)



The Global Economics Awards 2022

Awarded: February 2023
Awarded by: The Global Economics, a leading financial magazine from the UK

PTT received the Best Natural Gas Supply Procurement and Distribution Company from The Global Economics Awards 2022 in Best Natural Gas Supply Procurement and Distribution Company.



IAA Awards for Listed Companies 2022

Awarded: August 2023
Awarded by: Investment Analysts Association

Mr. Auttapol Rerkpiboon, President & CEO and Miss Pannalin Mahawongtikul, CFO, received the following awards:

1. Best CEO
2. Best CFO
3. Outstanding IR in the resources business sector



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Business
growth

New
growth

Clean
growth

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Message from the Board of Directors



The year 2023 marks PTT's 45th year of pride since the establishment of the Petroleum Authority of Thailand in 1978 as the national energy company with the mission of ensuring energy security. Throughout 45 years of our history, PTT has grown through good and bad times together with Thailand. We have weathered through multiple crises, each of which we strive to emerge stronger, while providing support to help Thai economy and society recover. We have also continuously promoted social development to enhance the well-being and livelihood of Thai people.

The world economy grew by 3.1% in 2023, down from 3.5% in 2022. This is a result of the protracted war between Russia and Ukraine, the erupted Israeli-Hamas conflict and the tightening of financial condition due to policy rate hike that is intended to limit inflation in key economies. As for Thailand, the economy grew by 1.9%, continuing from 2.5% growth in 2022 driven by the recovery of tourism sector. The export sector on the other hand remains weak. Energy price in 2023 remains volatile from international conflicts, while energy demand weakens from an economic slowdown. The average price of Dubai crude oil dropped from USD 96.3 per barrel in 2022 to USD 82.1 per barrel as a result. In the meantime, there was a decline in the petroleum product price spread.

Amid this challenging situation, PTT's management and employees remain committed to deliver 2023 results and executing strategic direction in line with our vision, "Powering Life with Future Energy and Beyond." PTT's total revenue in 2023 was THB 3.14 trillion, with a net profit of THB 112,024 million, representing 3.6% of total revenue, which 22% accounted for PTT's businesses and 78% of PTT Group.

Enhance Competitiveness and Foster Growth from the Current Business

PTT is still committed to ensuring Thailand's energy security. PTT focuses on strategies to boost the energy industry's long-term competitiveness by leveraging PTT Group's synergy to accelerate business performance growth in the face of the energy transition.

To create energy security for businesses in Thailand, PTT Exploration and Production Plc. (PTTEP) has continuously increased its gas production from block G1/61 to 400 million cubic feet per day at the 2023 year-end. It also won the bid and obtained petroleum exploration and production rights in the G1/65 and G3/65 blocks, and signed a purchase agreement to acquire a 33.33% stake in block G12/48 from Total Energies EP Thailand.

Natural gas is regarded as a transition fuel that will be crucial in the future transition to clean energy. Thus, the goal of the Gas Business is to create growth via the supply of natural gas and the expansion of investment projects. To improve flexibility in LNG management in Thailand, PTT LNG Co., Ltd. (PTTLNG) completed the pipeline connecting LNG Map Ta Phut Terminals 1 and 2, and to further encourage the development of a commercial LNG market, it also signed an LNG Truck Loading Agreement with PTT Global LNG Co., Ltd. (PTTGL). To serve national demand, PTT and its subsidiaries procured 87 cargoes of Spot LNG, totaling 6 million tons.

Petrochemical and Refining Business continuously invests in the development of its production processes to boost competitiveness and get oil production ready for the nationwide implementation of Euro 5 standards in 2024, which will help lower sulfur levels and improve air quality. In addition, PTT Global Chemical Plc. (GC) started the commercial operation of the Olefins Modification Project Unit 2, allowing for the increased use of propane as a feedstock during the high price of naphtha, thereby enhancing feedstock flexibility and long-term competitiveness.

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Transition to Future Energy Business and Grow in New Businesses Beyond Energy

Based on the vision and strategic direction, PTT has set a long-term target to invest in and increase the profit share from future energy and beyond energy businesses to at least 30% by 2030. Accelerated development of new business is necessary to generate significant returns for PTT before existing energy businesses decline as the world transition towards clean energy.

In the future energy business, PTT is focused on investing in the entire clean energy supply chain, including renewable energy, energy storage, electric vehicle (EV), and the utilization of alternative energy sources by consumers. In renewable power business, Global Power Synergy Plc. (GPSC), PTT Group's power business flagship, has won the bid for solar farm projects with a total capacity of 5.2 GW in Thailand and India, or 2.2 GW equity. The capacity expansion investment in India is implemented through Avaada Energy Private Limited (Avaada). PTT Group's renewable power generation capacity is now 4.9 GW equity. In EV and Energy Storage business, PTT Group via ARUN PLUS Group has continuously expanded its energy storage business through the signing of a contract to establish a Cell-To-Pack battery assembly plant with Contemporary Amperex Technology Co., Ltd. (CATL) to start production in 2025, and established NV GOTION, a joint venture company with Gotion Singapore Pte. Ltd. (Gotion) to build a battery pack manufacturing plant. Regarding the electric motorcycle business, PTT and KYMCO Group have partnered to form Aionex, a joint venture company that will market electric motorcycles. The first phase of the EV production plant is now being built at the Rojana Industrial Estate in Chon Buri as part of Horizon Plus Co., Ltd.'s (HORIZON PLUS) EV Production Platform investment. In the meantime, the expansion of EV charging stations is implemented through On-I on Solutions Co., Ltd. (On-I on Solutions), increasing its public chargers to over 454 outlets and PTT Oil and Retail Business Plc. (OR) expanding its EV charging service in accumulated

859 locations across the country. In hydrogen business, PTTEP won the bid to develop "Green Hydrogen", a clean energy source, in Oman. Production is anticipated to begin in 2030 with an annual capacity of around 220,000 tons per year.

Beyond energy business, PTT focuses on investing in businesses with growth potential, including the Life Science business by Innobic (Asia) Co., Ltd. (Innobic (Asia)), which has invested in a global pharmaceutical company through its 37% stake in Lotus Pharmaceutical Co., Ltd. (LOTUS), achieving growth performance from the launch of Lenalidomide for leukemia in U.S. market. Concurrently, Innobic (Asia) sold 13 new medical and nutritional products, and completed the construction of a Plant & Bean factory to produce plant-based protein. In logistics business, Global Multimodal Logistics Co., Ltd. (GML) has launched the Khon Kaen-Laem Chabang route, where a rail system is ready to transport sugar with the Mitr Phol Group and inaugurated the Thailand - Cambodia freight train to transport plastic pellets and lubricants of PTT Group. AI, Robotics, and Digitalization business is operated through Mekha V Co., Ltd. (Mekha V), which has formed RENEX TECHNOLOGY, a joint venture company to provide a peer-to-peer power trading platform and partnered with Siasun Co., Ltd. to develop AI & Robotics business to support Thailand's industrial sector and warehouse and logistics businesses. In addition, PTT has made investments in high-value business through GC to enter the high-value product market, and lifestyle business through OR to grow retail, food, and service businesses to meet lifestyle needs and support future consumer needs.

"3P" Strategy towards Net Zero Emissions

PTT has aimed to drive Thailand towards a low-carbon society, with the goal to control and reduce greenhouse gas emissions (Scope 1 and 2) by 15% by 2030 compared to greenhouse gas emissions in 2020, as well as achieve Carbon Neutrality by 2040 and Net Zero Emissions by 2050, earlier than Thailand's 2065 target. In order for PTT to play a role in driving Thailand towards this goal, PTT has formulated 3P Strategy as follows:

Pursuit of Lower Emissions: Accelerate production process adjustment for energy efficiency enhancements through the implementation of energy-saving and conservation projects. This year, PTT collaborated with CP Group to study the use of CO₂ from the gas separation process to produce alternative proteins for animal feed, and signed an agreement with Krung Thai Bank to launch Carbon Credit Linked Derivatives, an innovative and first-of-its-kind in the Thai capital market.

Portfolio Transformation: Accelerate portfolio transformation towards an environmentally friendly business by focusing on the future energy business and expanding into beyond businesses. This year, the Board of Directors approved the revision of 2030 business growth target by reducing the target of fossil fuel power generation capacity from 8 GW to 5 GW and increasing renewable energy from 12 GW to 15 GW in line with the energy transition direction and moving towards Net Zero Emissions. PTT also completed the share sale agreement of PTT Mining Limited (PTTML) with PT Astrindo Nusantara Infrastruktur Tbk to exit the coal business, aligned with the corporate strategic direction of shifting more towards clean energy.

Partnership with Nature and Society: Accelerate an additional 1 million rai of forest plantation by 2030 to increase natural greenhouse gas absorption. In 2023, PTT Group planted a total of 86,173 rai of forests in 25 provinces nationwide.

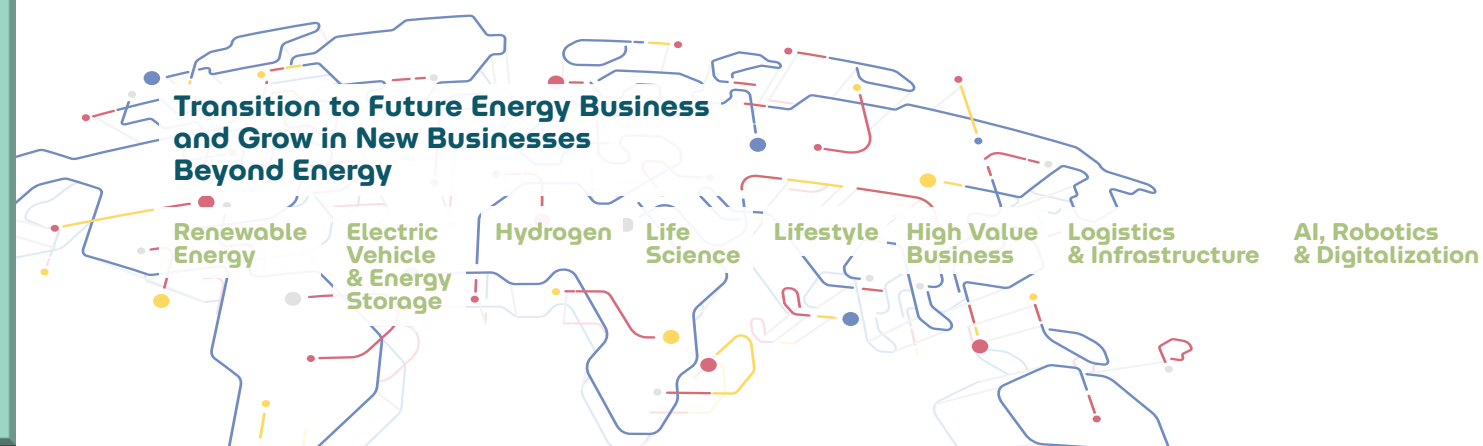
Continuing the Commitment to Igniting Life Potential and Driving the Future

PTT has strived to be powering life for all in keeping with the organization's purpose. Through various initiatives, PTT has integratively strengthened communities in 45 locations throughout 29 provinces in 2023. One such project is Smart Farming, which applies PTT Group's innovation to boost agricultural efficiency and lead to increased revenue and self-sufficiency for the community. Smart Marketing is the creation of community products with promise and the promotion of community product distribution channels to

450 communities via the "Smile Community" platform. Furthermore, PTT supports environmental initiatives via the Green Globe Institute to recognize communities with exceptional environmental conservation. We are also prepared to disseminate our knowledge throughout the network via diverse channels and aid more than 10,000 individuals impacted by natural disasters.

From the implementation of strategies under the sustainability framework, with transparent and auditable oversight and operations, PTT was awarded over 54 awards from 31 entities both domestically and internationally. PTT has been selected as a member of the Dow Jones Sustainability Indices (DJSI) - World Index and Emerging Market Index - for the 12th consecutive year and ranked among the top five in the Oil & Gas Upstream & Integrated (OGX) category, an assurance for global investors' confidence in PTT's efficient operations across all dimensions. In terms of national recognition, PTT received the Best State Enterprise Award 2022 and other outstanding state enterprise awards totaling 7 awards received in 2023 from the State Enterprise Policy Office, received the 2023 SET Awards in the categories of Sustainability Awards of Honor, Innovative Company Awards of Honor and Outstanding Investor Relations Awards, and SET ESG Ratings at the highest level of AAA. In addition, PTT was granted an Excellent CG Scoring rating or 5 badges for the 15th consecutive year, being ranked among the Top Quartiles of listed companies with a market value of not less than THB 10,000 million in the Corporate Governance Report of Thai Listed Companies (CGR) 2023 from the Thai Institute of Directors Association (IOD).

On behalf of the Board of Directors and PTT management, we would like to thank shareholders, investors, and all stakeholders for their trust and belief in PTT's potential and their support for PTT's growth over the past 45 years. PTT, as a Thai energy company, has a mission to create national energy stability, ready to create balanced and sustainable growth for Thai society, with the aim of Powering Life with Future Energy and Beyond in line with PTT's vision.



Mr. Chatchai Phromlert
Chairman

Mr. Auttapol Rerkpiboon
President and CEO



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Economic, Petroleum and Petrochemical Review and Outlook



1. 2023 in Review

1.1 World Economy

034 World economy in 2023 expanded at a slower pace than the previous year due to tightening in financial conditions following a series of policy rate hikes to curb inflation in major economies, especially the United States and the Eurozone, which led to a lack of liquidity and forced the closure of three U.S. regional banks at the end of March 2023. Whereas, geopolitical conflicts, including the protracted Russia-Ukraine war and, most recently, the Israeli-Hamas war, have been holding back regional economies and hindering international trade and cooperation. Meanwhile, China's economic growth accelerated following the lifting of the zero-COVID-19 policy and the reopening of the country, despite the real estate sector continuing to suffer from debt and liquidity problems. The International Monetary Fund (IMF) as of January 2024 estimated global economic growth in 2023 at 3.1%, down from 3.5% in 2022. (Figure 1)

1.2 Global Petroleum and Petrochemical Industries

According to S&P Global estimates as of March 2024, world oil demand in 2023 was 102.8 million barrels per day, up 2.0 million barrels per day from and a smaller increase than 2022 amid a slower, service-driven global economic recovery and weak global manufacturing sector. (Figure 2).

The slowdown in world oil demand, coupled with increased supply, especially from the non-OPEC, led by record-high U.S. and Brazilian crude oil production in 2023, continued Russian crude oil exports into new markets, and the limited Israeli-Hamas war amid OPEC+ efforts to curb production, resulted in Dubai crude oil prices falling in 2023 to an average of USD 82.1 per barrel, down from USD 96.3 per barrel in 2022. (Figure 3)

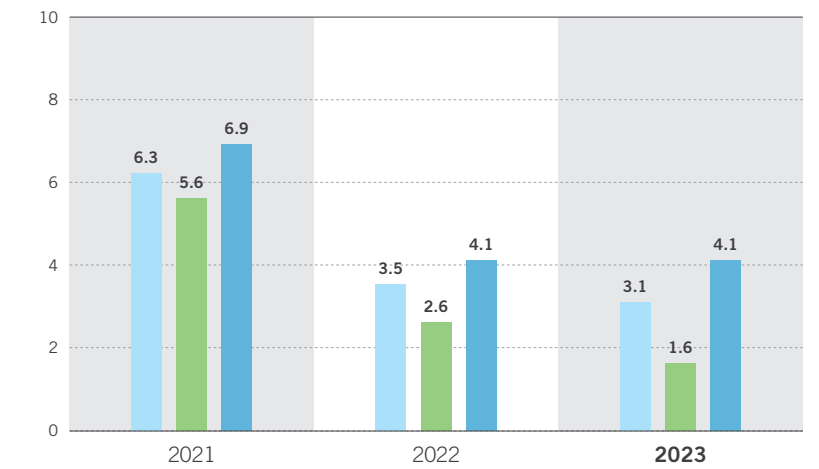
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Figure 1

Global Economic Growth 2021 - 2023

Unit: % YoY
Sources: IMF as of January 2024

- World
- Advanced Economies (including U.S. and Eurozone)
- Emerging Market and Developing Economies (including China)

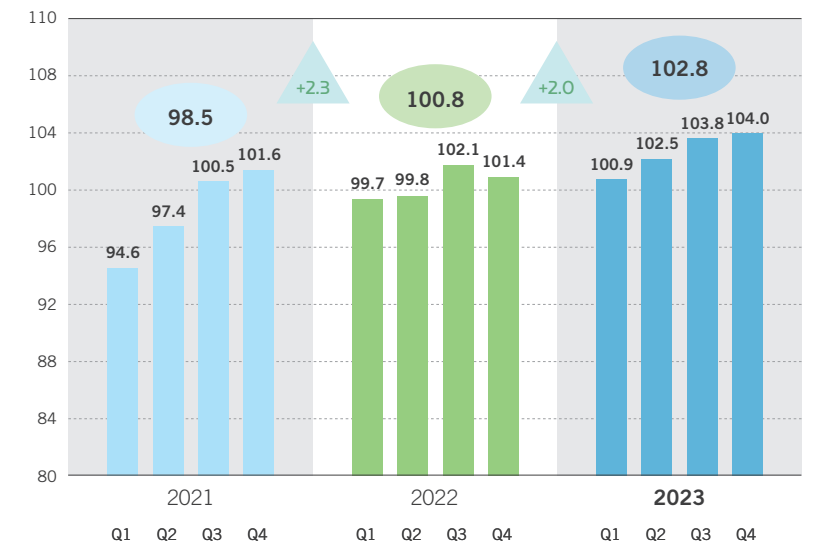


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Figure 2

World Oil Demand 2021 - 2023

Unit: Million Barrels/Day
Source: S&P Global as of March 2024



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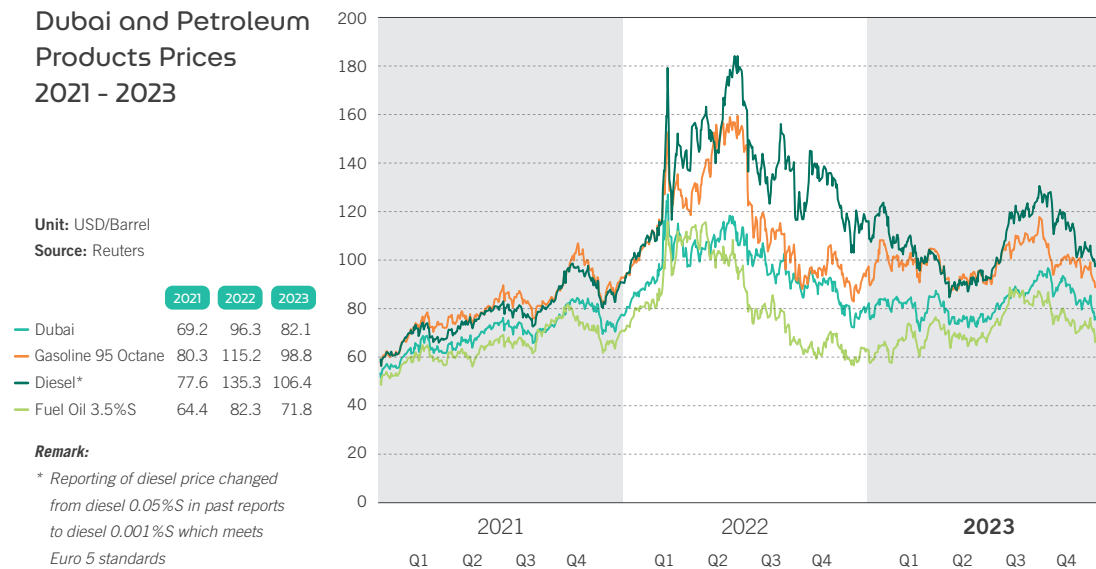
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Figure 3

Dubai and Petroleum Products Prices 2021 - 2023



As for the prices of refined petroleum products in 2023, the price of gasoline 95 octane averaged USD 98.8 per barrel, falling in line with lower crude oil prices and increased supply from new refineries in China, resulting in a decrease in gasoline crack spreads. Diesel price averaged USD 106.4 per barrel, falling in line with lower crude oil prices, weak demand in the global manufacturing sector, a switch back to natural gas for power generation following a sharp drop in natural gas prices, as well as increased diesel exports from China and continued Russian diesel exports into new markets. As a result, diesel crack spreads decreased significantly. High sulfur fuel oil 3.5%S (HSFO 3.5%S) price in 2023 averaged USD 71.8 per barrel, falling in line with crude oil prices. While demand for power generation in the Middle East amid a hot El Nino summer helped further support the rise in HSFO 3.5%S crack spreads.

The Singapore cracking margin against Dubai crude in 2023 averaged USD 6.8 per barrel versus USD 10.7 per barrel in 2022.

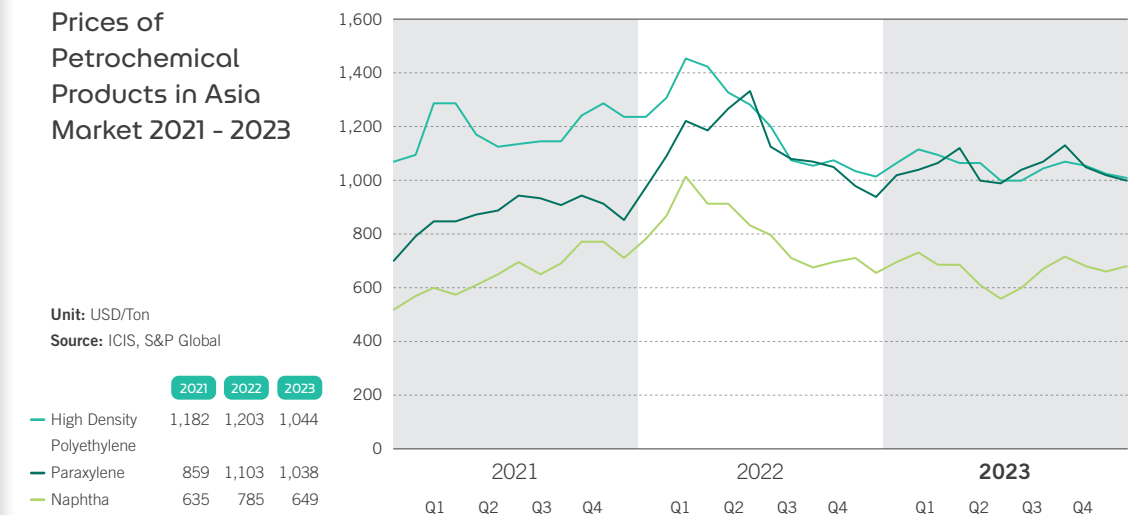
In 2023, the price of high density polyethylene (HDPE) averaged USD 1,044 per ton, falling in line with crude oil and naphtha prices, as well as sluggish demand for end products amid consumers shifting spending from goods to services after the ease of COVID-19 situation. This, coupled with new supply coming online from China and Vietnam, resulted in a decrease in naphtha-to-HDPE spreads. Paraxylene (PX) price in 2023 averaged USD 1,038 per ton, falling in line with crude oil and naphtha prices, amid increased use of PX as a gasoline octane booster and limited demand from purified terephthalic acid (PTA) capacity for use in the polyester industry. All this resulted in an increase in naphtha-to-PX spreads. (Figure 4)

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Figure 4

Prices of Petrochemical Products in Asia Market 2021 - 2023





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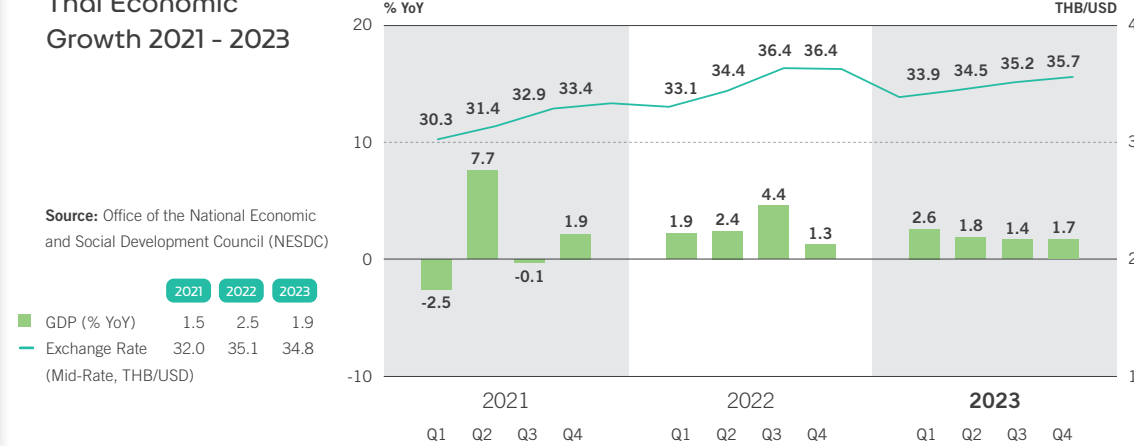
1.3 Thai Economy

The Thai economy in 2023 continued to expand from the previous year, following the recovery of the tourism sector as foreign tourists (almost all nationalities) returned to 75% of the pre-COVID-19 level. Private consumption expanded well in line with the increase in household income, especially of those in the service sector, amid a decline in inflation back to the Bank of Thailand's target range of 1 - 3% due to gradually easing supply factors and government cost-of-living support measures. Private investment slowed, in line with weak goods exports following rising global spending in services and a global electronics downturn. In addition, business confidence was affected by political uncertainties during the transition to the new government. The Office of the National Economic and Social Development Council (NESCO) reported the growth rate of Thai economy in 2023 at 1.9%, down from 2.5% in 2022. The Thai baht in 2023 averaged THB 34.8 per USD, a slight appreciation amid slowing U.S. policy rate hikes and Thailand's current account returning to surplus. (Figure 5)

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Figure 5

Thai Economic Growth 2021 - 2023



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1.4 Thailand Petroleum Industry

In 2023, Thailand's commercial primary energy consumption (excluding renewable energy) was 2.00 million barrels per day, up 0.5% from the previous year (Figure 6). Oil consumption increased by 0.3%, while natural gas consumption rose by 8.3% as fuel for electricity generation increased in line with the increased demand for electricity in the tourism and services sectors after the economy began to recover.

Thailand's refined oil consumption increased 0.4% in 2023 (Figure 7), with gasoline up 3.4%, LPG up by 0.5%, and aviation fuel up by 49.9% as both domestic and international travel demand tended to return to normal. Also, the visa waiver notice encouraged more tourists to travel. Diesel decreased 5.7% due to a slowdown in exports and a reduction in the use of base diesel in place of Spot LNG for power generation. Fuel oil declined by 15.8% as the use in international vessels decreased due to the inability to compete with Singapore.

Thailand's petroleum balance in 2023 increased from 2022, with petroleum procurement totaling 1,914.40 thousand barrels per day (KBD), up 3.6% from 2022 (Figure 8). Oil and natural gas procurement accounted for 61% and 39%, respectively. 88% of crude oil and 46% of natural gas were imported. Domestic consumption totaled 1,723.17 KBD, up 3.08% from 2022, with refined oil products accounting for 56% and natural gas 44%, whereas petroleum product exports totaled 193.94 KBD, up 12.18% from 2022.

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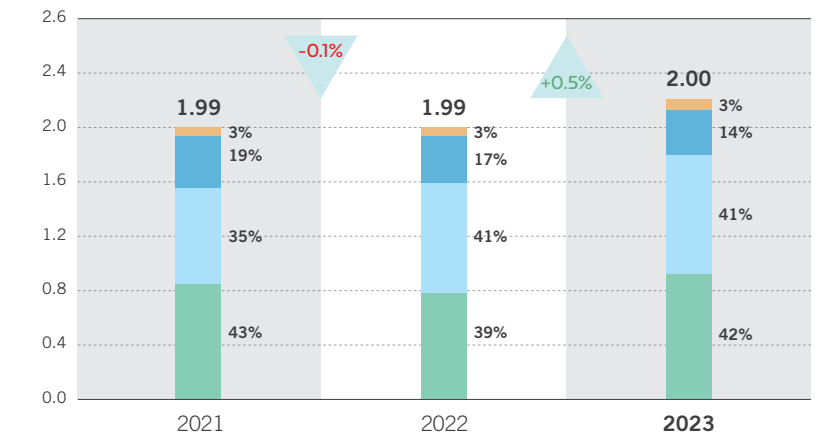
Figure 6

Thailand's Primary Commercial Energy Consumption 2021 - 2023

Unit: MBOED
Source: Energy Policy and Planning Office

Legend: Hydro/ Imported Power, Coal, Oil, Natural Gas

Remark: Excluding renewable energy



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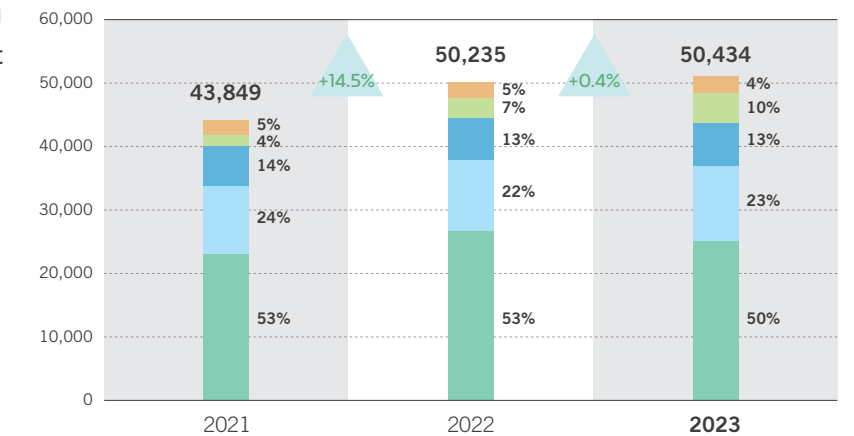
Figure 7

Thailand's Refined Petroleum Product Consumption 2021 - 2023

Unit: Million liters
Source: Department of Energy Business

Legend: Fuel Oil, Jet/ IK, LPG*, Gasoline, Diesel

Remark: Excluding LPG used as Feedstock in Petrochemical Industries





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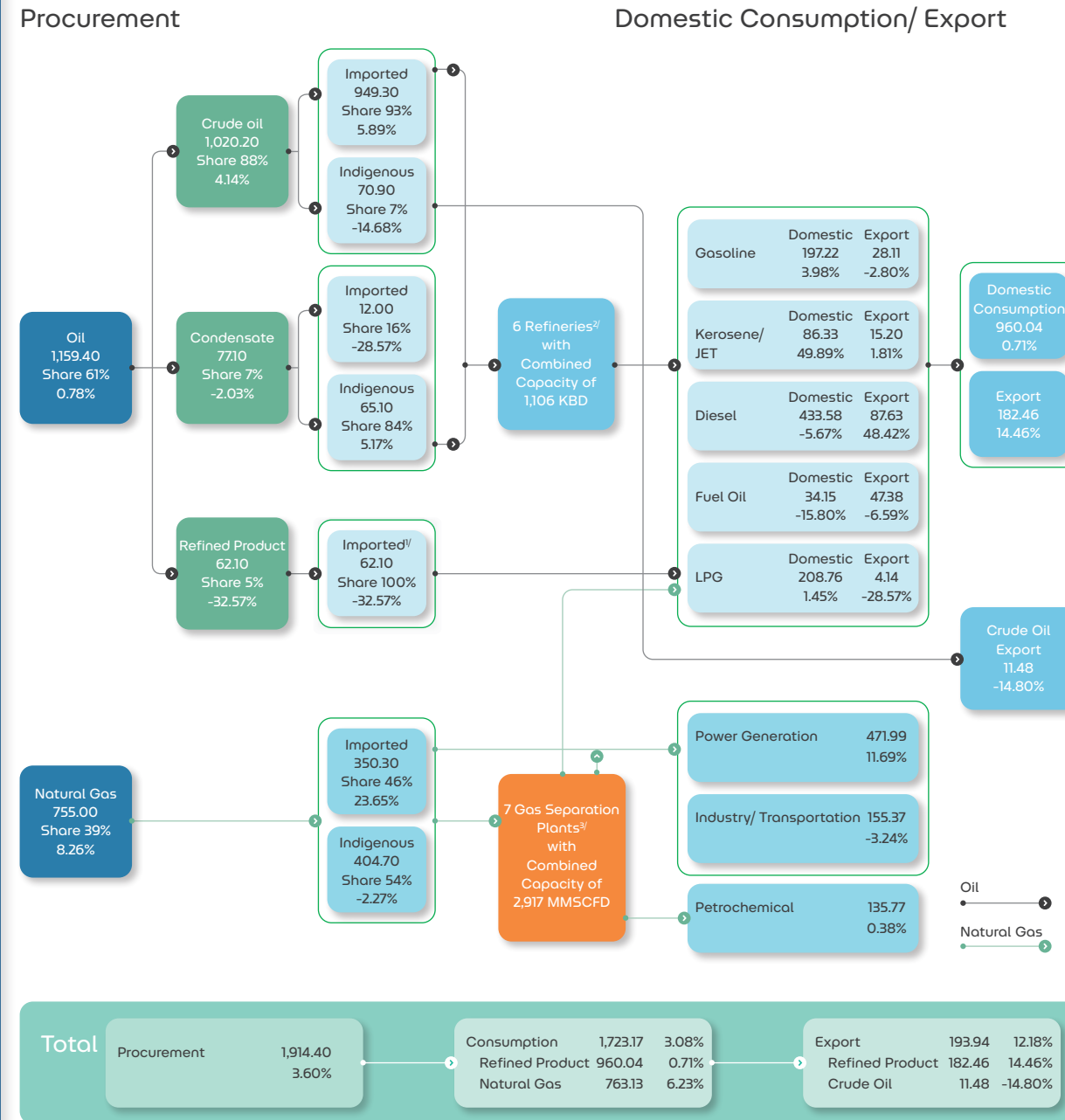
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Figure 8

Thailand Petroleum Balance 2023

Unit: KBD



Source: Energy Policy and Planning Office, Department of Energy Business, Department of Mineral Fuels, and PTT

Remarks:

1/ Including LPG

2/ Capacity includes those of BCP, ESSO, IRPC, PTTGC, SPRC, TOP and excludes GC's condensate splitters & Fang refinery.

3/ Capacity includes those of PTT/ GSP 1 - 6, PTT/ ESP and PTTEP Siam/ Phalang Phet. The Petroleum Procurement and Domestic Consumption/ Export exclude bitumen.

2. 2024 Outlook

2.1 Global Economic Outlook

Global economic growth in 2024 is expected to continue at a similar pace as in 2023, amid steadily declining inflation and improving global trade on the back of waning pent-up demand for services and slowly rising demand for goods. Whereas, high policy rates (at least in the first half of 2024) in major economies, as well as the gradual fiscal consolidation in many countries, will weigh on global economic growth in 2024. However, a close watch must be kept on how China's real estate problem will resolve, renewed geopolitical uncertainties (including the Houthi rebel's Red Sea attacks in a show of support for Hamas), and a potentially more severe and prolonged El Nino phenomenon. The IMF as of January 2024 forecasted global economic growth in 2024 at 3.1%.

2.2 Global Petroleum and Petrochemical Industry Outlook

World oil demand in 2024, according to S&P Global in March 2024, is projected to increase 1.7 million barrels per day to 104.5 million barrels per day, amid continued expansion of the global economy, tighter energy efficiency standards, and expanding EV fleet. The slowdown in global oil demand, coupled with an increase in supply from non-OPEC+, will weigh on oil prices in 2024. Though OPEC+ efforts to curb production could help support oil prices. Dubai crude oil prices in 2024 are expected to average USD 75 - 85 per barrel. The Singapore cracking margin against Dubai crude oil in 2024 is expected to average USD 6 - 7 per barrel.

Overall petrochemical prices in 2024 are expected to trade close to 2023 levels, amid falling crude oil and naphtha costs, as new supply and excess supply from North Asia continue to enter the market. Whereas, production cut by existing producers due to previous low profits, coupled with the global manufacturing sector steadying for a 2024 recovery as consumers shift spending back to goods from services, should help support petrochemical prices in 2024. HDPE price in 2024 is expected to average USD 1,020 - 1,120 per ton and PX price USD 980 - 1,080 per ton.

2.3 Thailand Economic Outlook

Economic recovery is expected to continue in Thailand in 2024, led by the tourism sector, as foreign tourists surge closer to the pre-COVID-19 level, amid visa exemptions for tourists from Kazakhstan, Russia, India, and Taiwan on a temporary basis, and most recently for Chinese tourists on a permanent basis. Private consumption is expected to further expand, in line with employment in tourism-related sectors, as well as government stimulus measures. Whereas, goods exports are expected to return to growth on the back of recovering global demand for goods and a global electronics upturn. However, a close watch must be kept on Thailand delayed 2024 fiscal budget and public investment disbursement, El Nino phenomenon and heightened risk of drought, and conflicts in the Middle East which could cause energy prices to rise. The NESDC in February 2024 forecasted the growth rate of Thai economy in 2024 at 2.2 - 3.2%. As for the Thai baht, analysts foresee exchange rate between the Thai baht and U.S. dollar averaging THB 34.3 - 35.3 per USD in 2024 on the back of still restrictive U.S. monetary policy and a surplus in Thailand's current account.

2.4 Thailand Petroleum Industry Outlook

Thailand's energy consumption in 2024 is likely to improve from 2023 due to the recovery of tourism, continuous expansion of household consumption, and the government's economic stimulus measures. However, other factors to monitor include oil price fluctuation and a lower-than-expected number of Chinese tourists despite the visa-free measure.

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1. Structure and Business Operations of PTT Group



1.1 Business Policy and Overview

Background

The Petroleum Authority of Thailand (PTT) was established on December 29, 1978 according to the Petroleum of Thailand Act B.E. 2521 principally to operate petroleum and related businesses. However, amidst an intense competition environment, Government recognized the necessity of the private sector's participation in the energy business. The Cabinet resolution on August 21, 2001 approved a corporatization plan of the Petroleum Authority of Thailand, and on September 25, 2001 approved the corporatization under the State Enterprise Corporatization Act B.E. 2542 to establish PTT Plc. by converting capital of the Petroleum Authority of Thailand into capital stock. It is mandated that the state holds at least 51% share in PTT and for PTT to remain the national oil company. After the Civil administration reform, PTT was placed under the supervision of the Ministry of Energy.

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On October 1, 2001, the Petroleum Authority of Thailand became PTT Plc. under the State Enterprise Corporatization Act with an initial registered capital of THB 20,000 million, divided into 2,000 million ordinary shares at a par value of THB 10, with the Ministry of Finance as the sole shareholder.^{1/} Subsequently, shares were offered to the public and institutional investors and then traded in the Stock Exchange of Thailand on December 6, 2001. The Finance Ministry remained a majority shareholder, and PTT's status remains that of a state enterprise regulated by the Ministry of Energy to this day. (On April 24, 2018, PTT split the par value from THB 10 to THB 1, resulting in a total number of common share 28,562.9 million, and registered capital of THB 28,562.9 million.) From its corporatization date, the Petroleum Authority of Thailand transferred its businesses, rights, debts, liabilities, assets, and staff to PTT to enable PTT to operate seamlessly and efficiently. Through the State Enterprise Corporatization Act, a Royal Decree was gazetted determining that PTT Plc. maintains the authority, rights, and benefits entitled to the Petroleum Authority of Thailand under the Petroleum Authority of Thailand Act B.E. 2521, with the provision that such authority, rights, and benefits entitlement end upon PTT's state enterprise status are dissolved according to the Budget Procedures Act. A separate Royal Decree was gazetted on the timeframe of revocation of the Petroleum Authority of Thailand Act B.E. 2544 resulting in the end of the law. Then on February 16, 2007, a Royal Decree was gazetted to determine the authority, rights, and benefits of PTT Plc. (Second Edition) in B.E. 2550. Substantively this Decree withheld or limited certain authority, rights, and benefits entitled to PTT under the Petroleum Authority of Thailand Act, and determined the authority, rights, and benefits of PTT such as exploration demarcation of petroleum transmission pipeline zone, planning of petroleum transmission pipeline, southward, northward, or passing through lands owned by any individuals, etc., according to the PTT Act to fall under the supervision of a committee regulating the company.

As the Energy Business Act B.E. 2550 become effective on December 11, 2007, PTT as an energy operator is regulated by the Energy Regulatory Commission, with PTT licenses to operate in the natural gas business. Licenses held by PTT include licenses for natural gas transmission through gas pipeline, natural gas supply and marketing, natural gas retail sale through distribution pipeline network, and the power business which consists of power generation for its own consumption at Gas Separation Plants in Rayong province and Khanom, and at natural gas stations.

1.1.1 Vision, Strategy, and Business Direction of PTT Group

PTT commits to generates economic growth, enhancing Thailand's competitiveness, and developing society and people's well-being. With innovations and technology, we are the driving force in transitioning people, society, community, and environment forward, in line with our vision of "Powering Life with Future Energy and Beyond." Our mission is to equally respond to all stakeholders, the country, society, shareholders, clients, business partners, and our workforce. We promote the core value called SPIRIT: S for Synergy; P for Performance Excellence; I for Innovation, R for Responsibility for Society, I for Integrity & Ethics, and T for Trust & Respect. In order to achieve our long-term target according to the new vision, PTT set the following three goals by 2030:

1. **Business Growth:** Expanding energy business with a growth potential of 9 million tons per annum in LNG portfolio; 5 GW of conventional power and a total of 15 GW of renewable energy production capacity.
2. **New Growth:** Growth in future energy business and other businesses beyond energy, generating more than 30% of total net profit.
3. **Clean Growth:** 15% Greenhouse Gas emissions reduction compared to 2020's emissions. Moreover, PTT with targets to achieve Carbon Neutrality within 2040, and Net Zero Emissions within 2050.

In attaining the goals outlined in the vision, PTT has the laid out operational principles called "PTT by PTT" which guides every aspect of business, through a business approach of forging "Partnership and Platform", where business means more than production and distribution. PTT will develop the platform business model through forming partnership and collaborating with expertise from overseas alongside collaboration with Thai state enterprises, the public sector, entrepreneurs, and SMEs. We will blend technology with knowhow, innovation, and digitalization in every aspect of work, "Technology for All". And we will conduct business with "Transparency and Sustainability", in consideration of Environmental, Social, and Governance including actions to reduce GHG emissions, including carbon sequestration through forestation schemes, and investment in the clean energy business.

In addition, to strengthen the competitiveness of current businesses, while creating new business growth in response to the global economic recovery, PTT adjusted our 4R operational strategies as follows:

1. **Resilience:** Create flexibility in order to operate business continually, maintain liquidity, create safety and operation excellence, promote synergy and optimization of existing assets, and encourage employees to be agile and prepared to cope with changing business situations, and also give precedence to risk and crisis management.
2. **Reenergize:** Strengthen the competitiveness of the existing business, create added value throughout the supply chain from upstream to downstream, adjust the portfolio to support the transition from hydrocarbon energy, and reduce carbon emissions from existing business operations.
3. **Reimagination:** Business expansion to accommodate changes that will become the Next Normal, including energy businesses that are likely continue to expand, consisting of liquefied natural gas and power businesses including accelerating the development and expansion of new business models beyond the hydrocarbon business, both future energy and other businesses beyond energy.
4. **Reform:** Restructuring or Re-design new business approaches to align with future trends, with the resilience to cope with any unforeseen challenges.

1/ PTT is exempted, under the State Enterprise Corporatization Act B.E. 2542, from enforcement of provisions in the Public Company Act on status and corporatization.



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1.1.2 Major Development of the Past Three Years



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January

January 1, 2021:

The retail price of NGV for public vehicles was adjusted to be similar to the retail price of private vehicles. Consequently, NGV retail price for all vehicles will be based on a cost-plus pricing structure.

January 8, 2021:

Alpha Com Co., Ltd. (Alpha Com), PTT wholly owned subsidiary, complete the establishment of Mekha Technology Co., Ltd. (Mekha Tech) (Later changed the name to Mekha V Co., Ltd. (Mekha V) with a registered capital of THB 30 million, later increased to THB 266 million). The objective of the company is to invest in the business of Public Cloud which provides various types of information system services via the Internet, including data storage, data processing, and data management to companies, organizations as well as PTT Group, which is aligned with PTT's investment strategy in Digitalization.

February

February 18, 2021:

Alpha Com completed the establishment of On-I on Solutions Co., Ltd. (On-I on Solutions) (Later changed the name to Arun Plus Co., Ltd. (ARUN PLUS)), a wholly owned subsidiary of Alpha Com, with the registered capital of THB 30 million, later increased to THB 5,000 million. The company will be responsible for operating the EV Value Chain business in line with the New S-Curve strategy to support PTT's expansion in the EV business.

February 21, 2021:

PTT completed the establishment of PTT MEA Ltd. in the United Arab Emirates, which is wholly owned by PTT International Trading Pte. Ltd. (PTTT) (a subsidiary of PTT), with a registered capital of USD 1.5 million. The objective is to operate the international trading business, especially in the Middle East and Asia region.

February (continued)

February 25, 2021:

The Central Administrative Court rendered a judgment to dismiss the case that the Ombudsman filed a lawsuit against the Ministry of Finance and others, totaling 11 parties, including PTT. The complaint alleged that the separation and transfer of assets according to the Supreme Administrative Court did not comply with the Cabinet's Resolution on December 18, 2007. Consequently, the Central Administrative Court rendered a judgment to dismiss the case on the ground that the issues presented in this case are the same issues on which the Supreme Administrative Court had rendered the final judgment. Therefore, the Central Administrative Court is prohibited from reconsidering such issues. The judgment is consistent with the Supreme Administrative Court and the subsequent orders of the Court in various cases that PTT and relevant government agencies completed the separation and transfer of the assets to the Ministry of Finance.

March

March 8, 2021:

PTT completed the deregistration of PTT International Trading DMCC (PTTT DMCC), PTTT wholly owned subsidiary. PTTT DMCC was established for international trading business in petroleum products in the United Arab Emirates. However, PTT revised the trading strategy of the petroleum products in the United Arab Emirates, Hence, PTTT DMCC reduced its commercial operation and focused only on maintaining relationships with business partners. The resolution of PTTT DMCC's deregistration is aligned with PTT's strategy in closing down the dormant companies and did not affect PTT's business operation.

March 18, 2021:

PTT passed the resolution of the establishment of Innopolymed Co., Ltd. (Innopolymed), a joint venture between Innobic (Asia) Company Limited (Innobic (Asia)) (PTT wholly owned subsidiary) and IRPC Plc. (IRPC), with a registered capital of THB 260 million. A 40% stake in Innopolymed Co., Ltd. is held by Innobic (Asia), and 60% is held by IRPC. The objective of the establishment is to manufacture and sell Non-Woven Fabric products as well as medical consumables, aligned with PTT's new business strategy in Life Science. The Company's registration was completed, with expected commercial operation within 2024.

April

April 9, 2021:

The annual general meeting of shareholders approved the dividend payment from 2020 performance which will be paid at THB 1 per share to the shareholders totaling 28,562,996,250 shares at an approximate amount of THB 28,563 million. The dividend payments are divided into the interim dividend payment from the first half of 2020 performance which PTT had already paid to shareholders at THB 0.18 per share. PTT also paid the dividend from the second half of 2020 performance at THB 0.82 per share on April 30, 2021.

April 16, 2021:

The Board of Directors of PTT and Lotus Pharmaceutical Co.,Ltd. (LOTUS), a Taiwan-listed company on TWSE, approved the investment in LOTUS' newly issued shares by Innobic LL Holding Co., Ltd. (INBL), which is a wholly owned subsidiary of Innobic (Asia) in an amount of 17,517,348 common shares at NTD 80.7 per share and the total investment is approximately USD 50 million. After the aforementioned subscription of LOTUS' newly issued shares, INBL has a 6.66% stakeholding in LOTUS of the total registered and paid-up capital. On November 26, 2021, PTT's Board of Directors approved Innobic (Asia) to join Aztiq HK Ltd., an affiliate of Aztiq Investment Group, to acquire all stakes in Alvogen Emerging Markets Holdings Ltd., a major shareholder of LOTUS and with 100% stake in Alvogen Malta (Out-Licensing) Holding Ltd., who owns 100% of Adalvo Ltd. (Adalvo), B2B pharmaceutical company with the massive global network. The total consideration of the transaction is approximately USD 475 million. The transaction has been completed. After the closing date, Innobic (Asia) will then have an indirect shareholding in LOTUS of approximately 37%, and 60% of the total issued capital in Adalvo. The objective of the investment is to align with PTT's New S-Curve strategy in expanding into a new business, especially in Life Science. LOTUS is a fully integrated pharmaceutical company that focuses on research and development, manufacturing, and distribution of generic drugs that cover therapeutic areas, especially oncology and the central nervous system. This investment will enable PTT to expand into addressable markets of the oncology portfolio as well as the strong global network and commercialization capabilities will reinforce business expansion not only in Asia but also globally.

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April (continued)

April 19, 2021:

Energy Complex Co., Ltd. (EnCo), PTT's subsidiary, won the bidding for land and buildings at the Thai Airways Crew Center at Lak Si, Bangkok of Thai Airways International Plc. with the proposed price of THB 1,810 million. This transaction would support PTT Group's business expansion.

April 22, 2021:

PTT's Board of Directors approved the shareholding restructuring of PTT's power business. PTT and Siam Management Holding Co., Ltd. (SMH), a wholly owned subsidiary of PTT, will purchase 358,936,756 shares of Global Power Synergy Plc. (GPSC) or equivalent to 12.73% of GPSC's total issued and paid-up shares from PTT Global Chemical Plc. (GC) for the value of THB 70 per share or total approximately THB 25,126 million. Before the transaction, PTT owned 31.72% and GC owned 22.73% of GPSC's total issued and paid-up shares. After this transaction, PTT and SMH will own 44.45% and GC will own 10% of GPSC's total issued and paid-up shares. The Restructuring Transaction will enable PTT to increase its investment in the power business through its flagship company which aligns with PTT's strategy. The Share Purchase Agreement of GPSC's common shares was signed in May 2021 and the transfer of GPSC shares to relevant parties was completed on June 8, 2021.

May

May 20, 2021:

PTT's Board of Directors approved the following:

- Approved Innobic (Asia) to establish a new joint venture company with Nove Foods Co., Ltd., a subsidiary of NR Instant Produce Plc. (NRF) with the registered capital not over THB 300 million. Innobic (Asia) and Nove Foods Co., Ltd. will equally hold 50% stakes in this joint venture company. The investment objective aims to operate the alternative protein business of which the initial phase will cover the entire supply chain of Plant-based Proteins from the development, manufacturing, and distribution. The manufacturing plant using state-of-the-art imported technology will be based in Thailand with a production capacity of 3,000 tons per year. The company completed its registration on August 25, 2021.
- Approved the establishment of T-ECOSYS Co., Ltd. (T-ECOSYS), which is 100% owned by SMH, with a registered capital of THB 350 million. The objective is to operate the industrial digital platform business under the cooperation between PTT and the Ministry of Industry, together with the Industrial Estate Authority of Thailand, the Board of Investment Office (BOI), financial institutions, etc. The Platform is created as an Ecosystem for service providers and customers who want access to robotics, automation system, and digital technologies through the Industrial Digital Platform (IDP) which is developed by PTT. The company has been completed its registration by 2022.

June

June 23, 2021:

The Supreme Court judgment of the Dispute between PTT and RPCG Plc. (RPCG) was reported as follows:

- Dispute of the Thai Arbitration Institute No. Black 114/2552, No. Red 23/2559, in which RPCG sought damage from PTT on the ground of wrongful contract termination. The Supreme Court rendered judgment in concurrence with the Civil Court's judgment to enforce the arbitral award and the case was final. As a result, PTT was obliged to make payment to RPCG in the approximate amount of THB 2,200 million within 30 days from the judgment date.
- Dispute of the Thai Arbitration Institute No. Black 78/2555, No. Red 37/2560, in which PTT sought an overdue payment for goods delivered from RPCG. The Supreme Court rendered judgment in reverse of the Civil Court's judgment to enforce the arbitral award and the case was final. As a result, RPCG was obliged to make payment to PTT in the approximate amount of THB 2,800 million within 30 days from the judgment date.
- On July 23, 2021, PTT exercised the right to offset the obligation that RPCG has to pay to PTT from another case, RPCG has to pay PTT in the amount of THB 600 million. Subsequently, on November 26, 2021, RPCG paid the remaining obligation to PTT completely according to the Supreme Court's judgment.

July

July 22, 2021:

On-I on Solutions Co., Ltd. (On-I on Solutions), a wholly owned subsidiary of PTT, registered to change the company name to Arun Plus Co., Ltd. (ARUN PLUS) and increase the registered capital to THB 5,000 million (initial registered capital is THB 30 million). ARUN PLUS will be responsible for operating the EV Value Chain business in line with the New S-Curve strategy to support PTT's expansion plan in the EV business. ARUN PLUS established EVME PLUS Co., Ltd. (EVME PLUS) which is 100% owned by ARUN PLUS, with a registered capital of THB 1,000 million and initial paid-up capital of THB 340 million. The objective of the company is to operate the electric vehicle business through the digital platform in order to promote and create an EV ecosystem for the widespread use of electric vehicles in Thailand, which includes EV rental services and information services for the charging and maintenance stations.

July 27, 2021:

Global Renewable Power One Co., Ltd. (GRP1) (a wholly owned subsidiary of Global Renewable Power Co., Ltd. (GRP) which is a subsidiary that PTT and GPSC equally hold at 50%) has met the conditions precedent under the share purchase agreement to acquire 90% stakes in Sheng Yang Energy Co., Ltd. (Sheng Yang) from Tatung Forever Energy Co., Ltd. with the total value of approximately THB 2,560 million. This transaction turned Sheng Yang into a subsidiary of PTT. Currently, Sheng Yang operates a solar power generation business in Taiwan with a total installed generation capacity of 55.8 MW with all commenced commercial operations.



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August

August 6, 2021:

PTT has issued unsubordinated and unsecured debentures No. 1/2021 for the total amount of THB 47,000 million at an interest rate of compound THOR+0.18% to 2.37% per annum with a tenor of 1 year 6 months to 10 years to the institutional investors and/or high net worth investors (excluding individual). The debentures are issued under the THB 130,000 million Medium-Term Note Program (MTN Program) 2020.

August 23, 2021:

PTT Global LNG Co., Ltd. (PTTGL) (a subsidiary of PTT in which PTT and PTTEP equally hold 50% shares) completely subscribed the 250,000 newly issued ordinary shares in B.Grimm Power LNG JV Ltd. (BGP LNG JV) with the subscription price at par value of THB 100 per share, totaling THB 25,000,000. As a result, PTTGL and B.Grimm Power Plc. (BGRIM) equally hold 50% stakes in BGP LNG JV. The objective of BGP LNG JV is to procure and supply LNG and explore other business opportunities related to LNG Value Chain both domestically and internationally as well as create a business alliance with the potential partners to expand business opportunities.

September

September 14, 2021:

ARUN PLUS signed the joint venture agreement with Lin Yin International Investments Co., Ltd. (Lin Yin), the wholly owned affiliate of Hon Hai Precision Industry Co., Ltd. (Foxconn), and established the joint venture company, Horizon Plus Co., Ltd. (HORIZON PLUS), on February 3, 2022, with the registered capital not over THB 3,220 million. ARUN PLUS and Lin Yin will hold 60% and 40% stakes, respectively. The objective of the company is to operate the electric vehicle manufacturing business in Thailand using Foxconn's state-of-the-art technology in manufacturing and developing of MIH (Mobility-In-Harmony) platform collectively with PTT Group's expertise in business operation within Thailand and the final investment decision have been reached and expect to start the commercial production 2025.

September 18, 2021:

PTT Regional Treasury Center Pte. Ltd. (PTT RTC), PTT wholly owned subsidiary, was completely dissolved which aligned with PTT's policy to close down the dormant company that did not affect PTT's business operation.

October

October 5, 2021:

PTT's Board of Directors approved SMH (PTT's 100% owned subsidiary) to establish PTT and TGES Optec Co., Ltd. (OPTEC), a new joint investment with Tokyo Gas Engineering Solutions Corporation (TGES) (a 100% owned subsidiary of Tokyo Gas Co., Ltd.) with the registered capital of not more than THB 60 million. SMH and TGES will hold 51% and 49% shareholding, respectively in this joint investment. The registration was completed on November 15, 2021. The investment objective aims to provide One-stop Total Improving Efficiency Technology Solutions and Services for Machinery and Equipment including fuel supply to customers in industrial, power, and utilities sectors.

November

November 1, 2021:

To support energy prices for Thai people, PTT capped the NGV retail price for taxi in Bangkok Metropolitan Area at THB 13.62 per kilogram from November 1, 2021 to March 15, 2022, and the NGV retail for general cars at THB 15.59 per kilogram from November 16, 2021 to March 15, 2022.

November 25, 2021:

The Board of Directors of PTT Tank Terminal Co., Ltd. (PTT TANK), a wholly owned subsidiary of PTT, approved the establishment of a new joint venture with Gulf Energy Development Plc. (GULF) and CHEC OVERSEA INFRASTRUCTURE HOLDING PTE. LTD. (CHEC OVERSEA) under the name of GPC International Terminal Co., Ltd. (GPC) with a registered capital of THB 4,000 million. PTT TANK, CHEC OVERSEA, and GULF will hold 30%, 30%, and 40% stakeholding, respectively in this joint investment. The investment objectives are to operate a seaport and to provide services covering mooring, docking, loading, and goods unloading for container vessels as well as to conduct warehouse business. This is in line with PTT's strategy in pursuing Logistics & Infrastructure business and supporting infrastructure growth in Thailand.

November 29, 2021:

The Board of Directors of Alpha Com approved the establishment of ReAcc Co., Ltd. (ReAcc) (Later changed the name to NEWVERSAL Co., Ltd. (NewVersal) (to be completed by the first quarter of 2024) which is 100% owned by Alpha Com, with a registered capital of THB 29 million, later increased to THB 302 million) to be the trading platform for clean energy and climate neutrality through the digital platform for the companies which have targets and needs to procure renewable energy.

December

December 2, 2021:

PTT's Board of Directors approved PTT Energy Resources Co., Ltd. (PTTER) (a wholly owned subsidiary of PTT) to sell its entire investment of 25% of the total issued shares in East Mediterranean Gas S.A.E (EMG) with the total amount of approximately USD 50 million to Snam S.p.A. The transaction caused EMG to cease to be the associated company of PTTER.

December 16, 2021:

PTT's Board of Directors approved the five-year (2022 - 2026) investment plan of PTT and its wholly owned subsidiaries in an aggregate amount of THB 102,165 million. PTT invested in the core businesses which account for 65%, i.e., Gas business and Transmission business. Additionally, PTT prepared provisional capital expenditure for the next 5 years amounting to THB 238,032 million mainly for the investment expansion into new businesses with the focus on clean energy businesses towards a low-carbon society, i.e., investment in renewable energy to achieve PTT Group's renewable energy target of 12,000 MW (In 2023, the target was changed to 15,000 MW) within the year 2030, EV Value Chain project, Life Science, Logistics and Infrastructure businesses. Furthermore, there is an investment in the gas business which is the transition fuel with a focus on the expansion of the pipeline network (subject to government approval) and the investment in the LNG value chain both in Thailand and overseas.



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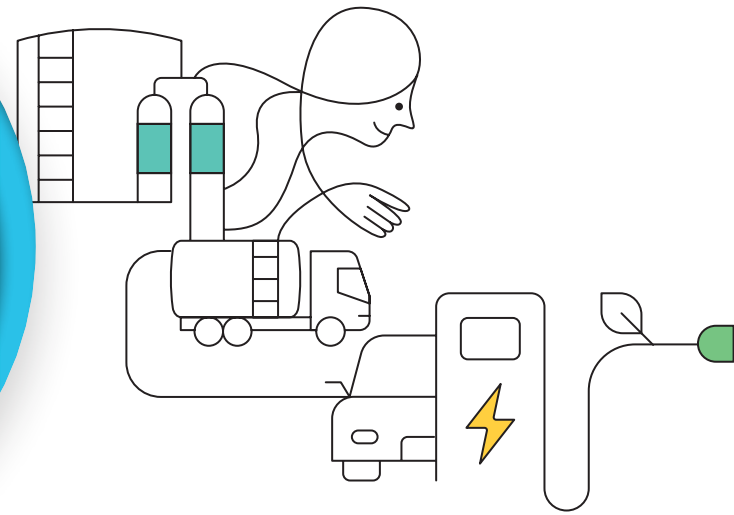
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January

January 1, 2022:

To support Thai people on energy prices, PTT has extended the cap of NGV retail price from January 1 to September 15, 2022. For the taxi in Bangkok Metropolitan Area the retail price has capped at THB 13.62 per kilogram and the NGV retail price for general cars has capped at THB 15.59 per kilogram. Then, from September 16 to December 15, 2022, PTT has extended the cap of NGV retail price for general cars to THB 16.59 per kilogram. Also, PTT has extended the period of LPG's discount for low-income household who sell food or operate food stalls through the State Welfare Card by THB 100 per person per month until March 31, 2023.

January 11, 2022:

The Board of Directors of ARUN PLUS, the wholly owned subsidiary of PTT, approved the establishment of Nuovo Plus Co., Ltd. (NUOVO PLUS), a joint venture company with GPSC with the registered capital of THB 4,200 million and an initial paid-up capital of THB 1,050 million. ARUN PLUS and GPSC hold 51% and 49% of the shares in NUOVO PLUS, respectively. The objectives of the company establishment are to study the possibility of the investments in the battery value chain in order to support the electric vehicle industry in accordance

with Thailand's automotive industry policy to promote electric vehicles, energy storage system (for the storage of electricity from renewable sources), as well as the investment in the related businesses. On February 28, 2022, the Board of Directors of NUOVO PLUS approved the acquisitions of battery related assets from PTT Group companies with the total amount of not exceed THB 2,900 million. The battery related assets consist of:

1. The assets, expenses, contracts, and other agreements related to the battery plant with the initial capacity of 30 MWh per year in Map Ta Phut Industrial Estate, Rayong province from GPSC.
2. 100% of the ordinary shares of GPSC-SG Holding Company, Singapore (the subsidiary of GPSC) that holds 11.1%^{1/} in Anhui Axxiva New Energy Technology Co., Ltd., People's Republic of China, which operates a battery plant with the capacity of 1 GWh per year, and also any relevant contracts and other agreements from GPSC.
3. The battery development under VISESS project of PTT and Alpha Com (PTT wholly owned subsidiary).

^{1/} As of June 2022 NUOVO PLUS holds 10.3% in Anhui.

February

February 17, 2022:

PTT's Board of Directors approved the shareholding restructuring of PTT's power business. PTT and/or SMH, a wholly owned subsidiary of PTT, will purchase 304,098,630 shares of GPSC, with a par value of THB 10.00 per share, equivalent to 10.78% of GPSC's total paid up capital, from Thai Oil Public Company Limited (TOP) at the total price of approximately by THB 22,351 million which is the price before deduction of GPSC's dividends after December 31, 2021 and before the share transfer date (if any). TOP will derive the proceeds to repay the loan to PTT and commercial banks for financial assistance in the form of bridging loan to finance the TOP's investment in PT Chandra Asri Petrochemical Tbk. Consequently, after the Restructuring Transaction, PTT and SMH will own 55.23% and TOP will own 10% of GPSC's total paid-up capital. SMH and PTT have completed the purchase of GPSC's ordinary shares from TOP on June 7, 2022.

April

April 1, 2022:

The Energy Regulatory Commission (ERC) announced criteria for calculating Energy Pool Price (EPP), which is the weighted average prices of energy used to generate power, including PTT's pool gas, New Shipper's liquefied natural gas (LNG), diesel, fuel oil, LPG and other fuels as specified by the ERC in order to average the cost of natural gas prices in the Pool Gas to calculate EPP price during the energy crisis. EGAT which is the clearing house is responsible for gathering data from relevant sectors to calculate the EPP gas price and submit EPP to PTT for determining gas cost for PTT's all customers. The purposes of the change are to reduce power producer's burden of higher gas cost. EPP is effective from April 1, 2022 and implemented on May 1, 2022 onwards.

April 7, 2022:

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

April 8, 2022:

The annual general meeting of shareholders approved the dividend payment from 2021 performance which will be paid at THB 2 per share to the shareholders of totaling 28,562,996,250 shares in an approximated amount of THB 57,126 million. The dividend payments are divided into the interim dividend payment from the first half of 2021 performance which PTT already paid to shareholders at THB 1.20 per share on October 15, 2021. PTT also paid the dividend from the second half of 2021 performance at THB 0.80 per share which already paid on April 29, 2022.

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April (continued)

April 8, 2022:

PTT has issued unsubordinated and unsecured debentures No. 1/2022 for the total amount of THB 20,000 million with the tenor of 3 - 12 years and the interest rate of 1.79% - 3.47% per annum to the institutional investors and/or high net worth investors (excluding individuals). The debentures are issued under THB 130,000 million Medium-Term Note Program (MTN Program) 2020.

April 20, 2022:

PTT, as buyer, and PTTEP Energy Development Company Limited (PTTEP ED) (a wholly owned subsidiary of PTTEP), operator of G1/61 and G2/61 Project, together with Department of Mineral Fuels as sellers, have completely entered into Gas Sale Agreement, Condensate Sale Agreement, and Crude Sale Agreement. PTTEP ED will become an operator under a Production Sharing Contract of both projects from April 24, 2022 onwards. PTTEP ED has also reached an agreement with MP G2 (Thailand) Limited, a subsidiary of Mubadala Petroleum (Thailand) Holdings Limited (Mubadala), for PTTEP ED to be a sole investment operator of G1/61 and shall recognize all revenues and costs from the petroleum produced with effective date from December 1, 2021.

May

May 17, 2022:

PTT's Board of Directors approved the shareholding restructure of PTT Global LNG Company Limited (PTTGL) by assigning SMH to purchase all shares of PTTGL from PTT and PTTEP Business Center Company Limited (PTTEP BC), which equally hold 50% stake in PTTGL, at the amount approximately USD 255 million. The transaction was completed in June 2022, after the restructuring transaction, SMH will hold 100% of PTTGL's shares. The shareholding restructure will enable PTTGL to flexibly accelerating growth in the LNG value chain business and becoming a global LNG player in accordance with PTT group's strategic plan.

May 20, 2022:

PTT's Board of Directors and Board of Directors of Interpharma Public Company Limited (IP) (Thai listed company on MAI ticker: IP) have approved the investment in IP's newly issued shares via private placement by Innobic LL Holding Co., Ltd. (INBL) to acquire IP's stakes at 20% of the total registered and paid-up capital. The total investment value is approximately THB 1,043 million. The transaction has been completed in the third quarter of 2022. The collaboration aims for the further development of R&D and for the escalation in businesses across the country, covering a full range of healthcare products including innovative medicine, eye healthcare, nutraceuticals & supplement, Thai herbal medicines, as well as health food and drink.

May (continued)

May 20, 2022:

PTT's Board of Directors passed a resolution for PTT to relieve electricity generating cost of EGAT in order to alleviate electricity burden for Thai people during the energy crisis in Thailand through the discharge of the interest from the delay of natural gas payment to EGAT according to the postponement of the natural gas payment for the period of May 2022. The due date will be extended from June to October 2022. The interest amount is approximately THB 340 million. EGAT has already paid for gas payment for the period as aforementioned.

May 25, 2022:

Alpha Com has established P-Dictor Company Limited (P-Dictor) with the registered capital of approximately THB 54.5 million with the objective to operate the predictive maintenance and machine monitoring artificial intelligence (AI) for industrial solution which help predicting the possibility of any mechanical failures on the critical machineries and equipments of the plants. Therefore, the production and maintenance could be properly planned and the risk of damage on operational production and product distribution would be reduced. The service will be provided to the industrial plants both within PTT group and external customers.

May 27, 2022:

PTT has issued the unsubordinated and unsecured debenture No. 2/2022 for the total amount of THB 20,000 million with the tenor of 7 years and interest rate of 3.25% per annum to general public, foundation, and non-profit organization. The debenture is issued under THB 170,000 million Medium-Term Note Program (MTN Program) 2020.

July

July 11, 2022:

PTT's Board of Directors passed a resolution for PTT's gas business to specifically support the Oil Fuel Fund for the amount of THB 1,000 million per month for 3 months within the year of 2022 in the total amount of THB 3,000 million. PTT aims to support the oil fuel fund to stabilize the energy prices in Thailand during the period of fluctuating global energy prices.

July 21, 2022:

PTT's Board of Directors approved the establishment of Innobic Nutrition Co., Ltd. (INNT) which is 100% owned by Innobic LL Holding Co., Ltd. (INBL), with the registered capital of THB 100 million. The objective of the company establishment is to conduct Nutrition business including Nutraceutical, which offers dietary supplements for general wellness that focuses on the suitable nutrition for each individual group by age, gender, or their nutritional needs as well as for specific prevention and the Medical Nutrition, which provide the nutritional needs for patients that will be developed for both general and specific patients. INNT is completed its registration in September 2022.

July 22, 2022:

PTTGL signed the sale and purchase agreement of LNG with Corpus Christi Liquefaction LLC (CCL), which is a wholly owned subsidiary of Cheniere Energy Inc. (the energy company in U.S.) in the amount of 1 million tons per year for a period of 20 years, starting its first delivery in 2026 onwards. The signing of this long-term LNG purchase agreement was in according with the Board's resolution of National Energy Policy (NEPC) which approved PTT to procure for the additional 1 million tons per year of LNG, from current long-term LNG contracts of 5.2 million tons per year, in order to increase country's energy security.



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August

August 2, 2022:

PTT International Holdings Limited (PTTIH) (a wholly owned subsidiary of PTT) has entered into a Share Purchase Agreement of its entire investment, being 100% of the total issued shares, in PTT Mining Limited (PTTML) with PT Astrindo Nusantara Infrastruktur Tbk (Astrindo), a listed company in Indonesia Stock Exchange, or its affiliate, on August 1, 2022 with a purchase price of approximately USD 486 million. The transaction has been completed on February 15, 2023. This transaction will divest all of PTT investment in the coal business which is aligned with PTT's strategy towards sustainability and clean energy.

August 17, 2022:

The Energy Regulatory Commission (ERC) approved the criteria of natural gas tariff for natural gas transportation licensees through pipeline, which consist of two components; the Demand Charge (Td) for the period of 2022 - 2026 and Commodity Charge (Tc) for the year 2022 according to new natural gas pricing structure from the resolution of National Energy Policy Council (NEPC)'s meeting on August 4, 2021. The revised gas pipeline tariff rates are effective since August 2022.

August 29, 2022:

The Extraordinary General Meeting of Shareholders of PTT Energy Solutions Co., Ltd. (PTTES) approved the dissolution of PTTES. PTTES is a subsidiary in which PTT holds 40% together with TOP, GC, and IRPC which hold equally at 20%. The registration of dissolution has already been completed in December 2022. The dissolution of PTTES is aligned with PTT Group's business restructuring policy and does not affect PTT group's business operations.

October

October 5, 2022:

The Board of Directors of SMH approved the establishment of Global Multimodal Logistics Co., Ltd. (GML) which is 100% owned by SMH, with the registered capital of THB 230 million. The objective of the company's establishment is to operate a logistics business with a focus on creating connectivity all of Thailand's transportation system and also seamlessly connecting the international transportation network. This will help entrepreneurs increase their market competitiveness as well as reduce their logistics costs. The key services consists of freight services (by rail, sea, land, air), cold chain management, property management, and asset rental related to the logistics business. The establishment of GML aims to support national policy under the 13th National Economic and Social Development Plan and PTT's New S-Curve strategy in logistics and infrastructure business.

December

December 14, 2022:

PTT's Board of Directors approved the shareholding restructuring of AI & Robotics business by assigning SMH to purchase all shares of ReAcc Co., Ltd. (ReAcc) from Alpha Com (SMH, ReAcc, and Alpha Com are indirect wholly owned subsidiary of PTT). In addition, there was an approval for the shareholding restructuring of Mekha Tech by assigning ReAcc to purchase all shares of Mekha Tech from Alpha Com. The objective of the shareholding restructuring is to strengthen operational agility of AI & Robotics business to support new business opportunities as per PTT group's strategy. Moreover, the Board of Directors approved the change in registered capital and company name which Mekha Tech completed the registration in 2022 and ReAcc is expected to complete the registration within the first quarter of 2024, detail as follows:

- Previous name: Mekha Technology Co., Ltd. (Mekha Tech) New name: Mekha V Co., Ltd. (Mekha V)
Registered capital: THB 266 million (initial registered capital is THB 30 million)
- Previous name: ReAcc Co., Ltd. (ReAcc)
New name: NEWVERSAL Co., Ltd. (NewVersal)
Registered capital: THB 302 million (initial registered capital is THB 29 million)

December 15, 2022:

PTT's Board of Directors approved the five-year (Year 2023 - 2027) investment plan of PTT and its wholly owned subsidiaries in an aggregate amount of THB 100,227 million. PTT invested in the core businesses to ensure national energy security which are accounted for 55% of PTT's total five-year investment plan. Additionally, PTT has prepared provisional capital expenditure for the next 5 years amounting to THB 302,168 million mainly for the investment expansion into new businesses to align with PTT's vision "Powering Life with Future Energy and Beyond" with the focus on clean energy businesses towards a low-carbon society i.e. investment in EV value chain business covering from upstream to downstream, Logistics and Infrastructure businesses focusing on connecting all transportation networks throughout the country, Life Science (Pharmaceutical, Nutrition, and Medical Device & Diagnostics) to drive Life Science business in Thailand and the ASEAN, as well as the investment in Renewable energy to achieve PTT group's renewable energy target of 12,000 MW (In 2023, the target was changed to 15,000 MW) within year 2030. Furthermore, there is investment in gas business which is the transition fuel with the focus on the expansion of pipeline network and the investment in LNG value chain both in Thailand and overseas.

December 15, 2022:

NUOVO PLUS (a subsidiary which PTT holds 51% of shares and GPSC holds 49% of shares) enter into a joint venture agreement and to establish NV Gotion Company Limited (NV Gotion), a joint venture company with Gotion Singapore Pte. Ltd. (Gotion), the leading Chinese company specializing in power battery for electric vehicles and energy storage systems, with the registered capital of not exceeding THB 600 million, in which NUOVO PLUS and Gotion hold 51% and 49% of the shares, respectively. The objectives of the joint venture company are to operate the business of importing, assembling, and distributing battery modules and battery packs for energy storage systems and electric vehicles by combining technology and expertise of those two companies to increase competitiveness in the battery business and also to integrate the supply chain of renewable energy and electric vehicles for Thailand which are in line with PTT Group's investment strategy in Future Energy. The establishment of the joint venture company is completed in the fourth quarter of 2023 with the initial capacity of 2,000 MWh per year and is expected to scale up to 8,000 MWh per year.



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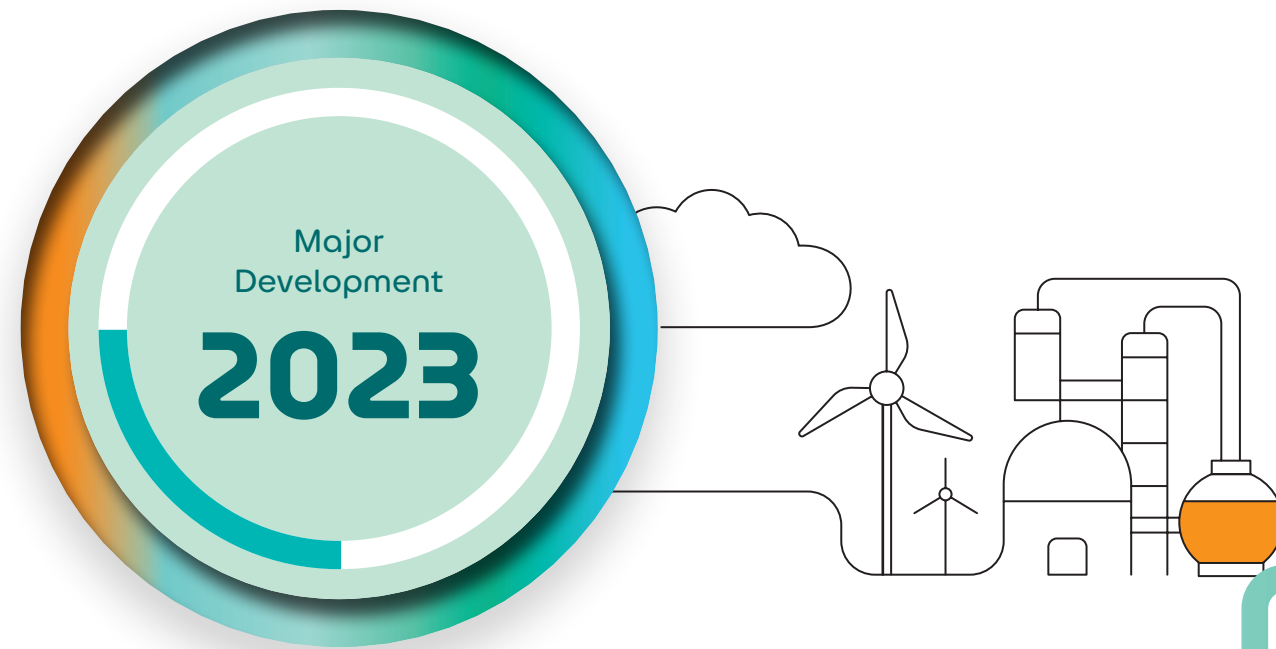
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January

January 1, 2023:

To support public sector on energy prices, PTT extended the cap of NGV retail price until June 15, 2023, previously from December 16, 2022 to March 15, 2023. For the taxi in Bangkok Metropolitan Area, the NGV retail price was capped at THB 13.62 per kilogram and for general cars at THB 17.59 per kilogram. Subsequently, on June 16, 2023, PTT extended the cap of NGV retail price further by capping the retail price at THB 14.62 per kilogram for taxi in Bangkok Metropolitan Area and THB 18.59 per kilogram for public cars until December 31, 2023. For general car, the price was capped at THB 18.59 per kilogram until September 15, 2023 and adjusted to 19.59 per kilogram until December 31, 2023. Subsequently, PTT's Board of Directors extended the cap of NGV retail price further by capping the retail price at THB 14.62 per kilogram for taxi in Bangkok Metropolitan Area until June 30, 2024 and THB 18.59 per kilogram for public cars until December 31, 2025. For general car, the price has been capped at THB 19.59 per kilogram until May 15, 2024. Nevertheless, for LPG, PTT ended the LPG's discount for low-income household who sell food or operate food stalls through the State Welfare Card by THB 100 per person per month since March 31, 2023.

February

February 15, 2023:

PTT International Holdings Limited (PTTIH) (a wholly owned subsidiary of PTT) divested its entire investment, 100% of the total issued shares, in PTT Mining Limited (PTTML) to an affiliate of PT Astrindo Nusantara Infrastruktur Tbk (Astrindo) and completed the settlement with the total value of USD 486 million (including interest). As a result, PTTML ceased to be the subsidiary of PTT. In addition, this transaction divested all of PTT investment in the coal business which is aligned with PTT's strategy towards sustainability and clean energy.

March

March 10, 2023:

Global Renewable Power Co., Ltd. (GRP) (a subsidiary which PTT indirectly holds 50% and GPSC holds 50%) has completed the establishment of Global Renewable Power China (Shanghai) Co., Ltd. (GRP China) in the first quarter of 2023 with the registered capital of Yuan 5,340,000 (or approximately THB 27,768,000), in which GRP holds 100%. The objective of the company's establishment is to support the investment and development of renewable business in China, in accordance with PTT group's investment strategy of Future Energy business.

April

April 17, 2023:

The Annual General Meeting of shareholders approved the dividend payment from 2022 performance which will be paid at THB 2.00 per share to the shareholders of totaling 28,562,996,250 shares in an approximated amount of THB 57,126 million. The dividend payments are divided into the interim dividend payment from the first half of 2022 performance which PTT already paid to shareholders at THB 1.30 per share on October 12, 2022. PTT also paid the dividend from the second half of 2022 performance at THB 0.70 per share which was paid on April 28, 2023.

April 21, 2023:

The Board of Directors of Energy Complex Company Limited (EnCo) (a subsidiary which PTT holds 50%) on April 10, 2023, approved EnCo to joint venture with One Origin Public Company Limited (ONEO) through the purchase of 50% shares of One District Rayong 2 Co., Ltd. (a subsidiary of ONEO which ONEO holds 99.9997% of shares) from ONEO at the amount of THB 46 million. On April 11, 2023, EnCo signed a share purchase and sale agreement, and the payment has been completed on April 21, 2023. The objective of this joint venture is to jointly develop a hotel business in the Origin Smart City Rayong project, in order to support the expansion of business sector in the Eastern Economic Corridor (EEC) and the tourism sector after economic recovery from the COVID-19. The hotel has started commercial operations in December 2023.

May

May 10, 2023:

PTT has issued unsubordinated and unsecured debenture No. 1/2023 for the total amount of THB 1,000 million with 2 years tenor at coupon rate of 2.31% per annum and PTTEP Treasury Center Company Limited (a subsidiary of PTTEP Group) has issued senior guaranteed debentures with a bondholders' representative for THB 1,500 million with 3 years tenor at coupon rate of 2.51% per annum to the institutional investors. This is the first time of Thai capital market to issue the digital debenture through the DIF: Web Portal under the Sandbox project which is a part of the Digital Infrastructure development of the Securities and Exchange Commission, Thailand, to support digital bond transaction.

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August

August 16, 2023:

The Board of Directors of ARUN PLUS (PTT's 100% subsidiary) approved ARUN PLUS to enter into a joint venture agreement with KWANG YANG MOTOR Company Limited (KYMCO) and KYMCO CAPITAL PRIVATE EQUITY MANAGEMENT Company Limited (KC) (the subsidiary of KYMCO) to establish Aionex Company Limited (Aionex), a joint venture company which ARUN PLUS, KYMCO and KC hold 51%, 29% and 20% respectively, with the registered capital not exceeding of THB 600 million. Aionex's vision aims to be a leader of two-wheeler electric vehicle in Thailand and ASEAN which include not only to sale and produce two-wheeler electric vehicle, but also to provide battery swapping service. The establishment of Aionex has been completed in 2023 and expected to start operation by 2024.

September

September 21, 2023:

PTT's Board of Directors, approved the dissolution of PTT Energy Resources Company Limited (PTTER) (a wholly owned subsidiary of PTT). The registration of dissolution has been completed in December 2023. The dissolution of PTTER is aligned with PTT's policy to close down the dormant company. This has no impact to PTT's business operation.

September 21, 2023:

PTT's Board of Directors approved a resolution of interim dividend payment for the first six-month performance of year 2023 to PTT's shareholders at the rate of THB 0.80 per share, totaling approximately THB 22,851 million, or 48% of the consolidated net income. The Record Date to entitle rightful shareholders who may receive the interim dividend was on October 5, 2023. The payment of the interim dividend was made on October 20, 2023.

December

December 21, 2023:

PTT's Board of Directors approved the five-year (Year 2024 - 2028) investment plan of PTT and its wholly owned subsidiaries in an aggregate amount of THB 89,203 million. PTT invested in the core business to promote sustainable growth and to ensure national energy security which are accounted for 51% of PTT's total five-year investment plan. Additionally, PTT has prepared provisional capital expenditure for the next 5 years amounting to THB 106,932 million mainly for the investment expansion during energy transition period such as the investment in the Gas business which is the transition fuel with the focus on the expansion of pipeline network, the investment in LNG value chain both in Thailand and overseas, the expanding investment in the Downstream business in storage tanks, etc. Moreover, PTT also focus on clean energy business toward a low-carbon society e.g. investment in Life Science including Pharmaceutical, Nutrition, and Medical device & Diagnostics, the AI & Robotics business with the target to become a leader in AI & Robotics services in the future, as well as Logistic and Infrastructure business by focusing on connecting all transportation networks throughout the country.

December (continued)

December 21, 2023:

PTT's Board of Directors approved the renaming of PTT's subsidiary namely Alpha Com Company Limited (Alpha Com) to ExpresSo NB Company Limited (ExpresSo NB) (PTT's owned 100%) through SMH, a subsidiary of PTTGM, PTT's subsidiary, with the total registered capital not exceeding THB 2,388.5 million. The objective of the company's establishment remains the same which is to conduct venture business operation. The registration of the renaming is expected to be completed within April 2024.

December 21, 2023:

PTT's Board of Directors approved the shareholder restructuring of GRP by approving PTTGM, PTT's subsidiary, to sell ordinary shares of GRP (50% owned subsidiary of PTTGM) to GRSC, a wholly owned subsidiary of GPSC, totaling 10,007,500 shares (equivalent to 50%) at par value of THB 100 per share with the total value of approximately THB 1,275 million. The sale and purchase of GRP shares is expected to be completed by the second quarter of 2024. After completion of the share sale, GRP shall remain a subsidiary of PTT. The objective of the sale of GRP shares is to restructure the shareholding structure in renewable power business in accordance with PTT Group's strategic plan to support GPSC to become the flagship for PTT Group's electricity and utility businesses (PTT Group's Power Flagship) and a leader in the renewable energy or green energy sectors both domestic and overseas.

The Milestones of the past three years of each PTT Group's flagship companies listed on SET were disclosed on the website; the details are as follows:



PTT Exploration and Production Plc.
(PTTEP)



Global Power Synergy Plc.
(GPSC)



PTT Global Chemical Plc.
(GC)



Thai Oil Plc.
(TOP)



PTT Oil and Retail Business Plc.
(OR)



IRPC Plc.
(IRPC)



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1.1.3 Use of Proceeds

Details of the use of proceeds as of December 31, 2023 are as follows:

Domestic, Unsecured, and Unsubordinated Bonds (Enforced under Thai Laws)

PTT utilized the funds derived from the issuance and offer of Thai Baht Bond consisting of PTTC243A, PTTC247A, PTTC248A, PTTC254A, PTTC255A, PTTC257A, PTTC268A, PTTC277A, PTTC270A, PTTC288A, PTTC295A, PTTC307A, PTTC318A, PTTC344A, PTTC357A, PTTC457A and PTTC10DA fulfilling completely the objectives as stated in the Registration Statement.

Foreign, Unsecured, and Unsubordinated Bonds (Enforced under New York Laws)

PTT utilized the funds derived from the offer of USD bond of PTT and PTT Treasury Center Co., Ltd. (PTT TCC) with PTT as guarantor consisting of USD Bond 2005, USD Bond 2012, USD Bond 2019 and USD Bond 2020 fulfilling the objectives completely as stated in the Registration Statement.

1.1.4 Obligations Pledged by the Company in the Registration Statement

Domestic Bonds and Foreign Bonds (Unsecured, Unsubordinated)

PTT has no financial obligation per each tranche of bond as stated in the Registration Statement and other documents pertaining to each tranche. Conditions for the exercising of Put and Call Options of each tranche are disclosed in 1.5 Issuance of Other Securities (1.5.2 Debt Securities).

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1.2 Nature of Business

1.2.1 Revenue Structure

Product/ Service	Operated by	% Share-holding	2021 (Audited)		2022 (Audited)		2023 (Audited)	
			THB million	%	THB million	%	THB million	%
1. Gas products	PTT Plc.		305,386	14	505,520	15	458,955	15
	PTT Exploration and Production Plc. (PTTEP)	63.79	27,801	1	42,581	1	38,429	1
	PTT Natural Gas Distribution Co., Ltd. (PTTNGD)	58.00	11,652	1	16,600	1	14,642	-
	Global Power Synergy Plc. (GPSC)	47.27	84	-	75	-	81	-
	PTT Oil and Retail Business Plc. (OR)	75.00	29,377	1	37,425	1	41,604	1
	PTT International Trading London Ltd. (PTTT LDN)	100.00	-	-	-	-	2,174	-
Total revenue from gas products			374,300	17	602,201	18	555,885	17
2. Oil products	PTT Plc.		193,348	9	338,011	10	274,647	9
	PTT Exploration and Production Plc. (PTTEP)	63.79	32,771	1	35,557	1	33,360	1
	PTT International Trading Pte. Ltd. (PTTT)	100.00	317,550	14	414,650	12	525,469	16
	PTT International Trading London Ltd. (PTTT LDN)	100.00	32,275	1	68,138	2	68,791	2
	PTT Global Chemical Plc. (GC)	45.18	23,783	1	36,976	1	24,007	1
	Thai Oil Plc. (TOP)	45.03	163,039	7	212,352	7	200,935	6
	IRPC Plc. (IRPC)	45.05	127,779	6	141,610	4	147,576	5
	PTT Oil and Retail Business Plc. (OR)	75.00	439,076	20	696,875	21	653,355	20
	PTT International Trading USA Inc. (PTTT USA)	100.00	7,285	-	51,034	2	27,308	1
	Total revenue from oil products			1,336,906	59	1,995,203	60	1,955,448
3. Petrochemical products	PTT Plc.		13,245	1	4,558	-	14,679	-
	PTT Global Chemical Plc. (GC)	45.18	259,292	11	384,204	11	318,805	10
	Thai Oil Plc. (TOP)	45.03	30,638	1	38,193	1	32,966	1
	IRPC Plc. (IRPC)	45.05	67,016	3	60,568	2	45,997	1
	PTT International Trading Pte. Ltd. (PTTT)	100.00	67,379	3	83,768	3	77,612	3
	PTT Oil and Retail Business Plc. (OR)	75.00	619	-	608	-	499	-
	PTT International Trading USA Inc. (PTTT USA)	100.00	186	-	3,231	-	2,092	-
PTT Global Management Co., Ltd. (PTTGM)	100.00	-	-	3	-	8	-	
Total revenue from petrochemical products			438,375	19	575,133	17	492,658	15
4. Mining products	PTT Global Management Co., Ltd. (PTTGM)	100.00	15,560	1	31,331	1	1,883	-
Total revenue from mining products			15,560	1	31,331	1	1,883	-
5. Pharmaceutical products	PTT Global Management Co., Ltd. (PTTGM)	100.00	-	-	14,411	1	21,541	1
Total revenue from pharmaceutical products			-	-	14,411	1	21,541	1
6. Public utilities	Thai Oil Plc. (TOP)	45.03	4,842	-	7,519	-	5,516	-
	IRPC Plc. (IRPC)	45.05	3,420	-	4,003	-	4,201	-
	Global Power Synergy Plc. (GPSC)	47.27	57,845	3	100,939	3	68,347	3
	PTT Tank Terminal Co., Ltd. (PTT TANK)	100.00	46	-	59	-	61	-
	PTT Global Management Co., Ltd. (PTTGM)	100.00	628	-	739	-	761	-
Total revenue from public utilities			66,781	3	113,259	3	78,886	3

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Product/ Service	Operated by	% Share-holding	2021 (Audited)		2022 (Audited)		2023 (Audited)	
			THB million	%	THB million	%	THB million	%
7. Non-oil Business	PTT Plc.		28	-	20	-	15	-
	PTT Oil and Retail Business Plc. (OR)	75.00	17,190	1	21,606	1	23,725	1
Total revenue from non-oil business			17,218	1	21,626	1	23,740	1
8. Revenue from services	PTT Plc.		260	-	314	-	257	-
	PTT Exploration and Production Plc. (PTTEP)	63.79	2,993	-	5,331	-	4,451	-
	PTT Global Chemical Plc. (GC)	45.18	3,343	-	4,968	-	4,346	-
	Thai Oil Plc. (TOP)	45.03	90	-	-	-	-	-
	IRPC Plc. (IRPC)	45.05	576	-	487	-	545	-
	PTT Oil and Retail Business Plc. (OR)	75.00	391	-	472	-	468	-
	PTT Digital Solutions Co., Ltd. (PTT DIGITAL)	20.00	145	-	176	-	327	-
	PTT Tank Terminal Co., Ltd. (PTT TANK)	100.00	685	-	684	-	705	-
	PTT Energy Solutions Co., Ltd. (PTTES)	40.00	4	-	3	-	-	-
	Energy Complex Co., Ltd. (EnCo)	50.00	282	-	297	-	310	-
	Business Services Alliance Co., Ltd. (BSA ^{1/})	25.00	211	-	240	-	183	-
	Global Power Synergy Plc. (GPSC)	47.27	30	-	63	-	435	-
	PTT LNG Co., Ltd. (PTTLNG)	100.00	288	-	314	-	451	-
	PTT Natural Gas Distribution Co., Ltd. (PTTNGD)	58.00	3	-	13	-	14	-
	PTT Global Management Co., Ltd. (PTTGM)	100.00	5	-	118	-	259	-
	PTT International Trading USA Inc. (PTTT USA)	100.00	-	-	5	-	-	-
Total revenue from services			9,306	-	13,485	-	12,751	-
9. Others	PTT Plc.		-	-	-	-	1	-
	Business Services Alliance Co., Ltd. (BSA ^{1/})	25.00	-	-	-	-	-	-
	Global Power Synergy Plc. (GPSC)	47.27	-	-	-	-	-	-
	PTT Digital Solutions Co., Ltd. (PTT DIGITAL)	20.00	-	-	-	-	-	-
	PTT International Trading Pte. Ltd. (PTTT)	100.00	269	-	324	-	595	-
	IRPC Plc. (IRPC)	45.05	99	-	98	-	97	-
	PTT Oil and Retail Business Plc. (OR)	75.00	-	-	-	-	-	-
	PTT Global Management Co., Ltd. (PTTGM)	100.00	3	-	123	-	501	-
	PTT International Trading London Ltd. (PTTT LDN)	100.00	-	-	2	-	-	-
	PTT International Trading USA Inc. (PTTT USA)	100.00	-	-	-	-	558	-
	PTT LNG Co., Ltd. (PTTLNG)	100.00	1	-	7	-	7	-
Total revenue from other products			372	-	554	-	1,759	-
Total revenue from products and services			2,258,818	100	3,367,203	101	3,144,551	98
10. Others								
	10.1 Other revenue ^{2/}		(3,018)	-	(50,494)	(1)	27,510	1
	10.2 Gain (loss) from foreign exchange		(6,469)	-	5,552	-	22,285	1
Total other revenue			(9,487)	-	(44,942)	(1)	49,795	2
11. Share of profit from investment in joint ventures and associates			9,010	-	5,849	-	3,013	-
Grand total			2,258,341	100	3,328,110	100	3,197,359	100

Remarks:

Revenue of PTT and subsidiaries represents net revenue derived from external parties.

1/ PTT holds 100.00% of BSA's ordinary shares. Thus, PTT's ownership interest in BSA is 100.00%.

2/ Other revenue includes gain (loss) on derivatives.

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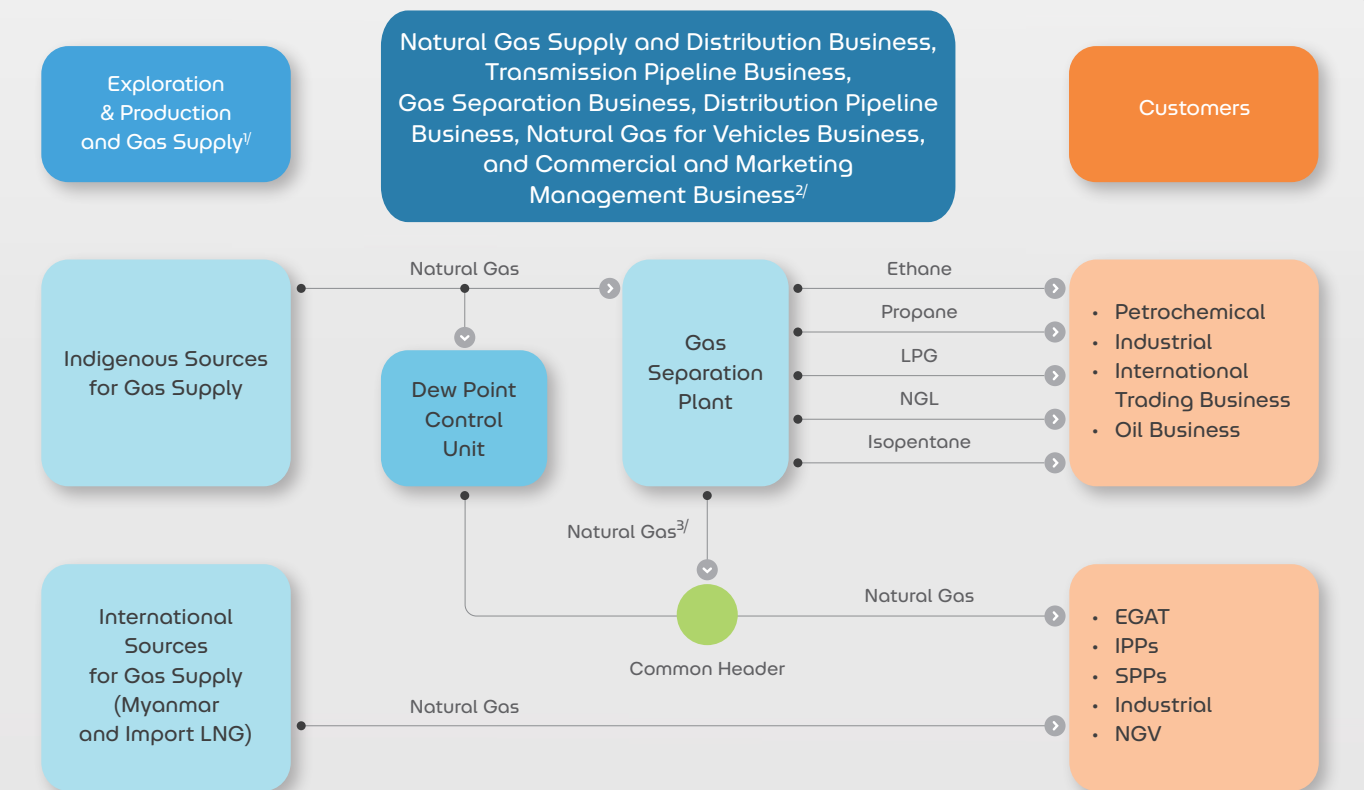
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1.2.2 Business/ Supply/ Distribution

Upstream Petroleum and Natural Gas Business Group

Currently, PTT and PTT's affiliates under the upstream petroleum and natural gas business are the only fully integrated natural gas operator in Thailand, which covers exploration and production, natural gas supply, Liquefied Natural Gas (LNG) import and regasification, pipeline transmission, gas separation, distribution, including investment in natural gas-related business in Thailand and internationally, and business development.

Diagram of PTT Group's Upstream & Gas Business Group



Remarks:

1/ PTT operates exploration and production through PTTEP. PTT procures natural gas from both indigenous and international sources together with import LNG.

2/ Operated by PTT.

3/ Refers to a portion of natural gas which is left after other products have been separated. It mainly consists of methane.

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PTT-Operated Upstream Business

Gas Business Unit

The Gas Business Unit engages in procurement, wholesaling, and retailing, distribution of products from gas separation plants (GSP), as well as investment in businesses that utilize and creates value for natural gas through PTT's affiliates. The gas procurement includes domestic sourcing and international sourcing from neighboring countries, including LNG import to ensure adequate supply for Thailand's ever-increasing demand. For distribution, it supplies power generators: Electricity Generating Authority of Thailand (EGAT), Independent Power Producer (IPP), and Small Power Producer (SPP). For industrial customers, distribution is through PTT-invested distribution pipeline. For transportation sector distribution is to incentivize natural gas as an alternative to gasoline and diesel via Natural Gas for Vehicles (NGV) service network. For gas separation business, PTT invested in gas separation plants to add value to Gulf of Thailand gas for outputs to feed Thailand's petrochemical industry in support of other sectors thereby contributing to national economic growth. LPG is also distributed as fuel to household, industrial, and transportation sectors.

The Gas Business Unit operates related businesses namely pipeline asset management, gas logistics through transmission pipeline consisting of offshore pipeline system connected to production platforms in the Gulf of Thailand, onshore eastern pipeline system that receives gas from the Gulf of Thailand, and LNG Receiving Terminal, together with onshore western pipeline system that receives gas from Yadana, Yetagun, and Zawtika in Myanmar along the Thailand-Myanmar border to feed natural gas to power producers, gas separation plant, NGV, and industries. PTT invests in LNG Receiving

Terminal through PTT LNG Co., Ltd. (PTTLNG) in which PTT holds 100% shares to cater to LNG vessels, storage, and regasification to accommodate LNG import. PTTLNG allows the external party to register intent to connect with LNG terminal from March 30, 2015.

The Energy Regulatory Commission (ERC) is the competent authority according to the Energy Business Act B.E. 2550 to determine natural gas tariffs, wholesale and retail. PTT divides natural gas business further into 5 sub-business units:

- (1) Natural Gas Supply and Trading Business: sources natural gas from Thailand and internationally including supply of LNG and regasification to be distributed to customers, with power producers as the major user.
- (2) Gas Separation Plant: operates and develops gas separation plant business. There are currently six units of gas separation plants.
- (3) Natural Gas Retail: responsible for distributing natural gas to industrial customers through distribution pipelines and off-pipe transportation, as well as offering comprehensive energy solution provider services.
- (4) Natural Gas for Vehicles (NGV) Business: responsible for the expansion of NGV service stations, coverage, and promoting gas as an alternative transport fuel because it is greener and cheaper than oil, less costly for consumers while mitigating air pollution which is intensifying.

In addition, Phase 2 of the state's gas liberalization policy to promote competition in the natural gas business results in emerging business competitors from existing clients, particularly when LNG price is low which incentivizes the entry of new shipper. The new shipper could seek promising opportunities for the LNG market expansion into the growing international market, especially in the Asia-Pacific. With these developments, PTT formed a fifth sub-business unit:

(5) Commercial and Marketing Management: in charge of commercial supply and distribution of LNG domestically and internationally, and of natural gas-related products and services.

In 2023, PTT's revenue from natural gas sales totals THB 555,885 million, decreased by THB 46,316 million or 7.7% from 2022 sales at THB 602,201 million (More details of PTT's revenue structure and subsidiaries per product specialization are outlined in 1.2.1)

Natural Gas Supply and Trading Business

Natural Gas Supply

PTT's gas supply is under the charge of the Natural Gas Supply and Distribution Business, with 52% mainly from sources in country and the rest from Myanmar and LNG import.

Currently, PTT is the buyer from gas producers governed by existing 15 contracts. Of the total, 12 are from sources in Thailand namely: Pailin, C5 & G4/48^{1/}, B8/32^{2/}, Arthit, G12/48^{3/}, MTJDA Block A-18, MTJDA Block B-17, G1/61, G2/61, Nam Phong, Sinphuhorm^{4/}, Sirikit (Lankrabue Area), and 3 contracts with producers outside Thailand namely: Yadana, Yetagun, and Zawtika^{5/} in Myanmar.

PTTEP Energy Development Co., Ltd. (PTTEP ED) (a subsidiary of PTT Exploration and Production Plc.) holds exploration and production rights in Block G1/61 (Erawan) and G2/61 (Bongkot), and it signed a Production Sharing Contract (PSC) with the public sector since February 2019 with a minimum contractual capacity of 800 MMSCFD and 700 MMSCFD, respectively. PTT and PTTEP ED have entered into the agreement on the natural gas purchase contract for Block G1/61 to replace the UNOCAL123 (Erawan) contract which expires in 2022. It is seeking negotiation for a contract for Block G2/61 to replace the Bongkot North and Bongkot South contracts which expire in 2022 - 2023.

PTTEP ED and PTT signed the Gas Sale Agreement on April 20, 2022, and in order to manage contractual transition risks which may impact the continuity of production, PTT has negotiated additional supply as a backup from the Gulf of Thailand, and LNG to ensure adequate supply to meet clients' demand, without affecting power generation and energy security.

In addition, PTT secured LNG supply to reinforce security and meet the ever-increasing demand. PTT has a total of 5 long-term LNG supply contracts. However, currently, PTT received LNG at a totaling of 5.2 million tons per year under 4 contracts: 2 million tons per year with Qatar Liquefied Gas Co., Ltd.; 1 million tons per year with Shell Eastern Trading (Pte) Ltd., and with BP Singapore Pte. Ltd.; and 1.2 million tons per year with Petronas LNG Ltd. Besides, another 1 million tons per year contract with PTTGL will be started receiving gas in 2026.

Remarks:

1/ Contract/ Concession expires in 2035.

2/ Consisting of Benjamas, Benjamas North, Maliwan, Chamchuree, North Chamchuree, Chabaa, Lanta. From October 1, 2019, volume averages 45 MMSCFD.

3/ The contract was signed on March 7, 2023 for the volume of 7 MMSCFD.

4/ Contract expiry date is November 28, 2021 and a new 10-year Sinphuhorm contract was signed on October 1, 2021 (October 1, 2021 - March 15, 2031).

5/ Contract was signed on July 30, 2010 for the volume of 240 MMSCFD with first delivery on August 5, 2014.



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As the current energy situation in Thailand where the demand for LNG has greatly increased. In order to provide a sufficient of LNG to meet demand at the appropriate price level, PTT will continuously seek opportunities to negotiate with LNG sellers to procure LNG both short-term and long-term to further strengthen the country's energy security.

In any case, a large chunk of PTT's gas supply originates from concessions/ production blocks in-country shown in the volume and proportion of PTT's gas supply 2021 - 2023 in the chart below.

Location/ Concession Block	2021		2022		2023	
	MMSCFD	%	MMSCFD	%	MMSCFD	%
Domestic						
- Pailin	395	8.9	399	9.5	396	8.9
- Bongkot (North/South)	827	18.7	663	15.9	123	2.8
- UNOCAL 1, 2, 3 (Erawan)	805	18.2	136	3.3	-	-
- B8/32	50	1.1	51	1.2	24	0.5
- G1/61	-	-	138	3.3	277	6.3
- G2/61	-	-	134	3.2	670	15.1
- C5&G4/48	-	-	4	0.1	4	0.1
- Arthit	234	5.3	288	6.9	319	7.2
- MTJDA	423	9.6	413	9.9	408	9.2
- Nam Phong/ Sinphuhorm	97	2.2	103	2.5	96	2.2
- Sirit	7	0.2	7	0.2	3	0.1
Total in Thailand	2,838	64.2	2,336	56.0	2,320	52.4
Overseas						
- Yadana	434	9.8	428	10.3	287	6.5
- Yetagun	16	0.4	27	0.6	32	0.7
- Zawtika	243	5.5	229	5.5	237	5.4
- LNG	889	20.1	1,153	27.6	1,552	35.0
Total overseas	1,582	35.8	1,837	44.0	2,108	47.6
Total	4,420	100.0	4,173	100.0	4,428	100.0
Average gas buying price (THB/MMBTU)	226.2		391.2		332.3	

Remark:

Natural gas calculated at heat rate of 1,000 BTU per cubic foot.

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Key Terms in Gas Supply Contract

Gas supply contracts between PTT and Seller typically cover a duration of 25 - 30 years. The contract parties agree to trade natural gas at agreed delivery points, for example at a wellhead platform or other agreed location at quality, quantity, and pressure as specified in the contract.

The Seller is duty-bound to prepare Contractual Delivery Capacity (CDC) for PTT to dispatch in the range of 105 - 125% of Daily Contract Quantity (DCQ) depending on the contract, whereas PTT must take the daily minimum quantity. PTT also has the right to buy more than the CDC contracted volume provided if the Seller is ready to deliver.

However, if in any contractual year, PTT is unable to take the Annual Contracted Quantity (ACQ), the Take-or-Pay obligation is applied with the right to receive the paid commodity rolled over to subsequent years in the contract without a deadline and additional cost (make-up gas). In the year when PTT wishes to exercise the right to take the make-up gas volume, this can be executed only after PTT completes its CDC obligation of the year. In reverse, should PTT buy more than CDC in any contract year, PTT can carry forward the surplus to be counted in the CDC portion in subsequent years not exceeding 15 - 20% depending on the contract. The right to exercise this is valid for 5 years from the starting year of Carry-Forward.

In the event of a shortfall where the seller is unable to deliver PTT dispatch in full, PTT shall pay for the actual quantity received, and be entitled to a 15 - 25% discount for the shortfall amount in that month, or subsequent month or subsequent year depending on contracts. Upon the end of each contract year, PTT can use the shortfall to reduce the ACQ.

On pricing, the contract shall fix an Initial Base Price as constant, with the formula to determine the highest and lowest prices to protect the buyer and seller. The gas price formula incorporates the following considerations: High Sulfur Fuel Oil price in the Singapore market, Dubai price, exchange rate, and key economic indicators such as Thailand's wholesale price index, and U.S. oil and gas producers' index, among others. The time frame for pricing adjustment varies according to contracts ranging from every 12 months, 6 months, 3 months, or monthly. This pricing shall be passed through to clients in the power generation sector who are core customers that buy gas from PTT, according to the pricing formula in the NG contract, and hence relatively low risks of pricing volatility for PTT.

All gas supply contracts have a force majeure clause which can be invoked by either PTT or the seller as a reason for failing to meet the obligation. The clause covers acts of gods faced by the contracting party. Some contracts specify cases in which PTT cannot dispatch due to force majeure on parts of PTT clients. This can only be invoked by PTT on the single condition that PTT must decrease dispatch across the board among sellers involved proportionate to the amount decreased.

Gas supply contracts end in the event of one of the following:

- (1) Expiry date as stated in the contract
- (2) Expiry of concession (gas fields in Thailand)
- (3) The natural gas reserve on-site runs dry.

Natural Gas Trading

PTT markets most of its natural gas supply to power producers: EGAT, independent power producers, and small power producers, through the Natural Gas Transmission System.

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Volume of gas supply to different segments (inclusive of that used in PTT's gas separation plants) during 2021 - 2023 is shown in the table:

Customer	2021		2022		2023	
	MMSCFD	%	MMSCFD	%	MMSCFD	%
1. EGAT	700	15.8	688	16.4	793	17.9
2. IPPs	587	13.2	547	13.1	753	16.9
3. SPPs	1,331	30.0	1,218	29.1	1,197	26.9
4. Industry ^{1/}	910	20.5	957	22.8	922	20.7
5. Gas Separation Plant	909	20.5	780	18.6	783	17.6
Total	4,437	100.0	4,190	100.0	4,448	100.0

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Source: PTT

Remarks:

Natural Gas volume is calculated at a heat value of 1,000 BTU per 1 cubic foot and based on calendar days.

1/ Including natural gas sold to customers holding licenses of natural gas retail business through the distribution system for sale to the industrial sector and natural gas for vehicles sector (NGV).

Generally, natural gas pricing structure for the power producer segment consists of 2 components: gas cost and pipeline tariffs, elaborated herewith.

(1) Gas Cost

Gas cost is the sum of the average gas price that PTT buys from Seller and remuneration for supply and marketing.

The supply and marketing remuneration which covers expenses and risks in sourcing natural gas and marketing varies in rates depending on the type of clients. At present, supply and marketing remuneration for EGAT and IPPs equals 1.75% of average gas price that PTT buys from Seller. The rate charged on EGAT and IPPs is capped at THB 2.1525 per MMBTU. For small power producers whose volume is lower than the first two groups, PTT charges 9.33% of the average gas cost that PTT buys from Seller at production fields. Nonetheless, the rate charged to SPP must not exceed THB 11.4759 per MMBTU.

On August 4, 2021, the National Energy Policy Council (NEPC) approved the natural gas pricing structure to facilitate the second phase of natural gas liberalization alongside a timeframe to enforce the structure. As a result, natural gas liberalization is now in the second phase, when operators are competing to supply LNG. Currently, the Energy Regulatory Commission (ERC) granted LNG Shipper Licenses to a total of 8 recipients: PTT, EGAT, Gulf LNG Co., Ltd., B.Grimm LNG Co., Ltd., Hin Kong Power Holding Co., Ltd., EGCO Plc., PTTGL, and SCG Chemicals Co., Ltd. (SCG Chemical).

(2) Pipeline Tariffs

Pipeline tariffs consist of 2 components. The first part is the fixed cost (Demand Charge: Td) with a 5-year regulatory cycle, calculated from the net value (NPV) of the Allowed Revenue of the licensee. Permission should be received (Allowed Revenue) in the next regulatory cycle divided by the NPV of the Capacity Reserved in the next regulatory cycle. The Allowed Revenue will reflect the investment, expenses, and returns on investment in the form of a weighted average cost of capital (WACC) as approved by the ERC. The second part is the natural gas transportation service charge of the variable cost (Commodity Charge: Tc), calculated from the cost incurred in servicing the variable cost according to the amount of gas delivered through the natural gas pipeline system.

In 2023, the Demand Charge (Td) of the gas pipeline tariff for natural gas transportation via pipeline calculated according to the criteria for determining the natural gas tariff for licensees transporting natural gas by pipeline through the natural gas transmission system B.E. 2564 has remained the same for the 2022 - 2026 regulatory cycle. As for the Commodity Charge (Tc), PTT has proposed 2023's pipeline tariff to the ERC for consideration as follows:

Demand Charge component of pipeline tariff structure is as follows:

Unit: THB/MMBTU

Zone	Pipeline	Demand Charge
1	Offshore pipeline at Rayong province	12.8869 ^{1/}
2	Offshore pipeline at Khanom	2.1135
3	Onshore pipeline	11.6894
4	Onshore pipeline at Chana	1.0061
5	Onshore pipeline at Nam Phong	0.2693

Remark:

1/ Offshore system includes TTM.

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Commodity Charge

Unit: THB/MMBTU

Zone	Pipeline	Commodity Charge (August 1, 2022 - September 30, 2023)	Commodity Charge (From October 1, 2023 onwards or until the tariff adjustment is approved by the ERC)
1	Offshore pipeline at Rayong province	0.1903 ^{1/}	0.2207 ^{1/}
2	Offshore pipeline at Khanom	0.0002	0.0248
3	Onshore pipeline	1.3954	1.9304
4	Onshore pipeline at Chana	0.0900	0.0806
5	Onshore pipeline at Nam Phong	0.0000	0.0000

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Remark:

1/ Offshore system includes TTM.

The Demand Charge is subject to periodic adjustment, through review of constant costs over a cycle of 5 years or ERC-approved timing, or in the event of factors affecting significant change in tariff to main the approved EIRR. The Commodity Charge component is reviewed annually by defining indexes to adjust variable costs to reflect current circumstances and operational efficiency.

Gas Separation Business

Besides the selling of natural gas direct to customers, PTT feeds parts of supply to its gas separation plants to add value and optimize the feed through extraction of key hydrocarbon components. Products from PTT gas separation plants include ethane, propane, liquefied petroleum gas (cooking gas), natural gasoline and isopentane. Another byproduct of the process is carbon dioxide that can be utilized in various industries. Products from gas separation plants and applications are listed in this chart.

Product	Application
Ethane	Raw material in the upstream petrochemical industry
Propane	Raw material in the upstream petrochemical industry
Liquefied Petroleum Gas (LPG)	Fuel for household, vehicle, industrial factories, and raw materials in upstream petrochemical industry
Natural Gasoline	Feed for oil refinery as gasoline and raw material in the upstream petrochemical industry
Isopentane	Raw material in upstream petrochemical industry

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PTT is currently the major GSP operator in Thailand, with 6 GSP units. All of PTT's gas separation plants have consistently been improved and optimized, with actual processing capacity totaling 2,870 MMSCFD, outperforming the nameplate capacity of 2,660 MMSCFD.

The production volume of GSP products from 2021 to 2023 is as follows:

Product (Ton)	2021	2022	2023
Ethane	2,181,596	1,752,406	1,786,925
Propane	1,017,933	963,476	965,193
Liquefied Petroleum Gas (LPG)	2,293,291	1,912,982	1,952,091
Natural Gasoline	489,937	385,284	387,183
Isopentane	43,055	48,800	50,961
Total	6,025,812	5,062,948	5,142,353

Source: PTT

Commercial and Marketing Management

In support of the government's natural gas liberalization policy and energy reform plan to make Thailand as the Regional LNG hub, in 2021 new sub-unit on Commercial and Marketing Management was established under PTT's Natural Gas Business. Commercial and Marketing is responsible for commercial natural gas products and services related to natural gas, selling and taking care of customers in the commercial natural gas market, gas product market and gas-related services. It also serves as the focal point for the Gas Business's international expansion, with the CLMV countries as its target market such as Cambodia, Laos, Myanmar, and Vietnam as well as China to in line with PTT's strategy expanding into growing overseas markets.

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The main product sales volume under Commercial and Marketing Management is divided into 2 main markets which are the Commercial Natural Gas Market and the Natural Gas Products Market. The Commercial Natural Gas Market is mainly distributed LNG via trucks. Natural gas products before 2021 were sold by PTT's gas separation plant business, and since 2021 the distribution of natural gas products is operated through Commercial and Marketing Management Business. The sales volume of each product in 2021 - 2023 is as follows:

Product (Ton)	2021	2022	2023
Ethane	2,181,272	1,752,287	1,786,823
Propane	953,395	1,139,216	1,028,237
Liquefied petroleum gas (LPG)	3,113,277	3,301,907	3,288,262
Natural Gasoline	617,011	504,133	500,264
Isopentane	43,057	48,803	50,965
Total	6,908,012	6,746,346	6,654,551

Source: PTT

The major customers can be divided into 2 main groups, consisting of: (1) the petrochemical group, including GC, HMC Polymers Co., Ltd. (HMC), Rayong Olefins Co., Ltd. (ROC) and (2) oil operator group according to Section 7 of the Fuel Oil Trade Act B.E. 2543 The important Section 7 operators namely PTT Oil and Retail Business Plc. (OR), Siam Gas and Petrochemicals Plc., and Unique Gas and Petrochemicals Plc.

Pricing of products from gas separation plants to petrochemical clients complies with the formula mutually agreed upon with individual client, mainly benchmarked against petrochemical product prices in the global market. Natural gasoline price is benchmarked against naphtha price in the global market. For LPG sold domestically from August 2017, EPPO shall announce reference price for domestic retail price of LPG only. Criteria have been changed for imported LPG price from CP price announced monthly to benchmarking instead against LPG Cargo with Platts' Spot Cargo data (FOB Arab Gulf) bi-weekly average, to make LPG cost from all supply sources comparable and competitive in a liberalization environment. For gas separation plants, currently, the Committee of Energy Policy Administration resolved to collect the spread onto the Oil Fuel Fund in case LPG Cargo+X (import expense) is higher than LPG cost from gas separation plants and compensate in the event where LPG Cargo+X is lower than LPG cost from GSPs.

Since 2015 the public sector requested PTT's cooperation in assisting LPG users in the household sector (low-income households, vendors, small shops and food hawkers) to lessen the impact of LPG retail price adjustment. Effective from October 2017 PTT targeted help to only low-income citizens through the government's welfare card scheme. In 2023, PTT supported a total of THB 1,440,595.05.

Natural Gas Retail Business

In addition to selling most of natural gas to power producers, PTT supplies industrial customers, having invested in a distribution pipeline system connected from the main transmission pipeline system to industry customers for the purposes of production processes, cogeneration and commercial use, together with the contribution through trucking of CNG (Compressed Natural Gas) and LNG. PTT and retail clients shall enter a gas supply contract that specifies the quantity required and the agreed selling price structure, for a duration ranging from 6 months to 10 years. As of December 31, 2023, PTT is serving a total of 374 pipeline contracts and 10 CNG/LNG contracts.

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The pricing structure for industrial customers differs from that of power producers. For industry clients, the gas charge consists of 2 components: gas cost according to actual volume used per month, and management fees to ensure availability per their advance notification to PTT. Natural gas price for industrial customers is determined to be competitive with other alternatives such as fuel oil and LPG.

Natural Gas for Vehicles Business

In addition to distributing natural gas to power producers and industrial customers, to promote natural gas as an alternative transportation fuel, ease impacts on fluctuation in crude oil and refined oil prices, reduce environmental impact, and encourage the use of fuel produced domestically, PTT introduced NGV to the public bus fleet of Bangkok Metropolitan Mass Transit since 1993. Subsequently, the NGV market has been expanded to other types of vehicles. By the end of December 2023, a total of 266,642 vehicles use NGV as fuel according to the Department of Land Transport. NGV sales in 2023 averaged 3.3 million kilograms per day. The 310 NGV service stations consist of 18 mother stations, distributing and trucking to feed 183 daughter stations outside the pipeline route, and 109 conventional stations located along the pipeline route. A total of 123 stations serve Bangkok and surrounding areas while 169 stations are in the upcountry.

The NGV sale price structure consists of natural gas costs based on the actual cost price each month and operating expenses (within a radius of 50 kilometers) and transportation costs exceeding a radius of 50 kilometers as specified by the government. However, in 2023, PTT provided assistance through the NGV Giving Breath Project for taxi drivers in Bangkok and its vicinity, as well as additional measures to help public bus groups nationwide through benefit cards totaling THB 643 million, as well as NGV price assistance for general vehicle groups, totaling THB 4,810 million, resulting in a total assistance value ending in December 2023 of THB 5,453 million.

Transmission Pipeline Business Unit

The business unit operates service, operation, maintenance work for transmission pipeline, and carrying out legal work related to gas transmission pipeline. When the Seller delivers natural gas to PTT at delivery point, natural gas shall be transmitted to clients via the pipeline systems which are assets of PTT's Upstream Petroleum and Natural Gas Business Group. These assets consist of offshore transmission pipeline, connected to production fields in the Gulf of Thailand and the onshore pipeline system in the east coast receiving gas from Gulf of Thailand, and the LNG station onshore westward that receives gas from Yadana, Yetagun and Zawtika fields in Myanmar to be distributed to power producers, GSPs, NGV and industries. Within PTT's pipeline systems, other critical components include Dew Point Control Unit and Common Header for quality control and harmonization processes for gas from various sources to yield unified heat rate and quality across the system.

As of December 31, 2023, PTT's transmission pipeline runs a total length of 4,570 kilometers consisting of a 2,437-kilometers long onshore pipeline (inclusive of pipeline to supply independent power producers and to power plants but excluding distribution pipeline) and a 2,133-kilometers offshore pipeline.

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This table presents information on the Transmission Pipeline, only the crucial systems, as of December 31, 2023.

Transmission Pipeline System	Length (km)	Pipe size (inch)	COD Year	Details
Offshore Pipeline System				
Erawan - Rayong Gas Separation Plant (1 st principal pipeline)	415	34	1981	Pipeline from Erawan production platform in the Gulf of Thailand to Rayong Gas Separation Plant in Map Ta Phut, Rayong
Bongkot - Erawan (1 st principal pipeline)	171	32	1996	From Bongkot platform in the Gulf of Thailand, connected to Erawan platform
Erawan - Rayong Gas Separation Plant (parallel pipeline)	413	36	1996 - 1997	Parallel pipeline from Erawan platform to Rayong GSP in Map Ta Phut, Rayong
Erawan - Khanom Power Plant	161	24	1996	Pipeline from Erawan platform to Khanom Power Plant in Nakhon Si Thammarat
Arthit - Rayong Gas Separation Plant (3 rd pipeline)	610	42	2007	The third pipeline from Arthit platform to Rayong GSP in Map Ta Phut, Rayong
JDA - Arthit	95	42	2008	The third pipeline from JDA to Arthit
Chevron Platform Extension (Platong 2) - 3 rd offshore pipeline	48	28	2011	From Chevron Platform Extension (Platong 2) to 3 rd offshore pipeline
South Bongkot - 3 rd offshore pipeline	38	24	2012	Linking South Bongkot platform with the third offshore pipeline
Onshore Pipeline System				
Rayong Gas Separation Plant - Bang Pakong Power Plant (2 nd principal pipeline)	107	28	1981	From Rayong Gas Separation Plant in Map Ta Phut to Bang Pakong Power Plant in Chachoengsao
Bang Pakong Power Plant - South Bangkok Power Plant (1 st principal pipeline)	57	28	1981	From Bang Pakong Power Plant in Chachoengsao to South Bangkok Power Plant in Samut Prakan
Bang Phli - Saraburi (principal pipeline)	99	24	1981	This pipeline system runs from Bang Phli, Samut Prakan to the cement factory of Siam Cement Plc. in Tha Luang, Saraburi

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Transmission Pipeline System	Length (km)	Pipe size (inch)	COD Year	Details
Nam Phong - Nam Phong Power Plant	3	16	1990	From Nam Phong production platform to Nam Phong Power Plant in Khon Kaen
Rayong Gas Separation Plant - Bang Pakong Power Plant (parallel pipeline)	105	28	1996	Parallel pipeline system from Rayong GSP to Bang Pakong Power Plant in Chachoengsao
Bang Pakong - Wang Noi Power Plant (parallel pipeline)	101	36	1996	Parallel pipeline from the compressor station at Bang Pakong to Wang Noi Power Plant in Phra Nakhon Si Ayutthaya
Transmission Pipeline from Thai-Myanmar border to Ratchaburi Power Plant	238	42	1998	From the delivery point along Thai-Myanmar border at Ban-I-Tong in Kanchanaburi, this system pipes natural gas from Yadana and Yetagun to feed Ratchaburi Power Plant in Ratchaburi
Ratchaburi - Wang Noi	154	30	2000	This connects the transmission pipeline at the gas measuring station in Ratchaburi with the Bang Pakong - Wang Noi Power Plant segment (parallel pipeline) at Wang Noi gas measuring station.
Rayong Gas Separation Plant - Bang Pakong Power Plant (3 rd pipeline)	110	36	2006	The third pipeline from Rayong Gas Separation Plant to Bang Pakong Power Plant in Chachoengsao
Wang Noi Power Plant - Kaeng Khoi Power Plant	72	36	2006	Pipeline system from Wang Noi Power Plant in Phra Nakhon Si Ayutthaya to Kaeng Khoi Power Plant in Saraburi
Transmission pipeline from the pressure control station RA#6 - South Bangkok Power Plant	67	30	2007	Transmission pipeline from the pressure control station RA#6 - South Bangkok Power Plant in Samut Prakan
Offshore - Chana Power Plant	8	20	2007	Pipeline system off the coast of Chana district, Songkhla to Chana Power Plant in Songkhla
Transmission pipeline to North Bangkok Power Plant	7	24	2009	The pipeline system connects South Bangkok Power Plant with North Bangkok Power Plant in Nonthaburi

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Transmission Pipeline System	Length (km)	Pipe size (inch)	COD Year	Details
Onshore pipeline along the Thai - Myanmar border - BVW#1	0.59	28	2014	The project to accommodate supply from Zawtika in Myanmar to feed existing transmission pipelines operated by PTT at BVW#1 in Kanchanaburi
Rayong - Kaeng Khoi (4 th pipeline)	298	42	2015	Pipeline system from Rayong to Wang Noi - Kaeng Khoi Power Plant
Nakhon Sawan	192	28	2015	The pipeline from Wang Noi Power Plant in Phra Nakhon Si Ayutthaya to Nakhon Sawan
Nakhon Ratchasima	145	28	2018	The pipeline from Wang Noi - Kaeng Khoi pipeline system in Saraburi to Nakhon Ratchasima
5 th onshore pipeline (GDF4 - BV5.4)	72	42	2021	This system runs from Rayong to the gas compression station 5.4 in Chon Buri
Transmission system from the 6 th gas compression station Ratchaburi - Wang Noi to Ratchaburi province	119	30	2021	From gas compression station RA#6 in Nonthaburi to BVW#10 in Ratchaburi connecting the transmission pipeline network between the east and west
The 5 th onshore gas pipeline transmission project (BV5.6 - BP4)	57	36	2021	The pipeline runs from gas compression station 5.6 in Chon Buri to BP4 compression station in Chachoengsao
The 5 th onshore gas pipeline transmission project (BV5.4 - BV5.8)	74	42	2021	The section connects gas compression station 5.4 in Chon Buri with control station 5.8 in Chachoengsao
The 5 th onshore gas pipeline transmission project (GDF4 - TP5MX)	5	42	2021	The system from Rayong to Gas Quality Mixing Zone (TP5MX)
The 5 th onshore gas pipeline transmission project (GDF5 - TP5MX)	8	42	2022	The system from Rayong to Gas Quality Mixing Zone (TP5MX)

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Natural Gas Transmission Pipeline System and Gas Separation Plants

GAS TRANSPORTATION PIPELINE CAPACITY

- Natural Gas Field
- ⚡ Power Plant
- Gas Separation Plant Unit 1, 2, 3, 5, 6 in Rayong
- Gas Separation Plant Unit 4 in Nakhon Si Thammarat
- Block Valve/ Important Node in Pipeline Network
- LNG Receiving Terminal (T-1)
- LNG Receiving Terminal (T-2)
- Existing Pipeline
- - - - Future Pipeline
- Industrial Estate

Nameplate Capacity

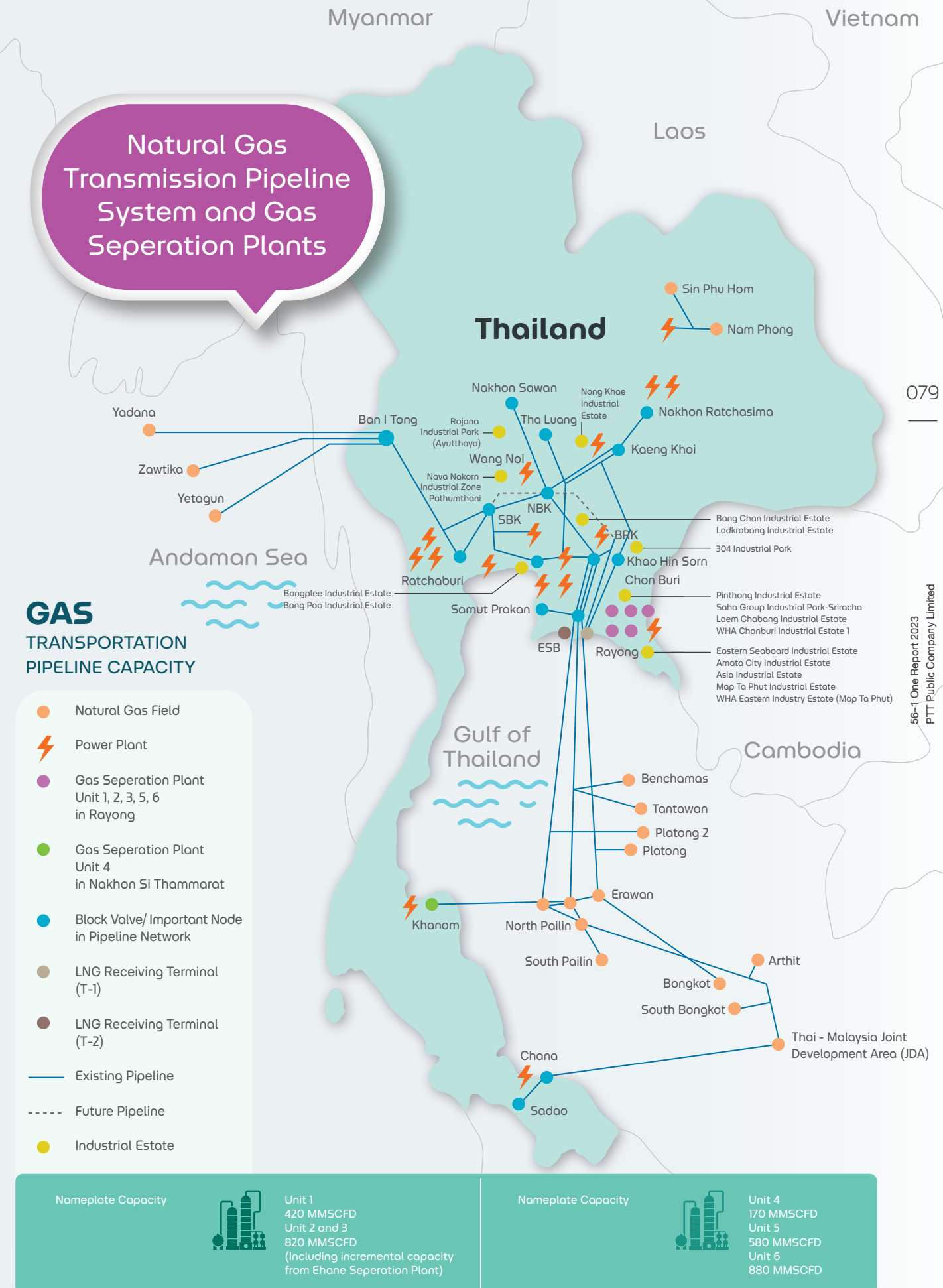


Unit 1
420 MMSCFD
Unit 2 and 3
820 MMSCFD
(Including incremental capacity from Ethane Separation Plant)

Nameplate Capacity



Unit 4
170 MMSCFD
Unit 5
580 MMSCFD
Unit 6
880 MMSCFD



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Upstream Business Invested through PTT Group

Gas-related Business

PTT operates natural gas-related businesses through its affiliates. For example, the LNG business operates LNG vessels, storage, and regasification to accommodate Thailand's LNG import. PTT is expanding investment and business into the gas value chain. The business scope to date includes the development and construction of distribution pipeline system, and gas transportation. PTT invests through PTT Natural Gas Distribution Co., Ltd. (PTTNGD), Trans Thai-Malaysia (Thailand) Co., Ltd. (TTM(T)), Trans Thai-Malaysia (Malaysia) Sdn. Bhd. (TTM(M)), PTT LNG Co., Ltd. (PTTLNG) and Map Ta Phut Air Products Co., Ltd. (MAP).

Petroleum Exploration and Production

080 PTT has conducted petroleum exploration and production businesses via PTT Exploration and Production Plc. (PTTEP), which is PTT Group's flagship company in exploration and production. PTTEP operates domestic and international petroleum E&P and invests in related businesses to prospect petroleum sources of crude oil and natural gas for the purposes of ensuring Thailand's energy security and selling petroleum outputs from domestic and regional projects, mostly natural gas, primarily to the domestic market. As of December 31, 2023, PTTEP had more than 50 petroleum exploration and production projects in 12 countries, both in Thailand and overseas.

Investment in Other Upstream Business

PTT has operated energy businesses overseas to find new energy sources and alternative energy to reinforce Thailand's energy security and upgrade its own existing businesses by leveraging the knowledge, expertise, and experiences of its human resources as well as collaborations within PTT Group to expand its investment outside Thailand. PTT invests through its subsidiaries, namely PTT Energy Resources Co., Ltd. (PTTER) and PTT Green Energy Pte. Ltd. (PTTGE).

More details on Business/ Supply/ Distribution by individual company within the Group in which PTT invests are available at investor.pttplc.com/en/downloads/supplementary-one-report



and on PTTEP at pttep.com/en/Investorrelations/Regulatorfilings/Annualfiling.aspx



Downstream Business Group

PTT's downstream business is divided into two business segments.

Downstream Business Group Structure





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PTT-Operated Downstream Business

International Trading Business

International Trading Business Unit engages in fully integrated international trading ranging from supply procurement, import, and export to international trading of assorted products, namely crude oil, condensate, liquefied natural gas, liquefied petroleum gas, refined product, petrochemical, solvent, and chemical, together with price risk management (hedging) services and international chartering services. Its core objective is to enhance energy security while adding value to Thailand's surplus products in parallel with trading platform expansion to all regions around the world and raising international trading competitiveness for PTT Group.

The business unit's performance hinges on its pursuit of growth opportunities in out-out trading activities. It therefore formed affiliates and representative offices in trading hubs around the world, including Singapore, Abu Dhabi (the United Arab Emirates), Shanghai (China), London (the United Kingdom), and Houston (the United States of America). As a result, the business unit engages trading transactions with various partners covering around the world. Since international trading transactions carry high value activities, the business unit has applied the risk control system employed by the world-class trading houses as its best practices. In addition, a committee is in place to set risk management policies, steer assorted risk management tasks, and clearly divide the work structure and roles in the system as Front-Mid-Back for checks and balances. Digital technology is also applied to develop systems for operation and transaction risk controls to enable quick, transparent transactions along with an efficient audit, and able to support the continuous growth of trade with greater volume and diversity.

Nature of Merchandise and Products

International Trading Business deals in 5 categories of Merchandise and Products:

1) Crude Oil

Crude oil represents assorted hydrocarbon compounds. Its quality varies with the types of organic substances where a given crude oil originates from, along with associated impurities. This is one of a constraint facing refineries. Thailand has several crude oil fields, but since the amount of crude oil extracted and used domestically accounts for only less than 20% of the total demand for domestic refineries, therefore, it is necessary for Thailand to import crude oil. From aboard. The crude suppliers are primarily from the Middle East, including Saudi Arabia, UAE, Qatar, and Oman, and the Far East, including Malaysia, Vietnam, Indonesia, and Australia along with other sources such as Africa and USA.

2) Condensate

Condensate is natural gas that is present as gaseous components in underground under high pressure but liquefies once brought up to the surface of the earth, and it is considered as a by-products of natural gas production. Over 60% of condensate used in Thailand is mainly from domestic gas production, with the rest imported. Refineries process condensate directly or blend with crude oil for refining. Products yielded will have the same property as those refined using light crude.

3) Liquefied Natural Gas

Liquefied natural gas (LNG) is natural gas that has been converted into liquid at atmospheric pressure by reducing the temperature to -160 degrees Celsius for the purpose of long-distance transportation by ship. The demand for LNG is currently increasing around the world in the energy transition era because natural gas is a low-carbon fuel compared to coal-fired power and other types of petroleum.

4) Refined Oil Product & Liquefied Petroleum Gas

Refined Oil Products & Liquefied Petroleum Gas are products obtained from the crude oil refining process or gas separation process, consisting of

- Refined oil products such as gasoline, kerosene, aviation fuel, gasoil, fuel oil, low sulfur waxy residue, etc.
- Liquefied Petroleum Gas (LPG)
- Natural Gasoline (NGL)

5) Petrochemical Products, Chemicals and Solvent

Petrochemical Products, Chemicals, and Solvent are products obtained from processing by heat, pressure, and chemical reaction with the main raw materials from oil or natural gas, consisting of

- Aromatics products such as Benzene, Toluene, Mixed Xylene, Paraxylene, Cyclohexane, Styrene Monomer, Cumene, Phenol, etc.
- Olefins products such as Ethylene, Propylene, Butadiene, C4 Raffinate, Butane, Mono-ethylene Glycol (MEG), Propylene Oxide (PO), etc.
- Feedstock & By-Product such as Naphtha, Pygas, etc.
- Chemicals such as Methyl Tert-butyl Ether (MTBE), Sulfuric Acid, Acetic Acid, Purified Terephthalic Acid (PTA), etc.
- Solvents such as Methanol, Acetone, etc.

Product Distribution of International Trading Business

PTT's international trading business is divided into 4 main aspects namely

- 1) Crude Oil and Condensate Business
- 2) Refined Oil Products & Liquefied Petroleum Gas
- 3) Liquefied Natural Gas
- 4) Petrochemical Products, Chemical and Solvent

1) Crude Oil and Condensate

The scope of operations includes international trading transactions, procurement, import, and export of crude oil and condensate from domestic and international sources to supply refineries in and outside Thailand, as well as seeking opportunities for the physical swap of crude oil and condensate for profit and balance of the system and ensuring that indigenous crude oil and condensate are consumed effectively.

1.1) Domestic Crude Oil

Due to resource scarcity in Thailand which is an importer, crude oil is precious and must be optimized. At present PTT procures domestically from various fields including Sirikit (Phet), Kampangsae and U-thong (BP), Sankajai, Buengyah and Buengmuang (North Central), Wichianburi and Srithep (Wichianburi), East Na-sa-noon (NSE), Arunotai, Pattani, Jasmine, Thantawan, Benjamas, Bualuang, Manohra. PTT buys parts of indigenous crude from concessionaires and sells this portion to domestic refineries.

1.2) International Crude Oil

PTT procures and transports crude oil from outside Thailand for domestic refineries together with providing hedging management services. PTT fully supplies crude and condensate according to the refinery's demand from GC, TOP, and IRPC, whereas supplies part of crude and condensate to Bangchak Corporation Plc. (BCP), and Star Petroleum Refining Plc. (SPRC). The procured volumes are dependent on the quality, prices, bidding, and trading terms offered by refineries.

PTT procures and imports feedstock to domestic refineries, accounting for over 80% of their throughput needs. PTT also serves as PTTEP's trading arm for the domestic and international crude oil trade.

Besides supplying imported crude oil for domestic refining, PTT also trades crude oil overseas for out-out trading, procured from producing countries worldwide, and supply to other countries. This could generate revenue and profits from overseas, as well as build a reputation for the country in the international trading platform. A comprehensive global trade network will contribute to energy security in the event of unrest affecting some oil-exporting countries.



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1.3) Condensate

PTT procures and transports condensate for domestic petrochemical plants and refineries, which GC, PTT Group's petrochemical flagship, serves as the foremost buyer for feedstock purposes. PTT purchases condensate from domestic concessionaires, operators of onshore gas fields namely Sinphuhorm and Gulf gas fields, namely Erawan, Pailin, Bongkot, and Arthit. However, during the shortage of domestic condensate, PTT will import from overseas sources, for instance, Australia, Indonesia, Philippines, and Malaysia, etc.

Volume of PTT's Crude Oil and Condensate Supply

	2021		2022		2023	
	Volume (Million barrels)	%	Volume (Million barrels)	%	Volume (Million barrels)	%
Domestic crude oil	26.3	7.9	23.4	6.2	22.1	5.3
Domestic condensate	26.8	8.0	22.8	6.0	23.2	5.5
Imported crude oil	175.2	52.3	230.9	61.0	247.4	58.9
Imported condensate	18.4	5.5	17.9	4.8	16.3	3.9
Internationally traded crude oil and condensate	88.3	26.3	83.4	22.0	111.0	26.4
Total	335.0	100.0	378.4	100.0	420.0	100.0

Source: PTT

2) Refined Oil Products & Liquefied Petroleum Gas

PTT procures, imports, exports and trades in refined oil product, semi-refined products and LPG for the purpose of energy security and balance under normal circumstances and emergency. It sells to PTT Group and other corporate buyers, both domestically and internationally. PTT also seeks trading opportunities in the world market to generate income for the national economy and fostering energy-security network worldwide. These endeavors have established PTT's reputation in the world arena. PTT imported LPG and basic gasoline for production of gasohol to meet domestic demands, and then exported natural gasoline, which is by-product of gas separation plants, as well as surplus fuels from refineries. Currently, PTT is well-positioned to export refined oil product to all parts of the world, with trading price in line with market mechanism.

3) Liquefied Natural Gas

PTT by International Trading Business Unit imports LNG from the Spot market and short-term purchase contracts for Commercial and Marketing Management Business under the gas business unit and those with Shipper License to create energy security for the country. Along with expanding liquefied natural gas trade in the international market continuously in line with the growing demand for clean energy, International Trading Business seeks opportunities for LNG Reloading Cargo to increase trade opportunities to other international markets.

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4) Petrochemical Products, Chemical and Solvent

PTT procures, imports, exports, and engages in out-out trading of both upstream and midstream aromatics and olefins petrochemical products, as well as chemicals and solvents, covering both raw materials, main products, and by-products from refineries and petrochemical plants. PTT is the main exporter of petrochemical products that exceed GC's demand in the aromatics sector, such as benzene (BZ) and paraxylene (PX). In addition, PTT also increases trade opportunities by participating in bidding for various products from other petrochemical plants both domestically and internationally to generate income and profit from international trade covering all regions of the world.

International Trading Support

PTT has the support for its international trading as follows:

- 1) Price risk management
- 2) International chartering

1) Price Risk Management

The Derivatives Trading Department is a support unit dealing with price risk management from trading transactions, refining, production, petroleum products, petrochemicals, and cargo vessels for PTT, including PTT Group by trading derivatives in the derivatives market to efficiently hedge against transaction risk and product price volatility risk. Digital systems are introduced to capture the timing of buying and selling derivatives contracts for efficient price risk management.

2) International Chartering

The International Chartering Department is a support unit for international trade by securing cargo vessels and managing time charter for import, export, and trading product of PTT and PTT Group as well as external agencies both in Thailand and overseas. In addition, it seeks opportunities to manage the cost of vessels from co-loading products to enhance our competitiveness and end-to-end business operation.

International Trading

As of December 31, 2023, PTT's international trading business reported sales revenue of THB 2,032,062 million.

Volume and Value of International Trading by Product

Product	2021		2022		2023	
	Value (THB million)	Volume (Million Liters)	Value (THB million)	Volume (Million Liters)	Value (THB million)	Volume (Million Liters)
International Trading						
- Crude oil and condensate	761,374	335	1,351,138	378	1,270,205	420
- Refined oil product and LNG	301,484	114	723,104	168	660,994	210
- Petrochemical product	83,420	24	97,973	22	99,395	78
- Other product	286	-	351	-	1,468	-
Total of International Trading	1,146,564	473	2,172,566	568	2,032,062	708

Source: PTT (inclusive of transactions through PTT Group)

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Downstream Business Invested through PTT Group Companies

International Trading Business

PTT invested in international trading business to undertake full-fledged international trading transactions through 3 companies which are PTT International Trading Pte. Ltd. (PTTT), PTT International Trading London Ltd. (PTTT LDN) and PTT International Trading USA Inc. (PTTT USA).

Details of business/ procurement/ distribution of each company in which PTT invests through its affiliates are available on the website investor.pttplc.com/en/downloads/supplementary-one-report



Flagship. OR conducts the business of distributing petroleum products, retails, and other services (Non-Oil), both domestic and overseas. Its business includes distribution of petroleum and other products in retail and commercial markets, coffee business, food and beverages, convenience stores, and space management. PTT TANK operates the business of receiving, storing, and transferring of products to PTT Group. PTT exercises direct and indirect governance of its affiliates through representatives that serve as directors and secondment.

PTT invested in the petrochemical and refining business, as well as the oil and retail business through shareholding in 5 companies in PTT Group as follows:

1. PTT Global Chemical Plc. (GC)
2. Thai Oil Plc. (TOP)
3. IRPC Plc. (IRPC)
4. PTT Oil and Retail Business Plc. (OR)
5. PTT Tank Terminal Co., Ltd. (PTT TANK)

Details of business/ procurement/ distribution of each company in which PTT invests through its affiliates are available on the website investor.pttplc.com/en/downloads/one-report



*including additional information of
GC: pttgcgroup.com/en/investor-relations/document/annual-filings
TOP: investor.thaioilgroup.com/form_561_one_report.html
IRPC: irpc.co.th/annualreport_post/annual-report/
OR: investor.pttor.com/en/document/annual-reports*



PTT Global Chemical Plc. (GC)



Thai Oil Plc. (TOP)



IRPC Plc. (IRPC)



PTT Oil and Retail Business Plc. (OR)

Petrochemical and Refining and Oil and Retail Business

PTT invests in refining business in 3 out of 6 existing refineries in Thailand, with a combined capacity of 770,000 barrels per day (BPD), accounting for 62% of the national refining capacity (as of December 31, 2023) and integrated petrochemical business covering upstream to downstream, from production to distribution of fuel oil, upstream, midstream and downstream petrochemicals both olefins and aromatics, which focus on value creation, including marine terminal and tank services. PTT procures crude oil and purchases fuels and petrochemical products partially from PTT Group to supply both domestic and international markets. Performance of oil, petrochemical, and refining businesses mainly depend on economic situation and spreads between crude and feedstock to petroleum and petrochemical products in the global market which fluctuate according to global demand and supply, as well as year-end inventories. For PTT Group, GC is the Petrochemical Flagship, TOP is the Refinery Flagship, IRPC is the Integrated Petrochemical and Refinery Flagship, and OR is the Oil and Retail Business

New Business and Infrastructure Group

New Business and Infrastructure Group was formed on October 1, 2021, as a result of organizational restructuring. The objective is to steer the operation of business units and subsidiaries in line with PTT Group's transition from legacy to new business in which Future Energy and Beyond will become PTT's core business in the future. This business group engages in engineering-related management, construction, real estate, logistics business development related to transport and infrastructure, research and development (R&D) of innovations for commercialization, as well as extending digital advancements and developing digital transformation to accommodate business growth.

New Business and Infrastructure Group operates as follows:

Structure of New Business and Infrastructure Group





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PTT-Operated New Business and Infrastructure

Innovation and New Business

This segment focuses on developing new businesses, exploring business opportunities in new technologies and innovations to accommodate megatrends and groom PTT for entering New Businesses which is in line with "Powering Life with Future Energy and Beyond" vision. These include new energy businesses by investing in renewable energy projects, battery related to the energy storage system business, EV value chain business, and Hydrogen business. Growth opportunities are explored in businesses other than energy, such as Life Science (includes Pharmaceuticals, Medical Devices, and Nutrition), AI, Robotics and Digitalization to provide energy management services, and digital platforms to support other business that are not currently in PTT's business value chain. Furthermore, this business unit shall regulate the investment in new business development and charting direction for the operation of companies within the Innovation and New Ventures.

Engineering and Infrastructure

This segment consists of engineering and project management in engineering and construction, such as construction of gas transmission pipeline and gas separation plant, assets management including land, building, and construction, etc. In addition, this segment shall implement projects that execute PTT's new business strategy, primarily logistics and infrastructure business that focuses on connecting domestic and international transportation networks, as well as executing the Eastern Economic Corridor of Innovation Project (EECi); exploring joint development possibilities in various Smart City projects and exploring business opportunities in logistics and infrastructures. All these are geared towards excellence in the real estate development business and integrated engineering services.

Innovation Institute

The Institute undertakes research and development (R&D) of products and innovations by focusing on strengthening technologies and evolving researcher's caliber to become

specialists in individual aspects. All these are aimed at cost-optimization, productivity maximization, and commercialization of R&D and innovations to yield business outcomes.

New Business and Infrastructure Operated through PTT Group

As of December 31, 2023, the following PTT Group companies are under the supervision of the New Business and Infrastructure Group:

1. Global Power Synergy Plc. (GPSC)
2. District Cooling System and Power Plant Co., Ltd. (DCAP)
3. Energy Complex Co., Ltd. (EnCo)
4. PTT Energy Solutions Co., Ltd. (PTTES)
5. PTT Digital Solutions Co., Ltd. (PTT DIGITAL)

Currently, the power business is a core business under the New Business and Infrastructure Group. PTT Group has engaged in the power business through GPSC, a Power Flagship company. GPSC conducts its business primarily in the production and distribution of electricity, steam, industrial water, and other public utilities, which operates by itself and by investing in other companies. As of year-end 2023, its total committed equity capacities were 9,315 megawatts (MW) of power generation (4,431 MW from conventional and 4,884 MW from renewable energy), 2,858 tons per hour of steam, 7,026 cubic meters per hour of industrial water, 15,400 refrigerated tons of chilled water, and 314 megawatts hour of energy storage unit.

Renewable Energy Business operates through GPSC, a flagship company in renewable energy business investment both domestically and internationally, to achieve the goal of 15,000 MW of power generation from renewable energy by 2030. As of the year-end 2023, GPSC's power generation capacity from renewable energy totaled 4,884 MW.

In addition, PTT Group has set the strategic direction by moving towards the energy business of the future and growing in new business beyond energy. In this regard, PTT has established new subsidiaries under the PTTGM group to execute these new businesses or New S-Curve businesses under the vision of "Powering Life with Future Energy and Beyond". The following new businesses have already started their commercialization, such as;

EV Value Chain Business: Arun Plus Co., Ltd. (ARUN PLUS) operates a fully integrated EV business recognizing significant environmental awareness and global change. While aiming to be a leader in developing and driving the EV ecosystem in ASEAN, ARUN PLUS has explored EV manufacturing opportunities in Thailand through business partnerships, providing EV air-conditioned bus services, distributing EV chargers, and expanding EV charging stations outside gas stations, etc. Investments through subsidiaries are as follows: Horizon Plus Co., Ltd. (HORIZON PLUS) is set up to operate EV manufacturing in Thailand targeted to start its commercialization in 2025 with an initial production capacity of approximately 50,000 vehicles per year. EVME PLUS Co., Ltd. (EVME PLUS) is the first and only fully integrated EV rental service provider in Thailand through the EVme application, such as EV rental services, information service on charging stations, and maintenance stations for EVs. Aionex Co., Ltd. (Aionex) operates the business of manufacturing 2-wheel EVs to sell and provide battery swapping services for 2-wheel EVs with projected commercial operation in 2024. Swap and Go Co., Ltd. (Swap and Go) provides an infrastructure platform and battery-swapping network for electric motorcycles without waiting for charging.

Energy Storage and System Related Business has established Nuovo Plus Co., Ltd. (NUOVO PLUS) to support investment in the battery value chain, accommodating the EV industry according to the country's automotive driving policy, including the Energy Storage System (ESS), a system that supports the storage of electric energy from renewable energy and investment in related businesses. NV Gotion Co., Ltd., in which NUOVO PLUS holds 51% shares and Gotion Singapore Pte. Ltd., holds 49% shares, designs, develops, inspects, manufactures, procures, and operates after-sales service for battery modules and battery packs with battery management system for all types of commercial vehicles, passenger cars, SUVs, two-wheelers and tricycles, as well as energy storage system. In addition, ARUN PLUS has completed the establishment of A C Energy Solution Company Limited (A C Energy Solution) by early 2024, collaboration with Contemporary Amperex Technology Co., Limited (CATL) to construct a Cell-To-Pack battery plant in Thailand to operate the Cell-To-Pack battery business, with targeted commercial operation by 2025.

Life Science Business: Innobic (Asia) Co., Ltd. (Innobic (Asia)) supports investment in Life Science business such as pharmaceuticals, food and nutrition, medical equipment and diagnosis, etc. The investment in this business will enhance PTT's capability in life science and create added value for the country. For example, Innobic (Asia) has purchased common stocks of Lotus Pharmaceutical Co., Ltd. (LOTUS), a listed company on the Taiwan Stock Exchange, whose core business is research and development (R&D), manufacturing, and distribution of generic drugs that cover various therapeutic areas, especially oncology, central nervous system, etc. In addition, Innobic Nutrition Co., Ltd. is established to operate the business of dietary supplements and medical food. The construction of a plant-based protein factory with a capacity of 3,000 tons per year, the largest in ASEAN, was completed in 2023.

AI, Robotics, and Digitalization Business: Alpha Com Co., Ltd. (Alpha Com) serves as an investment vehicle in new businesses for PTT and PTT Group, whereby new business concepts and models can be assessed before actual investments. PTT Raise Co., Ltd. (PTT RAISE) supplies and installs robotics and automation system for industrial customers. PTT and TGES Optec Co., Ltd. (OPTEC) operate One-stop Total Improving Efficiency Technology Solutions/ Services that deploy technology to enhance the efficiency of industrial equipment and machinery. Mekha V Co., Ltd. (Mekha V) which holds shares through NEWVERSAL Co., Ltd. (NewVersal) is a flagship to accommodate investment in AI & Robotics. T-Ecosys Co., Ltd. (T-ECOSYS) operates a digital platform business called "Industrial Digital Platform" (IDP) for driving industrial transformation in the Thai industry through connecting service providers with industrial users who want to access the robotics technology, automation, and digital technology services which is the basic ecosystem to support the growth of the industry sector.

Logistics & Infrastructure Business: Global Multimodal Logistics Co., Ltd. (GML) was established to connect all transportation networks of Thailand and also seamlessly connect the international transportation network. Its main services include freight services (by rail, sea, land, and air), cold chain management, property management and asset rental, and real estate related to the logistics business. This will help entrepreneurs increase their competitiveness as well as reduce their logistics costs.



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Details of business/ procurement/ distribution of each company in which PTT invests through affiliates are available on the website investor.pttplc.com/en/downloads/supplementary-one-report



and for GPSC on gpscgroup.com/en/investor-relations/downloads/one-reports



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1.2.3 Marketing and Competition

Exploration and Production Business

Marketing

PTTEP operates petroleum exploration and production business both domestically and internationally. The target markets are both domestic and overseas where the company invested. In 2023, the total sales ratio of domestic to overseas was 66% : 34%. PTTEP sells its outputs from domestic and ASEAN primarily to the Thai market through PTT, the major buyer and processor of all products. PTT then turns the processed products into the power sector, petrochemical sector, transportation sector, industry sector, and household sector.

Marketing of petroleum products varies with their characteristics and field location which results in differentiating the market and sales price structures as summarized herewith.

1) Natural gas

Due to capital-intensive investment in developing oil and gas exploration business, gas sales agreements (GSAs) must be agreed upon or signed between the buyer and seller before any major investment is made. GSAs are typically long-term contracts, ranging from 15 to 30 years. Prices, volumes, and points of sale are stipulated for each of the contracts. Gas prices are mostly linked to fuel oil prices or Dubai crude prices as well as several key economic indices and exchange rate to reflect the investment costs and be competitive compared with other fuels along the GSA period.

2) Condensate and Crude Oil

Condensate and crude oil prices are determined by their properties and benchmarked with condensate prices and crude oil prices of Regional Benchmark Price. Contracts are either short-term or long-term, and some are sold in spot markets.

Other Businesses

PTT Treasury Center Co., Ltd. (PTT TCC) serves as a treasury center for PTT and PTT Group companies by securing Thai baht and foreign currency over the long and short term to be lent to PTT and/or affiliates. This includes debt management, liquidity management, short-term and medium-term investment services, financial risk management, etc., taking into account the interests of PTT and PTT Group companies.

PTTGM acts as a holding company to support investment in PTT's businesses both domestically and internationally or operate new businesses according to PTT's vision and strategic direction.

Further information concerning business/ procurement/ distribution of companies in which PTT invests through its affiliates is available on the website investor.pttplc.com/en/downloads/supplementary-one-report



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3) Naphtha

PTTEP sells naphtha from its investment in the ADNOC Gas Processing Project (AGP), the largest gas processing complex located onshore of Abu Dhabi, UAE, which is sold by Abu Dhabi National Oil Company (ADNOC) and represents as a Marketing Agent. The selling price followed the official selling price in the region and naphtha is sold under a short-term contract.

4) Liquefied Petroleum Gas

PTTEP sells LPG produced from S1 Project to PTT under a long-term contract with a price in line with the government's policy and announcements of the Joint Committee on Energy Policy Administration. In addition, LPG produced by ADNOC Gas Processing Project (AGP) is sold under a short-term contract in which the selling price refers to the official selling price in the region.

Competition

Thailand's E&P industry is oligopolistic due to high petroleum demand compared with production, resulting from the business' relatively high investment and advanced technology required. The GSAs, especially natural gas, are predominantly long-term contracts coupled with take-or-pay clauses to attract new investments to the market and reduce the risk of investors investing in this business.

Based on estimated data of 2023 production petroleum of PTTEP from domestic sources accounted for 72% of total domestic production

As of 2022-year-end, the total amount of the natural gas reserves in Thailand and the Malaysia-Thailand Joint Development Area (MTJDA) are as follows:

Reserves	Natural Gas (Billion Cubic Feet: bcf)	Crude Oil (Million Barrels: MMbbl)	Condensate (Million Barrels: MMbbl)
Proved Reserves	4,658.88	76.70	131.29
Probable Reserves	3,627.84	94.11	132.80
Possible Reserves	3,127.75	38.86	135.15

Source: Annual Report 2022 of Department of Mineral Fuels

In Thailand, there are many large operators in petroleum exploration and production such as PTT Exploration and Production Plc., Chevron Thailand Exploration and Production Co., Ltd., Chevron Offshore (Thailand) Co., Ltd., Hess (Thailand) Co., Ltd., Mitsui Oil Exploration Co., Ltd. In 2023, the average production volume of domestic natural gas was at 2,192 MMSCFD, stable from the previous year, and crude oil production was at 69,012 BPD, decreased by 12% from the previous year. Additionally, condensate production volume was at 60,668 BPD, which increased by 3% from the previous year.



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Thailand's Petroleum Production Volume 2013 - 2023

Year	Natural Gas (MMSCFD)	Crude Oil (BPD)	Condensate (BPD)
2013	4,045	149,482	91,159
2014	4,073	138,552	94,330
2015	3,852	152,387	95,629
2016	3,777	163,527	94,489
2017	3,620	141,248	98,572
2018	3,527	129,201	99,010
2019	3,623	125,889	102,332
2020	3,262	117,029	84,835
2021	3,204	97,620	79,549
2022	2,192	78,793	58,630
2023	2,192	69,012	60,668

Source: Website of the Energy Policy and Planning Office, Ministry of Energy (www.eppo.go.th)

Natural Gas Business

In Thailand, natural gas business is regulated by the Energy Regulatory Commission under the Energy Business Act B.E. 2550. In view of the government's policy to restructure the energy business, separating regulatory work from the energy business, and for the regulatory scope to cover the electricity and natural gas business for efficiency, prosperity, and adequate supply, the Energy Regulatory Commission was established. As an independent regulator, the scope of ERC authority includes the prevention of monopoly and protection of energy users and those affected by the energy business. The Energy Business Act B.E. 2550 was gazetted on December 10, 2007, effective from December 11, 2007 onwards.

PTT is the sole integrated operator of natural gas business in Thailand. Currently, PTT and affiliates engaging in the gas business adhered to the following marketing policies:

- Supply Strategy: This includes the procurement of natural gas and LNG to ensure energy security together with commercial competition accommodating the policy to promote competition in natural gas business.
- Operating Strategy: Maintaining operational excellence in meeting client's needs and lay the foundation for future growth.
- Marketing Strategy: Managing supply contracts with power producers to maintain market share while exploring new avenue to boost natural gas sales or LNG in Thailand and internationally.
- Portfolio Expansion: Pursuing investment opportunities in Thailand and beyond including Gas/ LNG Business and Non-Gas Business.

For the natural gas wholesale business, the ERC granted Shipper License to the following 8 companies:

1. PTT Plc.
2. EGAT
3. Gulf LNG Co., Ltd.
4. B.Grimm LNG Co., Ltd.
5. Hin Kong Power Holding Co., Ltd.
6. EGCO Plc.
7. PTT Global LNG Co., Ltd.
8. SCG Chemicals Co., Ltd.

In 2023, PTT has continued to supply most natural gas and LNG from both long-term contracts and the spot market into the pipeline transmission system for the country's energy security and energy cost management. Only EGAT imports LNG from the spot market for use in EGAT's power plants, as part of the implementation of the Third Party Access (TPA) policy, which allows third parties to access gas pipelines and LNG stations as well as promotes competition in the natural gas business under the framework established by the Ministry of Energy.

Regarding Distribution Pipeline System, PTT remains the lead player in investment and operation. Apart from PTT, there are other companies operating in distribution pipeline system including PTTNGD, which engaged in developing and constructing distribution systems to transport and distribute natural gas to customers in industrial zones around Bangkok and perimeter.

Current Natural Gas Demand

In 2023, natural gas supply averaged 4,430 MMSCFD (heat value of 1,000 BTU per cubic foot), 52% of which domestic and 48% international production. The volume of gas supply in 2023 increased by 257 MMSCFD or 6% from 2022. Overall supply and distribution of natural gas increased due to higher gas supply from gulf of Thailand.

PTT supplied natural gas in 2023 to the following clients:

• Electricity

Averaging 2,743 MMSCFD, accounting for 62% of overall sales volume, a 12% increase from 2022, an average of 2,453 MMSCFD. In this segment, supply to EGAT totaled 793 MMSCFD, along with 753 MMSCFD to independent power producers and 1,197 MMSCFD to small power producers.

• Industry

Averaging 786 MMSCFD, 18% of total sales, decreased by 4% from the 2022 sales volume of 817 MMSCFD.

• Transport

Natural gas sales in the transport sector in 2023 averaged 136 MMSCFD, 3% of total sales, which decreased by 3% from 2022 at 140 MMSCFD.

• Gas Separation Plant

The gas usage on the gas separation plant to add value to natural gas had a total volume of 783 MMSCFD, accounting for 17% of total sales volume, which increased by 0.4% from 2022 at 780 MMSCFD.



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Electricity Output by Fuel Type 2019 - 2023

Unit: Million Units

	2019	2020	2021	2022	2023
1. Hydropower	6,310	4,540	4,540	6,599	6,588
2. Natural gas	121,841	113,859	113,113	114,637	129,402
3. Fuel oil and diesel	1,125	722	716	1,731	888
4. Coal	35,825	36,823	36,065	35,523	30,433
5. Imported electricity	25,547	29,551	33,356	35,472	32,805
6. Renewable Energy	21,402	20,540	21,894	21,862	23,179
Total	212,050	206,035	209,684	215,824	223,295
Expansion rate (%)	3.7	(2.8)	1.8	2.9	3.5

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Source: www.eppo.go.th

Policy to Promote Competition in Natural Gas Business

The government has launched a policy to promote natural gas business competition throughout the system. The objective is to raise the efficiency of supplying and service providing, which enables consumers to get quality services at reasonable and fair prices. To this end, the government advocated a rise in the number of LNG supply and wholesale players and assigned the ERC to grant shipper licenses and issue the third party access regime (TPA regime) so that other shippers can use PTT's natural gas infrastructure. PTT Group complied with such policy and on March 30, 2015, announced its first onshore natural gas pipeline third party access code (the latest revision was announced on June 7, 2017). PTTLNG announced its first LNG terminal third party access code on March 30, 2015 (the latest revision was announced on August 1, 2021)

The Committee on Energy Policy Administration (CEPA) on August 30, 2019, endorsed experimental guidelines for EGAT's Spot LNG import of up to 200,000 tons in 2 vessels, each 65,000 tons. PTTLNG coordinated with EGAT in implementation of CEPA's resolution by receiving the first LNG shipment on December 28, 2019, and the second on April 21, 2020.

Following EGAT's trial in Phase 1, the Energy Ministry reviewed and drew up a framework and blueprint for Phase 2 and on April 1, 2021, the National Energy Policy Council (NEPC) approved the natural gas liberalization Phase 2 and assigned relevant agencies to work out the details. The Council assigned CEPA to deliberate and act according to the guideline. On August 4, 2021, NEPC approved the natural gas pricing structure to promote competition in Phase 2, along with the timeframe to enforce the pricing structure. This would increase to more natural gas operators for LNG supply. Currently, the ERC approved a total of 8 shipper licenses as mentioned.

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On its parts, PTT has been preparing for the imminent competition in natural gas business. It has plans, structure, and investment capital in place to act on the government's policy of making Thailand Regional LNG Hub for importing and exporting LNG to countries in the region, concurrently promoting the Thai economy as a regional energy hub.

In addition, the ERC on March 29, 2022 announced the criteria for calculating natural gas prices under the supervision of the ERC (Energy Pool Price: EPP), which are weighted average prices of fuel costs. These include PTT's pool gas, New Shipper's liquefied natural gas, diesel, fuel oil, liquefied petroleum gas, or other fuels as specified by the ERC to reflect the cost of energy management, which is the country's resource, to be fair to the people, conducive to competition and non-discrimination. PTT has supported and implemented the guidelines set by the ERC.

In addition, on February 13, 2023, the NEPC resolved to approve the review of guidelines to promote competition in natural gas business Phase 2, divided into 2 groups:

- (1) The Regulated Market: The group under the supervision of the ERC in terms of volume, quality, and price consists of EGAT's power generation users, IPPs, SPPs, and VSPPs, as well as industrial and NGV users who use natural gas from the country's pool gas.
- (2) The Partially Regulated Market: The group under the supervision of the ERC in terms of volume and quality consists of natural gas users who do not use natural gas from the country's pool gas.

All shippers in the Regulated Market shall sell natural gas and/or LNG supplied to the Pool Manager to be incorporated into the country's pool gas and purchase natural gas from the pool gas according to the volume supplied and input into the pool gas. PTT has been assigned to manage the country's pool gas (Pool Manager) by establishing a separate unit independent of PTT with ring-fenced implementation. The ERC is to consider the implementation to align with the format of competition promotion in the natural gas business Phase 2.

PTT has prepared for the upcoming competition in the natural gas business and has planned its structural readiness and investment in response to the government's policy to drive Thailand to be the Regional LNG to import and export LNG

to other countries in the region. At the same time, it will also promote the Thai economy as an energy hub in the region.

Natural Gas Demand Outlook

The Cabinet on October 20, 2020 endorsed NEPC's resolution of March 19, 2020 to approve Thailand's Power Development Plan B.E. 2561 - 2580, the first revision edition. (PDP 2018 Rev. 1) and Gas Plan 2018 as proposed by the Energy Ministry. The conceptual framework and objectives of Gas Plan 2018 envisage natural gas use in multiple economic sectors to reduce air pollution, accelerate exploration and production in-country, in Joint Development Areas and overlapping areas, develop and optimize natural gas infrastructure and promote sector competition.

On gas demand outlook, Gas Plan 2018 worked on assumptions of demand chiefly from power generation, according to PDP 2018 Rev. 1 which reduced output from coal and nuclear and increased natural gas share from 37% in 2079 (PDP 2015) to 53% in 2080 (PDP 2018 Rev. 1). Gas separation plants' demand (as feedstock for LPG and petrochemicals) is estimated on the back of Gulf of Thailand supply. Industry sector demand is based on GDP growth forecast 2018 - 2037 at 3.8% annual average and factoring in distribution pipeline network expansion while the transport sector is calculated on future numbers of NGV vehicles. These elements combined, overall Thailand gas demand is estimated in the range of 5,348 MMSCFD in 2037, annual average increase of 0.7% per year. (Power generation 67%, industry 21%, gas separation plants 11% and transport 1%). These estimates are revised upward of Gas Plan 2015 according to revision 2 assumptions forecasting 2036 demand at 5,062 MMSCFD, an increase of 0.1% per year.

On September 27, 2021, the EPA resolved to approve the long-term electricity demand forecast for the preparation of the Thailand's Power Development Plan B.E. 2565 - 2580 (PDP 2022) and acknowledged the draft PDP 2022 base case plan that takes into account the utilization of the existing infrastructure for maximum benefit. This is the initial case for the preparation of other case plans of the country and presented to the CEPA for consideration again. In this regard, it will consider the draft plan in the case that is most suitable for Thailand as a draft PDP 2022 plan for actual implementation.

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The PDP 2022 plan places importance on the following issues: (1) Security of the country's power system (Security), including power generation, transmission and area security (2) Cost of electricity is at an appropriate level (Economy) and (3) Environmental impact (Ecology) that must limit the amount of carbon dioxide emission in accordance with the goals of the national energy plan and the country's long-term greenhouse gas emissions target (LTS) according to the Carbon Neutrality and Net Zero Emissions policies that were signed at the COP26 meeting.

Trends in renewable and clean energy are increasing. PTT Group can increase channels to expand the market for natural gas and liquefied natural gas. PTT Group will promote the use of renewable and clean energy in parallel with the usage of natural gas.

International Trading Business

Marketing

Domestic markets feature main customers, including refineries with demand for crude oil and condensate through the supply of domestic producers and import from overseas producers, along with petrochemical plants needing feedstock from overseas producers, import of gasoline for gasohol production, import of LPG for the industrial, transport, and household sectors, LNG import for power and industries to cater to national demand for imports, which reflect on the role of strengthening national energy security. In 2023, the share of revenue from the domestic market is 55% (6% from domestic supply and 49% from import).

Outside Thailand, main clients include refineries, petrochemical plants, national oil companies, multinational energy companies, and international trading houses through transactions of commodities such as crude oil, condensate, LNG, LPG, refined oil,

petrochemicals, chemical and solvent, and export of refined oil products, petrochemicals, chemical and solvent the portion exceeding domestic demand to generate income and profits from oversea. In 2023, the share of revenue from the international market is 45.4% (45.0% from out-out trading and 0.40% from export).

To foster business growth and trading opportunities, one needs to engage in worldwide trading. One of the key strategies is to penetrate oil trading hubs through offices in various countries, including Singapore for Asia, China for China and nearby countries, UAE for the Middle East, UK for Europe and Africa, and in the U.S. for the Americas. This global presence enables PTT to closely monitor ongoing around the clock across time zones for demand-supply, effectively capturing arbitrage opportunity when imbalance arises. These offices also facilitate relationship between PTT and clients and partners and exploring value-added opportunities in those regions.

Competition

International trading has become more competitive as national oil companies in the Middle East and global energy companies holding various assets such as production wellheads, jetty, oil terminal, refinery and petrochemical plants ventured into Asset-backed Trading. Asset-backed trading is a form of trade in which major multinational trading companies expand investment into their assets to add value and competitiveness to the playing field. In addition, technology and digitalization enable fast and well-rounded access to pricing and trading data, where speed can make or break trading and profitability opportunities. In 2023, the volume of International Trading Business and PTT Group total trade volumes of 1.86 million barrels per day, up by 23% from 2022 with partners and clients numbering over 1,200 companies located in 70 countries worldwide.

Going forward, the industry and competition outlook remain intense. The world is still facing challenges despite the ease of the COVID-19 situation, world economic growth particularly the recovery of the Chinese and large economies is still gradually affected by the economic impact of global central banks' policy rate hikes to slow down inflation and geopolitical conflicts, thereby resulting in limited growth of global energy demand. The Net Zero Emissions policy of various countries has led to the use of more environmentally friendly clean energy. Therefore, the International Trading Business Unit has established an agency to be responsible for the trade in LNG, an important choice in the transition to clean energy in the future, as well as seeking new business opportunities, including entering the carbon credit trading market and sustainable aviation fuel (SAF) trading. This is in line with the industry's business trend in line with the Net Zero Emissions target.

Refining Business

Refining Industry

Marketing

Currently, Thailand has a total of 6 oil refineries with a combined refining capacity of 1,243,600 barrels per day (BPD) (including GC's condensate splitter capacity of 135,000 BPD). As of December 31, 2023, these refineries yielded 1,060,787 BPD (including LPG production from gas separation and petrochemical plants).

Unit: BPD

Product	2021	2022	2023
Gasoline	214,845	223,203	228,202
Diesel	476,859	481,972	489,332
Aviation fuel	36,221	71,447	92,256
Fuel oil	91,782	99,308	86,760
Kerosene	28,864	33,086	34,405
LPG	143,840	130,116	129,832
Total	992,411	1,039,132	1,060,787

Source: Department of Energy Business, Ministry of Energy

Competition

In 2023, Thailand's average daily demand for fuel products grew by 2.1% compared to 2022, with demand for diesel increasing by 1.5% and aviation fuel increasing by 29.1%. Demand for fuel oil declined 12.6% and LPG (including petrochemical feedstock) declined 0.2%. Demand for gasoline rose 2.2% and kerosene rose 4.0%. Overall oil demand was steadily rising. Foreign tourists were interested in visiting Thailand, and Thais were increasingly traveling across provinces, particularly during the year-end New Year celebration. In addition, the government launched measures to help with diesel prices by lowering the excise tax and funding the diesel price freeze with the oil fuel fund.

In 2023, refined product exports included gasoline, diesel, fuel oil, aviation fuel, kerosene, and LPG, with the export volume decreasing to 183,304 BPD (an increase of 15.0%), with a total export value of THB 19,199 million per month (a decrease of 4.7%).



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Petrochemical Business

Marketing

Thailand's overall petrochemical industry in 2022 slightly contracted compared to the previous year due to the slowdown in the domestic and global economies owing to the Russia-Ukraine conflict, thereby resulting in declining global energy supply. Meanwhile, energy prices, whether crude oil or natural gas, rose significantly, leading to higher inflation, while the increasing policy rate in many countries slowed down the economic growth. In addition, China enforced a zero-COVID-19 policy, which significantly impacted the manufacturing sector, transport sector, and domestic consumption. This led to a global supply chain disruption that has affected Thailand's petrochemical and plastic resin manufacturing sector, which primarily serves China as its major destination market. Besides, the commissioning of new petrochemical plants in the region resulted in increased supply and competition on the whole.

098 Thailand's Profile of Overall Production, Import, Export, and Consumption of Petrochemical Products

Unit: Thousand tons per year

Year	Supply		Consumption	
	Production	Import	Production	Import
2020	23,500	1,739	17,672	7,573
2021	25,130	1,703	18,182	8,203
2022	22,951	1,742	18,098	6,597

Source: Petroleum Institute of Thailand

Competition

Olefins

In 2022, production volume decreased from 2021, mainly due to factory maintenance shutdowns and weaker demand from end-product manufacturers cutting production capacity after facing a downturn in profits from rising raw material prices in the first quarter in the wake of the Russia-Ukraine war. This was in contrast to the product selling price that was pressured by the increasing supply in the market, while economic slowdown and rising inflation resulted in receding demand.

Aromatics

In 2022, production volume decreased from 2021 due to weaker demand from the economic slowdown, as well as higher raw material prices in line with crude oil and naphtha prices. As a result, production margins decreased. Exports also declined as overseas demand remained unrecovered. This is mainly due to China's policy of reducing imports and relying on domestic production and consumption, as well as the commissioning of new refineries in India.

Oil and Retail Business

Thailand has a total of 52 registered fuel traders in Article 7 (as of December 31, 2023). In 2023, domestic oil demand totaled 50,762 million liters with the largest share being diesel, followed by gasoline, LPG, aviation fuel, and fuel oil, respectively.

Oil sales in Thailand is a free market, with constant competition based on market forces in terms of price, product quality and service development, supply chain cost management, and new business model development to increase revenue. Thailand's oil consumption in 2023 increased compared to 2022 due to the economic recovery, increasing travel, resulting in rising energy demand.

Thailand's Fuel Consumption for 2021 - 2023

Unit: Million liters

Product	2021	2022	2023
LPG ^{1/}	6,246	6,705	6,743
Gasoline	10,762	11,180	11,559
Kerosene	6	5	4
Aviation fuel	1,775	3,337	5,006
Diesel	23,042	26,664	25,153
Fuel oil ^{2/}	1,897	1,992	1,832
Lube	458	468	465
Total	44,186	50,351	50,762

Source: Department of Energy Business, PTT Oil and Retail Business Plc. (OR)

Remarks:

1/ Excluding propane and butane

2/ Excluding fuel oil sold to the Electricity Generating Authority of Thailand

OR is a lead player in the domestic fuel market across most product categories. According to the Department of Energy Business, in 2023, OR's market share was 42.2% of the overall oil sales volume.

Oil Traders' Market Shares from 2021 - 2023

Unit: Percent

Company	2021	2022	2023
OR ^{1/}	42.21	43.22	42.17
Bangchak	10.39	11.15	11.96
Esso ^{2/}	11.29	10.53	9.95
Shell	7.50	7.13	6.72
Minor traders	28.61	27.97	29.20

Source: Department of Energy Business

Remarks: Excluding LPG used as petrochemical feedstock

1/ Including PTT's and OR's market shares

2/ Name changed to Bangchak Sriracha Plc. on November 15, 2023



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Oil Price Structure

Oil price structure consists of 2 components: refiners' wholesale price and retail price. The wholesale price at refinery gate incorporates refining costs, excise duty, municipal tax, contribution to Oil Fuel Fund, Energy Conservation Fund, and value-added tax (VAT). The retail price component consists of refiners' wholesale price, marketing margin and VAT.

Given Thailand's oil importer status mostly in crude oil and partially refined oil, and a free-market trade system, determination of oil price at refinery is benchmarked against global oil price on Import Parity principle, decided by the authority. Pricing is also subject to foreign exchange rates (value of Thai baht) which directly affects Import Parity cost calculation.

Regarding excise duty, municipality tax and VAT, contribution to the Oil Fuel Fund, and Energy Conservation Fund, the state determines tariffs which differ with each category of oils. Producers are responsible to paying tax and into funds at the rates fixed by the state.

With refined oil price in the world market moving in line with market conditions, and the government fixed different rates for different fuel categories resulted in continuous adjustments of retail oil prices. The table shows the oil price structure on December 28, 2023.

Oil Price Structure in Bangkok Metropolis as of December 28, 2023

Unit: THB/liter

	Gasoline 95	Gasohol 95 E10	Gasohol 91	Gasohol 95 E20	Gasohol 95 E85	Diesel B10
Ex-refinery price	20.6032	21.0470	20.6191	21.6818	27.6332	22.8788
Excise tax	5.5000	4.9500	4.9500	4.4000	0.8250	3.6700
Municipal tax	0.5500	0.4950	0.4950	0.4400	0.0825	0.3670
Oil Fuel Fund	9.3800	2.8000	1.4500	0.8100	0.1600	(0.9500)
Energy Conservation Promotion Fund	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500
Ex-refinery wholesale price	36.0832	29.3420	27.5641	27.3818	28.7507	26.0158
VAT	2.5258	2.0539	1.9295	1.9167	2.0125	1.8211
Ex-refinery wholesale price including VAT	38.6090	31.3959	29.4936	29.2985	30.7632	27.8369
Marketing margin	4.5150	3.8823	4.0060	3.8706	2.6419	1.9655
VAT	0.3160	0.2718	0.2804	0.2709	0.1849	0.1376
Retail price	43.44	35.55	33.78	33.44	33.59	29.94

Source: Energy Policy and Planning Office

Remarks:

- Refinery price, benchmarked against refined oil in the global market on the Import Parity principle
- Tax and fund contribution rates determined by the state

LPG Supply Industry

In 2023, Thailand's demand for LPG averaged 17.60 million kilogram per day, increase 0.6% from 2022. Transport sector consumed 2.27 million kilogram per day (increase 3.6%), industry sector consumed 2.00 million kilogram per day (decrease 1.6%), petrochemical sector consumed 7.60 million kilogram per day (increase 0.9%) and household sector consumed 5.74 million kilogram per day (decrease 0.05%).

LPG Price Structure

LPG price structure consists of two components:

- (1) Ex-refinery wholesale price, consisting of
 - Price at refinery
 - Excise duty, municipal tax, oil fund contribution, and VAT
- (2) Retail price, consisting of
 - Ex-refinery wholesale price
 - Marketing margin and VAT

LPG Price Structure as of December 28, 2023

	THB/kilogram
Ex-refinery price	25.7135
Excise tax	2.1700
Municipal tax	0.2170
Oil fund	(7.1826)
Ex-refinery wholesale price	20.9179
VAT	1.4643
Ex-refinery wholesale price including VAT	22.3822
Marketing margin	3.2566
VAT	0.2280
Retail price	25.8668

Source: Energy Policy and Planning Office

New Business and Infrastructure Group

Power Business

Industry Overview

At the end of November 2023, Thailand had an installed power generation capacity of 53,762 megawatts and an electric power consumption of 187,727 gigawatt-hours, an increase of 3.1% compared to the same period last year. The increase resulted from robust electricity demand from industrial and business sectors following the economic recovery. The overall peak demand for the electricity system in 2023 was 34,827 megawatts, 5.0% higher than in 2022. For the long term according to the National Energy Plan, the proportion of power generation from renewable energy is expected to increase to achieve Net Zero Emissions by 2065.

Competition

Amidst increasingly competitive market in the power sector, PTT Group's power company stands strong with the potential to compete with other players from its expertise and long experience in power generation and steam businesses, in combination with the security of grids linking outputs from various generation plants as well as coverage of large geographical area, customer care, guarantee of secure electricity and steam supply to clients throughout contractual duration and coupled with a sustainable growth policy with an emphasis on innovation development. Moreover, it can generate using a wide range of fuel types, resulting in lower cost compared to competitors, or proprietary utility that invested by individual customers in an industrial estate.



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Electric Vehicle (EV) and EV-related businesses

Industry Overview

Currently, Electric Vehicles (EVs) are emerging globally as a megatrend to address environmental challenges, to reduce fossil fuel dependence, presenting a New S-Curve opportunity. For Thailand in 2022, the government announced an EV investment promotion and support policy to encourage the use of EVs and develop Thailand as the regional EV production base. Thailand's National EV Policy Committee has announced an EV incentive guideline under a "30/30 Policy" which targets manufacturing Zero Emissions Vehicle (ZEV) by at least 30% of total car outputs by 2030 through the EV 3 support policy and continual support of EV 3.5 policy in 2024 - 2027, as well as reducing import duties and excise taxes on EVs, and supporting investment in the supply chain such as batteries and key parts. Thailand's National EV Policy Committee assigned sub-committees to study details and feasibility of incentives to be implemented in 3 phases:

Phase 1 (Immediate): 2021 - 2022

Launched pilot promotion for electric motorcycles and support EV infrastructure nationwide.

Phase 2: 2023 - 2025

Develop EV industry by set the production target of 225,000 units of passenger cars and pick-up trucks, 360,000 units of motorcycles, and 18,000 units of buses/ trucks by 2025 along with battery production to meet domestic demand, which is the first indicator to achieve the economies of scale production target.

Phase 3: 2026 - 2030

Drive plans and measures to achieve concrete results in line with the 30/30 policy for total target production of 725,000 passenger cars and pick-up trucks, 675,000 electric motorcycles, amounting to 30% share of total production in 2030 including battery production to meet domestic demand.

The Board of Investment (BOI) meeting on November 4, 2020 approved a new round of EV investment promotion after the application period for promotion has expired since 2018. The promotion covers all types of EVs, including cars, motorcycles, tricycles, buses, trucks, and electric-powered boats. In the past, only electric cars and electric buses were promoted. The benefits and conditions are as announced by the Office of the Board of Investment. Subsequently, on February 15, 2022, the Cabinet approved measures to promote EVs which contains both of tax measures and other non-tax measures to increase the competitiveness. These measures cause the price of EVs to drop and stimulate the demand of EVs in Thailand. To achieve the goal in 2030, the measures issued by the Cabinet meeting are divided into two main parts: tax-related measures and subsidy measures.

Competition

The trend of using EVs around the world tends to grow rapidly, such as in China, European countries, and the USA, which will inevitably affect the automotive industry in Thailand. The combustion engine industry must adapt to the EV industry. The development of the EV industry in Thailand has lagged behind many countries in terms of production, technology, sales, and infrastructure. On the other hand, it is an opportunity to create growth because Thailand has market readiness and has a production base in the region. However, consumers still have some concerns such as safety, after-sale service, charging service stations, and driving distance per charge cycle, which will affect the decision-making to use EVs and will also be a guideline for the adjustment of industry players in the future.

As for the competition in Thailand, there are many foreign EV manufacturers, especially China, have given importance to entering Thailand's market. Moreover, having a tax support policy for EVs imported from China, resulting in competition that will benefit consumers and the development of Thailand's EV ecosystem. However, the increasing in competition and transforming in automotive industry, causing players in the industry and related parties to quickly adjust themselves and their networks in response to the new era of the automotive industry, such as improving production efficiency to the level of economies of scale, adjusting product and service models, seeking for the target customers, developing new business models, and collaborating with other players both inside and outside the industry in order to be able to compete in the market.

1.2.4 Business Assets

PTT's core business assets consist of investment properties; property, plant, and equipment; right-of-use assets; goodwill; intangible assets; and exploration and evaluation assets. The net book values as of December 31, 2023 were as follows:

Unit: THB million

	Investment Properties	Land	Buildings & Building Improvements	Machinery & Equipment	Exploration and Production Properties	Other Assets	Construction in Progress	Right-of-use Assets	Goodwill	Other Intangible Assets	Exploration and Evaluation Assets	Total
Net value	11,234	60,601	148,705	655,700	428,934	7,580	239,689	116,099	183,731	130,312	94,331	2,076,916
Obligations	None	765	8,701	41,785	None	25	1,104	None	None	4	None	52,384

Besides the assets stated above, PTT's business assets include petroleum reserves, which are the core business assets of PTTEP, PTT's subsidiary. As of December 31, 2023, PTTEP and its subsidiaries have total Proved Reserves of 353 million barrels of crude oil, condensate, and LPG, as well as 6,620 billion cubic feet of natural gas, or equivalent to a total of 1,436 million barrels of crude oil equivalent. PTTEP's geologists and petroleum engineers audit and appraise these reserves every year to achieve standardized numbers.



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Proved Crude Oil, Condensate, and Natural Gas Reserves^{1/}

	Crude Oil and Condensate ^{2/}			Natural Gas			Crude Oil Equivalent		
	(Million Barrels)			(Billion Cubic Feet)			(Million Barrels of Crude Oil Equivalent)		
	Indigenous	Overseas	Total	Indigenous	Overseas	Total	Indigenous	Overseas	Total
Proved Reserves of PTT and Subsidiaries									
As of December 31, 2021 ^{3/}	115	242	357	3,004	2,969	5,973	605	745	1,350
1) Revision of previous estimates	13	6	19	173	208	381	41	33	74
2) Improved recovery	1	-	1	1	-	1	1	-	1
3) Additional development well drilling & new discoveries	32	9	41	859	171	1,030	174	37	211
4) Purchase/ sale of reserves	3	-	3	80	35	115	16	4	20
5) Production	(31)	(25)	(56)	(575)	(402)	(977)	(125)	(89)	(214)
Proved Reserves of PTT and Subsidiaries									
As of December 31, 2022 ^{3/}	133	232	365	3,542	2,981	6,523	712	730	1,442
1) Revision of previous estimates	32	1	33	618	(1)	617	123	1	124
2) Improved recovery	3	-	3	2	-	2	3	-	3
3) Additional development well drilling & new discoveries	10	3	13	273	278	551	55	46	101
4) Purchase/ sale of reserves	-	(1)	(1)	-	-	-	-	(1)	(1)
5) Production	(35)	(25)	(60)	(694)	(379)	(1,073)	(147)	(86)	(233)
Total Proved Reserves as of December 31, 2023^{3/}	143	210	353	3,741	2,879	6,620	746	690	1,436

Remarks:

1/ Proved reserves include PTTEP's net equity reserves and those of the countries that own oil and gas fields.

2/ Including NGL

3/ Including reserves under the APICO joint-venture project

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Long-Term Leases

PTT's major long-term property leases are the agreements for using Ratchaphatsadu land (royal land) subleased to the Ministry of Finance for PTT Plc.'s business under an agreement between the Ministry and PTT dated June 3, 2008. Properties which PTT segregated to the Ministry under the verdict of the Supreme Administrative Court are right-of-use land, pipelines, equipment, and tools which together form transmission pipeline systems. The assets under the agreement were booked as right-of-use of such Ratchaphatsadu land for 30 years (January 1, 2008 to December 31, 2037). After the period expiration, the Ministry pledges to allow PTT to use this segregated land for another 30 years. Regarding compensation payment for land use, the agreement calls for annual payment at the rate derived from revenue sharing of onshore gas transmission pipeline tariff of each calendar year. This tariff means the charge for the onshore transmission pipeline system (Area 3), which includes demand charge and commodity charge under the rule for setting natural gas prices and pipeline charges under the NEPC announcement No. 1 of 2001 or future amendments. The compensation is calculated by a sliding scale as detailed below.

Unit: THB million

Revenue	Compensation Rate (% of Revenue)		Annual Compensation
	Minimum	Increment	
0 - 3,600	5%		= Minimum Compensation 180
> 3,600 - 3,700	10%		> 180 - 190
> 3,700 - 3,900	15%		> 190 - 220
> 3,900 - 4,100	20%		> 220 - 260
> 4,100 - 4,300	25%		> 260 - 310
> 4,300 - 4,500	30%		> 310 - 370
> 4,500 - 5,000	36%		> 370 - 550
> 5,000			= Maximum Compensation 550

Investment Policy in Subsidiaries and Associates

PTT's investment policy, whether for new investments, expansion or capacity growth, share purchase or acquisition. PTT has taken many factors into consideration, namely, business growth trends, investment capable of adding value and economic viability, and enhanced competitiveness. PTT or its subsidiaries may carry out the investments, depending on each company's suitability and capability.

1.2.5 Outstanding of Undelivered Project

-None-

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1.2.6 Environmental Impacts

Environmental Impacts of Gas Separation Plants (GSPs)

Throughout the operations of the Gas Separation Plants (GSPs), PTT pays great attention to the impacts on the environment, safety and occupational health as well as the quality of life and health of people living nearby by continuously and strictly monitoring environmental quality following the relevant laws. Based on the environmental quality monitoring results of all GSPs since the start of operations, air quality, water quality and waste management from the processes are all well below regulatory limits, as well as complying with environmental impact prevention and mitigation measures with continuous monitoring. If the results of the environmental impact monitoring measures do not conform to the environmental impact assessment, PTT would develop an implementation plan to improve and comply with the established measures, including reporting information to relevant agencies within the guidelines and time frame specified by law. In addition, PTT improves the efficiency of processes as well as implementing energy conservation projects, for example, a waste heat recovery project at GSP Unit 5, power generation and cogeneration projects for the Ethane GSPs, and a waste gas recovery unit (Remaining Gas Recovery Unit: RGRU) for GSPs in Rayong province.

Moreover, PTT has determined to control air pollution consistently. In 2019, the construction was begun to install the Regenerative Thermal Oxidizer (RTO) and the SO₂ Scrubber at GSP Unit 5 and the expansion of the installation of Regenerative Thermal Oxidizer (RTO), a hydrogen sulfide removal unit for gas contaminated with residual acidic gas from gas separation, and SO₂ Scrubber to GSP Unit 6 and Ethane Separation Plant. PTT is also committed to controlling the quality of effluent to be more stable by installing additional Advanced Oxidation Process (AOP) units within the central wastewater treatment system.

In addition to compliance with laws, PTT's GSPs at Rayong province achieved Integrated Management Systems (IMS) Certification, Environmental Management Systems Certification (ISO 14001), Occupational Health and Safety Management System (ISO 45001) Certification, Quality

Management System (ISO 9001) Certification, Business Continuity Management System (ISO 22301) Certification and Energy Management System (ISO 50001) Certification. Khanom GSP has received the above management standard certifications as well.

Environmental Impacts of Gas Transmission Pipeline Operations

PTT has been developing the natural gas pipeline network since 1981. Originally, the natural gas pipeline system was not designated for environmental impact studies until the adoption of the National Environmental Quality Promotion and Preservation Act B.E. 2535 and the Ministry of Science, Technology, and Environment Announcement No. 3 in 1996 on determining the type and size of projects or businesses of government, state-owned or private sectors that require the preparation of the Environmental Impact Analysis Report, respectively. As a result, the Environmental Impact Assessment (EIA) of natural gas pipeline system projects must be studied and prepared. At the time, the network of natural gas pipeline system under PTT's operations consisted of natural gas pipeline projects under the Natural Gas Pipeline Master Plan Project, Natural Gas Pipeline Project to Industrial Customers, Power Plants, and Natural Gas for Vehicles (NGV) Service Stations. Environmental impacts in accordance with the requirements of the announcement have been studied since then. In addition, when additional environmental requirements are enacted. For example, the National Environmental Quality Promotion and Protection Act (No. 2) B.E. 2561, the Announcement of the Ministry of Natural Resources and Environment determining the project, business, or operation, which must prepare an environmental impact assessment report and criteria, procedures and conditions for the preparation of the Environmental Impact Assessment B.E. 2562, including additional announcements and the latest version of the Announcement of the Ministry of Natural Resources and Environment Subject determining the project, business or operation, which must prepare an environmental impact assessment report and criteria, methods and conditions for the preparation of the Environmental Impact Assessment (No. 7) B.E. 2566 and the Notification of the Ministry of Energy determining the Type and Size

of Natural Gas Transportation System by Pipeline and Procedure, Criteria Procedures and guidelines for Environmental Report (ER) B.E. 2556. PTT has studied and specified the types of projects that are deemed to be subject to a complete study of environmental impacts according to relevant requirements.

Therefore, before the construction preparation, construction and operation phases, all PTT natural gas pipeline projects must study and assess direct or indirect potential environmental impacts from project implementation to lead to the determination of preventive, corrective, and environmental impact monitoring measures, then compiling it as an EIA or ER and presented to the Office of Natural Resources and Environment Policy and Planning (ONEP) and related licensors such as the Department of Energy Business (DOEB), the Energy Regulatory Commission (ERC). After the EIA or ER is approved, PTT will direct, monitor, and present the results of compliance with the conditions specified in the report, including strict environmental measures both during the construction and after-construction phases. The project will deliver the project care to the natural gas transmission business throughout the period of gas transportation through the pipeline system. The results of EIA or ER compliance will be reported to the relevant licensors on a 6-month basis or according to the conditions specified by each agency. All PTT projects have fully implemented the measures proposed in the report until now.

1.2.7 Notable Research and Development (R&D) Works of PTT Innovation Institute

Process Technology and Applied Energy

The core business of PTT Group revolves around production process, from natural gas industry to petroleum refinery and petrochemicals. PTT Innovation Institute focuses on research and development to add value to product, increase process efficiency in terms of energy use, productivity, and enhance high-tech processes. To date, PTT Innovation Institute has played

an instrument role in the development and evaluation of catalyst and adsorbents for PTT Group of companies to substitute import and to enable performance evaluation for appropriate choice of catalyst and adsorbents. These result in cost cutting and value adding to Business Units to the tune of over THB 200 million per year.

In addition, the Institute works on simulation of processes to enhance energy efficiency or develop new technology corresponding with raw material and market trends. For example, the Microchannel Base reactor that is compact and efficient in transfer of intense energy and matters. It plays a part in evaluation of CO₂ Conversion to manage process and turn CO₂ into valuable product, demonstrating for Business Units in their investment consideration and potential new business of PTT in the future.

To assist PTT Group and external agencies with energy applications. PTT Innovation Institute has created a readiness for the Energy Application Lab to assess the impact of gas quality on industrial machinery, as well as provide training on gas engines to PTT's natural gas business customers to support the replacement of industrial fuel from diesel. LPG or fuel oil to natural gas, with future transition to liquefied natural gas.

Biotech and Materials Research

In support of PTT's sustainable business, PTT Innovation Institute pursues R&D in biotechnology, Microbial development and selection, polymer technology and products, materials, and chemicals to generate innovation and products for PTT Group and to support PTT's new business in Life Science.

In supporting PTT's new business, the Institute works on biomaterial for medical use such as bio-cellulose wound dresser, multi-purpose masks with dust filters and disinfection capability. In addition, it works in the polymer field, material and chemicals for PTT Group, ranging from petroleum plastic and bioplastic such as pellets to clean machinery. The Institute also successfully developed Coffee Chaff Compound, using coffee chaff which is waste from bean roasting process to mix with polymer and shape into products and furniture pieces to reduce waste generation and add value by producing environmentally friendly products.



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In addition, PTT Innovation Institute has also focused on the research and development of extracts, active ingredients from plants and herbs to be used in the food supplement industry and pharmaceuticals by using domestic raw materials that contain the desired active ingredients such as stevia, black galingale, etc.

Petroleum Product and Automobile Research

PTT Innovation Institute plays an active role in the development of oil and lubricant products for automobiles, industrial lubricants, and specialties, including by-products from petroleum and new products for factory machinery and equipment to accommodate overseas market expansion. This enables PTT Group to maintain its market share and leadership by responding to new needs of clients, and new international standards and to provide technical support to the state in matters relating to fuel, alternative fuel, lubricant, and automobiles, as a guideline for national energy formulation. In 2022, a premium gasohol formula was developed, and in 2023 a new fuel product formula was launched under the name XtraSave with nozzle cleaning feature and higher acceleration for Gasohol 95, E20, and diesel.

In addition, PTT Innovation Institute has laboratories to provide fuel-related technical services and lubricants for machinery and vehicles for PTT Group and external entities. This is to support research, solutions, analysis and test, and standard setting. The Institute offers consultancy and keeps a database of related research. There is a state-of-the-art Automotive Lab for testing and benchmark testing against international standards, testing, and evaluation of vehicle and engine performance, combustion, and pollution emissions from different fuel types. In 2023, the testing laboratory was certified by the Thai Industrial Standards Institute as an industrial product inspection unit according to Section 5 of the Industrial Standards Act B.E. 2511 in testing Euro 5 standard vehicles, which will be enacted in 2024. In addition, the Institute has expanded the testing laboratory capability to test batteries for EVs to support the expansion of the EV business in the future.

New Energy Technology Research

PTT Innovation Institute has developed innovations to support the growth of the EV value chain business and technology that will drive the energy business towards an electricity-consuming society in the future, including the use of energy produced from renewable energy sources for sustainability and reducing environmental impact, such as the EV Wall Charger and Charging Platform, with continuous development to support power and formats, more diverse applications including connecting to other network's charging devices. Currently, it has cooperated with Arun Plus Co., Ltd. (ARUN PLUS) to produce and distribute EV Wall Charger and manage the charging service network. Energy storage technology has been developed either in battery or hydrogen form. PTT Innovation Institution collaborates with Vidhyasirimedhi Institute (VISTEC) and Nuovo Plus Co., Ltd. (NUOVO PLUS) in developing battery cells using Core-Shell technology for higher storage capacity than those available in the market, and it is ready for commercialization and business development. The Institute has equipment and a lab to mold cells at bench scale and pilot scale. Furthermore, the Institute works on capacity-strengthening for technical due diligence tasks for investment in renewables namely wind, and solar, to expand the renewables portfolio of PTT Group in Thailand and internationally.

In addition, PTT has realized the importance of related businesses which necessary to build the foundation for the country. Therefore, a working group has been set up to drive business in both hydrogen and smart electronics.

Environment Technology Research

Beyond business perspective, PTT upholds environmental conservation. It has conducted R&D in environment management to mitigate and prevent impacts of PTT operations, to ensure sustainability in PTT Group's sustainable growth in line with the Net Zero goal of the organization and Thailand, generating Circular Economy. The Institute provides R&D services, development, and application of environmental technology and products to PTT Group and external parties.

PTT Innovation Institute conducts R&D on environmental quality assessment - air, water, soil and waste to PTT's businesses and PTT's office building to define approach, method and measures to resolve or mitigate non-compliance. Its R&D work covers preventive solutions, control, and elimination of pollution from PTT Group's business activities over short and long terms. These include factory-generated VOCs treatment system, prototype food waste digestion machine, prototype anti-PM2.5 and pathogen machine. The Institute has developed a climate simulation prototype using pollution databases to enable 3-dimensional inspection of pollution on the ground for PTT Group. It has conducted Life Cycle Analysis (LCA) of fuel and products by PTT Group to gather evidence for renewables with the least environmental impact. All these efforts are exerted to ensure efficiency of environmental rehabilitation process and mitigate business impact on the environment and community, aligned with corporate social responsibility and sustainability principles in PTT Group's business.

In addition, the Institute has also collaborated with PTT Group in feasibility studies and technology development of Carbon Capture & Sequestration and plans to implement it as a national pilot project in the Gulf of Thailand. the Institute has also studied and developed the T-VER Methodology for carbon credit certification of CCS and Future Energy projects to support PTT Group's Net Zero strategy.

Strategic Plan and Innovation Management

Research and innovation management plays an important part in shaping the direction, tracking performance, and steering PTT Innovation Institute's work towards outcomes efficiently. Managing research and innovation consists of strategic planning and innovation management, intellectual property management, Innovation and Collaboration Strategy, commercial technology work, knowledge management, and other support.

In planning and innovation, PTT has a process of project screening to prioritize and allocate resources properly, as well as collaboration on innovation with other units within PTT Group under the supervision of PTT Innovation Management Committee (PTT IMC) and PTT Group-wide integration through oversight of PTT Group Technology Committee (PTT GTC).

Furthermore, PTT Innovation Institute operates a unit on the commercialization of technology. The scope of its work includes economic feasibility assessment of research projects, developing a business model to commercialize research, and ensuring effective commercialization of research. PTT Innovation Institute has an intellectual property management unit in charge of IP Landscape & FTO study prior to research undertaking. The unit maintains IP data base, IP valuation as well as facilitates patent application in support of PTT Group's innovation.

To ensure the sustainability of PTT's innovation, the Institute operates a knowledge management unit that advances the capacity of researchers and staff to ensure that innovation generation is systematic and efficient. The unit handles general support including public dissemination of research outcomes and innovation, community relations work, procurement, and the overall administration of the Institute itself.

PTT Innovation Institute is certified ISO 14001 for its environmental management system, ISO 45001 by the Management System Certification Institute (Thailand) (MASCI), and TISI 17025 from the Thai Industrial Standards Institute (General Requirement for the Competence of Testing and Calibration Laboratories).



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1.3 Shareholding Structure of PTT Group

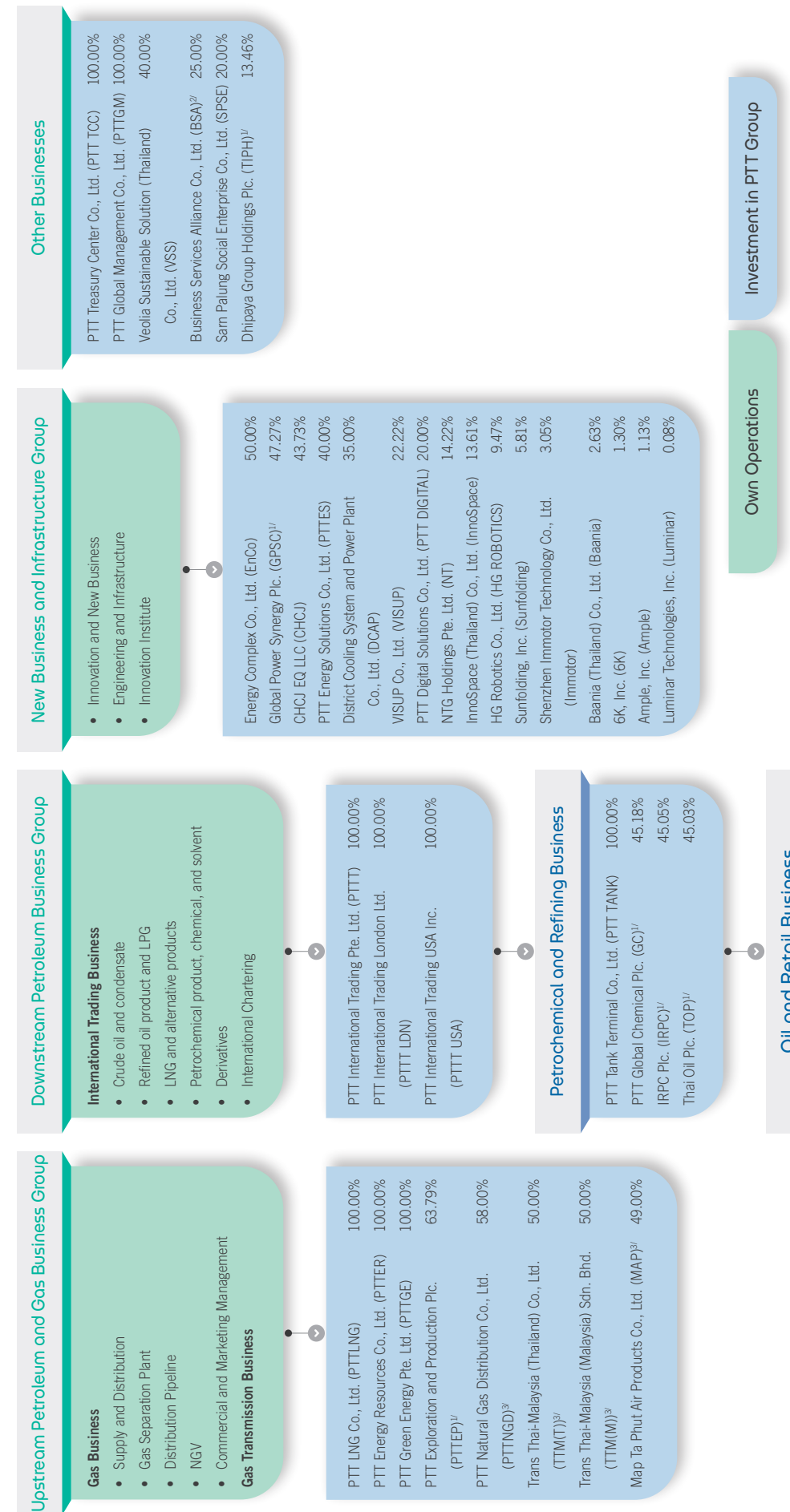
1.3.1 Shareholding Structure of PTT Group

PTT is a fully integrated national petroleum and petrochemical company with the mission to ensure national energy security, economic prosperity, and organization sustainability in parallel with socio-environmental stewardship.

Our operations cover the energy industry's entire business value chain from upstream to downstream activities with an emphasis on value added to its businesses as well as creating energy innovation. PTT has its own business operations and operates through subsidiaries. The following structure illustrates the integration of our operations.



Business Structure of PTT Group Companies



Remarks:
 Information as of December 31, 2023. (All figures are presented by PTT's portion.)
 1/ These 7 listed companies are registered in The Stock Exchange of Thailand.
 2/ BSA is a wholly owned subsidiary as PTT holds all common shares of BSA.
 3/ Shareholding in these subsidiaries is a joint investment in other businesses.
 Details are in Supplementary of 56-1 One Report for the year 2023.



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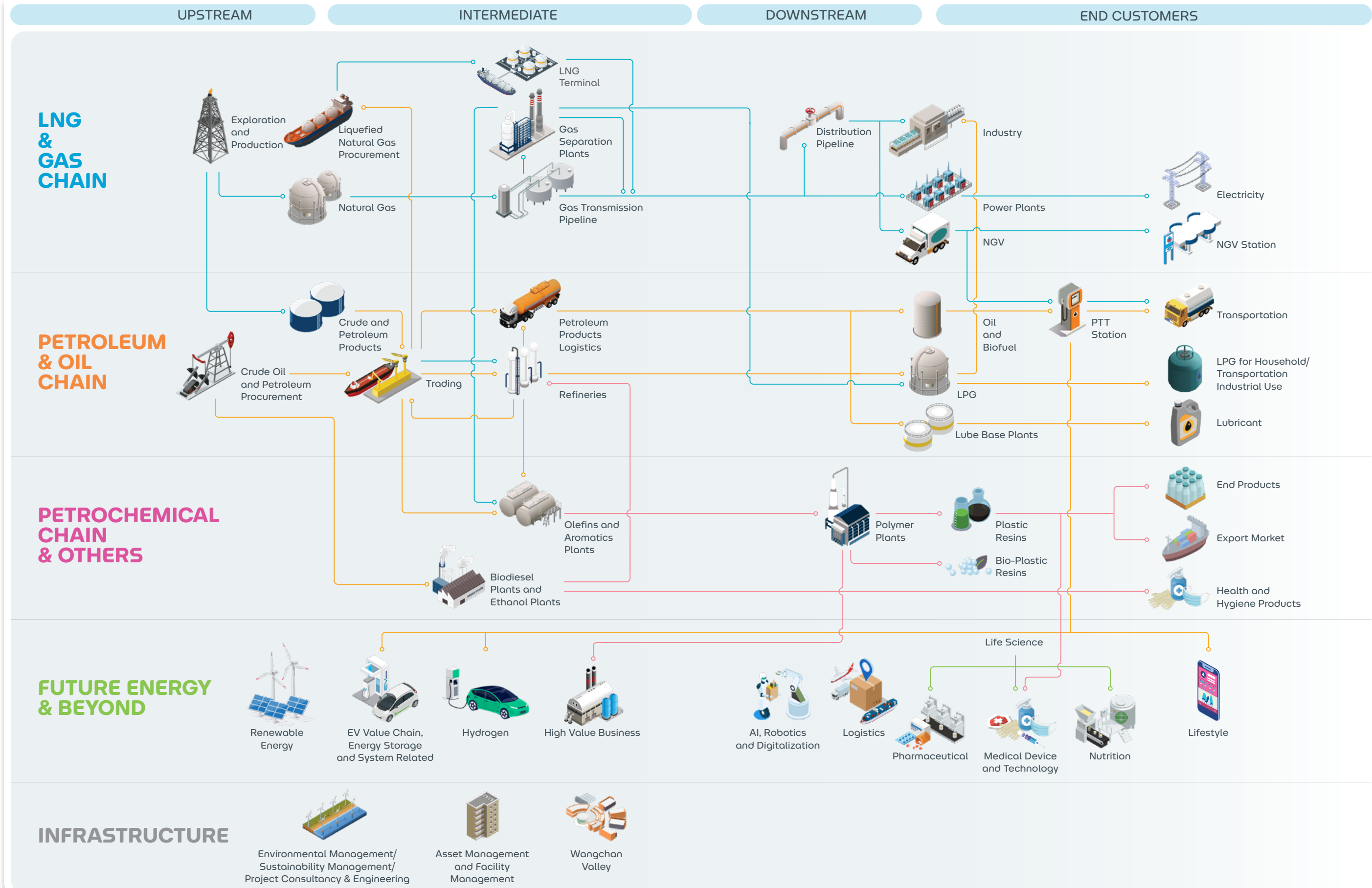
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Create Value through Business Chain





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1.3.2 Parties with Conflict of Interest

-None-

1.3.3 Relations with Major Shareholders' Business Group

PTT is a state enterprise, with the government through the Ministry of Finance as its major shareholder, under the supervision of the Ministry of Energy. Its business operations must also comply with the National Energy Policy Council Act B.E. 2535 (1992) with the supervision of the National Energy Policy Council (NEPC). As a state enterprise, the public sector can supervise its operations in compliance with national energy, economic, and social policies.

1.3.4 Shareholders

The following table illustrates PTT's shareholding structure as of October 5, 2023, the record date for the 2023 interim dividend payment.

Item	Shares (million)	THB million	%
Registered Capital	28,562.9	28,562.9	-
Paid-up capital (as of October 5, 2023)	28,562.9	28,562.9	100.000
• Ministry of Finance	14,598.9	14,598.9	51.111
• Vayupak Fund 1 by MFC Asset Management Plc.	1,736.9	1,736.9	6.081
• Vayupak Fund 1 by Krungthai Asset Management Plc.	1,736.9	1,736.9	6.081
• Institutions and public investors	10,490.2	10,490.2	36.727
Unpaid Capital	-	-	-

Top 10 shareholders (as of October 5, 2023) are as follows:

No.	Name	Shares	%
1.	Ministry of Finance	14,598,855,750	51.111
2.	Vayupak Fund 1 by MFC Asset Management Plc.	1,736,895,500	6.081
3.	Vayupak Fund 1 by Krungthai Asset Management Plc.	1,736,895,500	6.081
4.	Thai NVDR Co., Ltd.	1,176,890,806	4.120
5.	SOUTH EAST ASIA UK (TYPE C) NOMINEES LTD.	515,807,753	1.806
6.	Federation of Savings and Credit Cooperative of Thailand Ltd.	490,063,300	1.716
7.	Social Security Office	456,149,900	1.597
8.	STATE STREET EUROPE LTD.	365,440,285	1.279
9.	Electricity Generating Authority of Thailand Saving and Credit Cooperative Ltd.	349,476,100	1.224
10.	THE BANK OF NEW YORK MELLON	329,620,728	1.154
Total		21,756,095,622	76.169

Remarks:

- Shareholders of Thai NVDR Co., Ltd., who hold non-voting depository receipts (NVDR) in No. 4, are ineligible for voting at shareholders' meetings except when exercising their voting rights on delisting the shares from SET.
- Number 5 is a nominee account. PTT's investigation at Thailand Securities Depository Co., Ltd. (TSD) found that the ultimate shareholder's names could not be disclosed. However, the Ministry of Finance remained the sole majority shareholder on behalf of the State, which in part dictates PTT's management policy. The ministry nominated directors to the Board for approval by shareholders. Other substantial shareholders, including Number 5 exercise no influence over PTT's management policy formulation, including director nomination.



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1.4 Registered and Paid-up Capital

1.4.1 Common Shares

As of December 31, 2023, PTT's registered capital totaled THB 28,562,996,250, consisting of 28,562,996,250 common shares at THB 1 per share. These shares represented THB 28,562,996,250 in paid-up capital, or 28,562,996,250 common shares.

1.4.2 Other Shares with Different Terms or Rights from Common Shares

-None-

1.4.3 PTT's Shares or Convertible Securities as Underlying Securities for Issuing Mutual Funds for Foreign Investors

-None-

1.5 Issuance of Other Securities

1.5.1 Convertible Securities

-None-

1.5.2 Debt Securities

Bonds and Debentures

As of December 31, 2023, PTT had THB 143,354 million of Baht-denominated debentures and U.S. dollar denominated debentures issued by PTT and PTT Treasury Center Co., Ltd. (PTT TCC), which are guaranteed by PTT, equivalent to THB 53,933 million. The detail is summarized as follows:

Debentures	Amount (THB million)	Redemption Date	Guarantee
Domestic debentures ^{1/}	143,354	2024 - 2110	None
Foreign debentures ^{2/ 3/}	53,933	2035 - 2070	None
Total	197,287		

Remarks:

1/ Fitch Rating's national rating of PTT long-term debentures at "AAA (tha)."

2/ Moody's rating of PTT and PTT TCC foreign debentures at "Baa1."

3/ S&P's international rating of PTT and PTT TCC foreign debentures at "BBB+."

Unsecured, Unsubordinated Domestic Debentures

Symbol	Issuance Date	Maturity Date	Tenor	Amount (THB million)	Annual Coupon Rate (%)	Terms
PTTC243A	Mar. 6, 2009	Mar. 6, 2024	15 years	14,967 ^{1/}	Year 1 - 5, 5.00 Year 6 - 8, 6.20 Year 9 - 15, 6.80 (semi-annually)	• Debenture holders can redeem at the end of the 8 th year.
PTTC247A	Jul. 31, 2009	Jul. 31, 2024	15 years	9,387 ^{2/}	Year 1 - 5, 4.25 Year 6 - 10, 5.50 Year 11 - 15, 5.75 (semi-annually)	• Debenture holders can redeem at the end of the 10 th year.
PTTC248A	Aug. 6, 2021	Aug. 6, 2024	3 years	15,000	0.96 (semi-annually)	-
PTTC254A	Apr. 8, 2022	Apr. 8, 2025	3 years	8,000	1.79 (semi-annually)	-
PTTC255A	May 10, 2023	May 10, 2025	2 years	1,000	2.31 (semi-annually)	-
PTTC257A	Jul. 2, 2020	Jul. 2, 2025	5 years	3,000	2.05 (semi-annually)	-
PTTC268A	Aug. 6, 2021	Aug. 6, 2026	5 years	15,000	1.31 (semi-annually)	-
PTTC277A	Jul. 24, 2020	Jul. 24, 2027	7 years	13,000 ^{3/}	2.85 (semi-annually)	-
PTTC270A	Apr. 8, 2022	Oct. 8, 2027	5.5 years	3,000	2.45 (semi-annually)	-
PTTC288A	Aug. 6, 2021	Aug. 6, 2028	7 years	5,000 ^{4/}	1.79 (semi-annually)	-
PTTC295A	May 27, 2022	May 27, 2029	7 years	20,000	3.25 (semi-annually)	-
PTTC307A	Jul. 2, 2020	Jul. 2, 2030	10 years	2,000 ^{5/}	2.84 (semi-annually)	-
PTTC318A	Aug. 6, 2021	Aug. 6, 2031	10 years	8,000	2.37 (semi-annually)	-
PTTC344A	Apr. 8, 2022	Apr. 8, 2034	12 years	9,000	3.47 (semi-annually)	-



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Symbol	Issuance Date	Maturity Date	Tenor	Amount (THB million)	Annual Coupon Rate (%)	Terms
PTTC357A	Jul. 2, 2020	Jul. 2, 2035	15 years	6,000	3.20 (semi-annually)	-
PTTC457A	Jul. 2, 2020	Jul. 2, 2045	25 years	7,000	3.74 (semi-annually)	-
PTTC10DA	Dec. 2, 2010	Dec. 2, 2110	100 years	4,000 ^{6f}	5.90 (semi-annually)	<ul style="list-style-type: none"> Debtenture holders can redeem at the end of 50th and 75th years, and other cases as defined in the Indentures.
Total				143,354		

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Unsecured, Unsubordinated Foreign Debentures

Symbol	Issuance Date	Maturity Date	Tenor	Amount (THB million)	Annual Coupon Rate (%)	Terms
USD Bond 2005 ^{7f}	Aug. 3, 2005	Aug. 3, 2035	30 years	1,832 ^{10f}	5.875 (semi-annually)	<ul style="list-style-type: none"> Debtenture holders have right to exercise put option in the event that (i) the Thai Government, directly or indirectly, ceases to own and control at least 50% of PTT's issued and outstanding capital stock and (ii) within 180 days from the date of such decrease in ownership, PTT's Credit Rating is reduced below such Credit Rating immediately prior to the occurrence of such change of control as defined in debentures prospectus and related documents.

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Symbol	Issuance Date	Maturity Date	Tenor	Amount (THB million)	Annual Coupon Rate (%)	Terms
USD Bond 2012 ^{8f}	Oct. 25, 2012	Oct. 25, 2042	30 years	8,271 ^{11f}	4.50 (semi-annually)	<ul style="list-style-type: none"> Debtenture holders have right to exercise put option in the event that (i) the Thai Government, directly or indirectly, ceases to own and control at least 50% of PTT's issued and outstanding capital stock and (ii) within 180 days from the date of such decrease in ownership, PTT's Credit Rating is reduced below such Credit Rating immediately prior to the occurrence of such change of control as defined in debentures prospectus and related documents. PTT has right to exercise call option (Make-whole Redemption) as defined in debentures prospectus and related documents.

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USD Bond 2019 ^{7-9f}	Oct. 24, 2019	Aug. 3, 2035	15 years 9 months 10 days	8,424 ^{12-13f}	5.875 (semi-annually)	<ul style="list-style-type: none"> Debtenture holders have the right to exercise put option in the event that (i) the Thai Government, directly or indirectly, ceases to own and control at least 50% of PTT's issued and outstanding capital stock and (ii) within 180 days from the date of such decrease in ownership, PTT's Credit Ratings is reduced below such Credit Rating immediately prior to the occurrence of such change of control as defined in debentures prospectus and related documents.
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	Oct. 24, 2019	Oct. 25, 2042	23 years 1 day	11,335 ^{14f}	4.50 (semi-annually)	<ul style="list-style-type: none"> Debtenture holders have right to exercise put option in the event that (i) the Thai Government, directly or indirectly, ceases to own and control at least 50% of PTT's issued and outstanding capital stock and (ii) within 180 days from the date of such decrease in ownership, PTT's Credit Ratings is reduced below such Credit Rating immediately prior to the occurrence of such change of control as defined in debentures prospectus and related documents. PTT has right to exercise call option (Make-whole Redemption) as defined in debentures prospectus and related documents.
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Symbol	Issuance Date	Maturity Date	Tenor	Amount (THB million)	Annual Coupon Rate (%)	Terms
USD Bond 2020 ^{9/}	Jul. 16, 2020	Jul. 16, 2070	50 years	24,071	3.70 (semi-annually)	<ul style="list-style-type: none"> ● Debenture holders have right to exercise put option in the event that (i) the Thai Government, directly or indirectly, ceases to own and control at least 50% of PTT's issued and outstanding capital stock or PTT ceases to own and control, directly or indirectly, at least 99% of PTT TCC's issued and outstanding capital stock and (ii) within 180 days from the date of such decrease in ownership, PTT's Credit Ratings is reduced below such Credit Rating immediately prior to the occurrence of such change of control as defined in debentures prospectus and related documents. ● PTT has right to exercise call option (Make-whole Redemption) as defined in debentures prospectus and related documents.
Total				53,933		

Remarks:

- 1/ PTT engaged in an interest rate swap from Baht-denominated debentures worth THB 2 billion at a fixed rate to a Fallback Rate (THBFIX) + a fixed rate per year on the Baht-denominated principal. The swap will end on March 6, 2024.
- 2/ PTT engaged in an interest rate swap from Baht-denominated debentures worth THB 6 billion at a fixed rate to a floating rate based on a long-term USD reference rate. The swap will end on July 31, 2024.
- 3/ PTT engaged in an interest rate swap from Baht-denominated debentures worth THB 13 billion at a fixed rate to a floating rate of Compounded THOR + a fixed rate per year on the Baht-denominated principal. The swap will end on July 24, 2027.
- 4/ PTT engaged in an interest rate swap from Baht-denominated debentures worth THB 5 billion at a fixed rate to a floating rate of Compounded THOR + a fixed rate per year on the Baht-denominated principal. The swap will end on August 6, 2028.
- 5/ PTT engaged in an interest rate swap from Baht-denominated debentures worth THB 2 billion at a fixed rate to lower fixed rate. The swap will end on July 2, 2030.
- 6/ PTT engaged in an interest rate swap from Baht-denominated debentures worth THB 4 billion at a fixed rate to a floating rate of Compounded THOR + a fixed rate per year on the Baht-denominated principal. The swap will end on December 2, 2031.
- 7/ In 2019, PTT exercised liability management by repurchasing its USD bonds (USD Bond 2005) in the amount of USD 244.955 million, and PTT TCC reissued new USD bonds (USD Bond 2019), guaranteed by PTT in the same amount of USD 244.955 million. The current PTT's USD bonds 2005's outstanding is USD 53.297 million.
- 8/ In 2019, PTT exercised liability management by purchasing its USD bonds (USD Bond 2012) in the amount of USD 330.09 million, and PTT TCC reissued new bonds (USD Bond 2019) guaranteed by PTT. The current USD bond 2012's outstanding is USD 240.51 million. In 2023, PTT exercised liability management by purchasing PTT TCC's reissued debentures in the amount of USD 0.47 million. The current PTT's USD Bond 2019 outstanding is USD 329.62 million.
- 9/ PTT TCC issued the bonds guaranteed by PTT. The guarantee's maximum liability will be capped at an amount equal to 125% of the outstanding of PTT TCC's bond. The guarantee amount for USD Bond 2019 series maturity on August 3, 2035 and October 25, 2042 are USD 306 million and USD 412 million, respectively. Also, USD 875 million is the maximum guarantee for USD Bond 2020 with maturity on July 16, 2070.

- 10/ PTT engaged in a cross-currency swap from dollar-denominated debentures worth USD 53.297 million to Baht-denominated ones worth THB 1,749.21 million at a fixed rate to a lower fixed rate on the Baht-denominated principal. The swap will end on August 3, 2035.
- 11/ PTT engaged in an interest rate swap worth USD 240 million at a fixed rate to a floating rate based on the long-term USD reference rate. The swap will end on October 25, 2025.
- 12/ PTT entered into a cross-currency swap worth USD 144.955 million to Baht-denominated ones worth THB 4,486.50 million, with a fixed interest rate to a floating rate of Compounded THOR + a fixed rate per year on the Baht-denominated principal which will end on August 3, 2035.
- 13/ PTT entered into a cross-currency swap from dollar-denominated debentures worth USD 100 million to Baht-denominated ones worth THB 3,230 million from a fixed to a lower fixed rate on the Baht-denominated principal which will end on August 3, 2035.
- 14/ PTT engaged in an interest rate swap of USD 200 million from a fixed to a floating rate of Compounded SOFR + a fixed rate per year on USD principal and the long-term USD reference rate which will end on October 25, 2030.

Short-term Bills of Exchange

As of December 31, 2023, there was no outstanding of short-term bill of exchange.

1.6 Dividend Policy

PTT

PTT has a policy to pay dividend of not less than 25% of net income after deducting all provisional reserves required by law and PTT. While the net income is based on the consolidated financial statements, dividend payment is subject to future investment plans, necessities, and suitability. Once the Board has decided on the annual dividend payment, it must seek approval from the shareholders' meeting. An exception is for interim dividend payment, which the Board can approve and report to the next shareholders' meeting.

Subsidiaries

Each subsidiary may proceed with dividend payment by taking into account its remaining cash flow in comparison with the investment capital. If the cash flow is substantial enough after legal provisions, the subsidiary may consider proceeding with dividend payment on a case-by-case basis.

PTT Dividend Payment

	2021	2022	2023
Earnings per share (THB/share)	3.79	3.20	3.92
Dividend per share (THB/share)	2.00	2.00	2.00
Dividend payout ratio (%)	53	63	51



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2. Risk Management



Risk

2.1 Risk Management Policy and Plans

Risk Management

In recognition of the importance of risk management in the face of changes from both internal and external factors that may affect the business, PTT has adopted the International Standard Committee of Sponsoring Organizations of the Treadway Commission (COSO-ERM 2017) to continuously manage risks, a crucial part of all PTT's business processes that need to be thoroughly linked. PTT has integrated Governance, Risk, and Compliance (GRC) to support executives' decision-making and to add value or help safeguard the company against risk factors that it encounters on a systematic and efficient basis.

PTT currently has committees: the Corporate Governance and Sustainability Committee (CGSC) and the Governance Risk and Compliance Management Committee (GRCMC) to ensure effective governance, operational risk management, internal control, legal compliance, adherence to corporate regulations, sustainability management, and responsible engagement in social, community, and environmental operations, it is imperative to oversee the administration of ethical promotion, as well as the prevention and repression of misconduct and corruption within the operations of state enterprise agencies. This approach aims to foster efficiency, transparency, and a concrete operational framework for state enterprise agencies, aligning with the principles outlined in the National Strategy on Prevention and Combating Corruption in the Public Sector. The Corporate Plan and Risk Management Committee (CPRC) and the Enterprise

Risk Management Committee (ERMC) are responsible for overseeing corporate risk management. A quarterly report will be provided to update the relevant committees on the progress of the Governance, Risk, and Compliance (GRC) plan, allowing for the evaluation of its efficacy and efficiency.

Risk Management Structure

To guarantee that risk management plans are efficient, effective, and in line with business goals and strategies, PTT systematically controls risks through a variety of management committees and integrates risk management with the creation of corporate plans. Executives who oversee a certain function are in charge of operational risks. Each unit's job description outlines their responsibility for managing and controlling risks to acceptable levels.

Risk Management Tools

PTT implements corporate risk management policies that are binding on all employees. It also uses a range of risk management tools, including risk appetite assessment, risk map assessment and prioritization, mitigation plan and key risk indicator (KRI) monitoring, and Monte Carlo simulation technique to identify impacts on operating results in the form of Value at Risk (VaR). To establish proactive risk management measures before having an impact on PTT's business operations, PTT also keeps an eye on changes in important external factors and emerging risks.

Risk Management Culture

To consistently enhance the effectiveness of enterprise risk management, PTT fosters awareness, cultivates a risk management environment and culture throughout the organization, and emphasizes resource allocation by offering various GRC training courses and engaging in cultural activities. These activities include a monthly GRC Talk during the PTT Management Committee (PTTMC) meeting, the establishment of a regular agenda for line meetings, organization of a GRC Camp, and sharing senior executive interview clips as a Tone from The Top, both with executives

and staff. PTT also conducts an annual survey to gauge employee opinions and understanding. In 2023, PTT organized additional activities by running a GRC Knowledge Awareness Workshop, publishing GRC policy and knowledge. Additionally, channels for employees to access the risk management policy, enterprise risk management manual, and public relations materials have been expanded through the Risk Management Dashboard (RMD) system.

2.2 Risk Factors Facing PTT's Businesses

PTT identifies enterprise risk factors through an analysis of the Risk Universe, which covers both internal and external factors, the organization's key goals and strategies, the needs and expectations of stakeholders, and a variety of other factors, including economic, social, political, technological, industrial, and competitor trends. Enterprise risk factors are as follows:

2.2.1 Current and Emerging Risks Facing Businesses of PTT or PTT Group

Strategic Risks

Strategic Direction

Disruptive technology or innovation and global environmental awareness have led to the concept of energy transition from conventional to new clean energy, which has had a significant impact on PTT's commercial operations. Consequently, PTT has established the strategic direction of PTT Group's corporate plan to accommodate shifts in the economy, society, energy, technology, and consumer behavior in line with the global megatrends in a timely manner to minimize effects on PTT's business operations and future performance.



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By 2030, PTT has targeted to build a portfolio of nine million tons annually through the implementation of a liquefied natural gas (LNG) business plan across the whole supply chain. However, economic fluctuations, geopolitical conditions, and changes in consumer behavior trends have led to a highly uncertain demand for energy. Energy prices, especially for LNG on the international market, are erratic as this fuel becomes increasingly important for preserving energy security and driving the country's economy. As such, the government has a policy of natural gas industry liberalization. Thailand is now liberalizing the natural gas industry in its second phase. Licenses have been granted by the government to eight natural gas suppliers and distributors in total. Apart from ensuring energy security, PTT's responsibilities also include boosting its competitiveness to grow its market share of LNG by extending the market's reach both domestically and globally while preserving its initial market share. To foster collaboration within the Group and propel operations toward the Group's objectives, PTT has also worked with PTT Group companies to form committees and working groups on commercial LNG business operations.

Creating a New S-Curve, exploring opportunities, and developing new business formats such as investing in Electric Vehicles, Renewable Energy, Life Sciences, Logistics and Infrastructure, as well as AI, Robotics, and Digitalization businesses may pose operational risks, potentially leading to a slower alignment with the strategic direction and hindering the achievement of tangible success. Therefore, each year at both PTT's Top Executive Thinking Session (TTS) and Strategic Thinking Session (STS), the company has a brainstorming symposium to assess its vision, direction, and future business strategy to prepare for such developments. The risk management plan and the business plan are integrated to create a five-year plan. To make sure that operating results are in line with targets, PTT also organizes monthly meetings of PTT Group executives to discuss short-term strategies and make adjustments to the business plan in light of the group's performance.

PTT has directed its focus towards the AI, Robotics, and Digitalization business including Logistic and Infrastructure business in 2023, driven by its perception of significant future growth potential in these sectors. However, PTT faces challenges due to a shortage of personnel with the necessary knowledge and understanding, as well as a lack of proprietary technology. Therefore, to mitigate the potential impact of risks on its ability to run a successful business, PTT has developed prototypes to assess technology and gather feedback from the market before scaling up to commercial production. Additionally, it has assembled and trained teams with specialized knowledge, while also actively seeking additional investment with potential partners.

In terms of ESG risk, PTT conducts a comprehensive annual assessment of the organization's material topics using the Double Materiality principle. This involves considering risks and opportunities that impact the environmental, society, and governance, with a focus on human rights throughout the organization's business processes (known as Impact Materiality). Additionally, PTT analyzes the influence of external factors on the organization's financial performance (known as Financial Materiality). These key materiality factors are served as input for organizational strategy determination and enterprise risk management processes, which are managed according to the workflows of the responsible departments.

Investment Risks

PTT has consistently pursued new ventures and expanded its operations, both internally and through PTT Group firms, notwithstanding the possibility that the projected return on investment may fall short of expectations. To scrutinize decision-making, monitoring, and supervising investments of PTT and PTT Group companies, PTT has established regulations on investment criteria, budget management, and investment supervision guidelines for companies in which PTT holds shares. These regulations are based on a Strategic Investment Management (SIM) process, which involves an Investment Management Committee made up of executives with a variety of backgrounds. The Committee reviews investments before recommending them to the PTT Management Committee for endorsement and requesting investment approval from the Board of Directors. The Enterprise Risk Management Committee must review and provide feedback on high-value or significant-risk assets to support the Board of Directors' investment decisions.

When the investment is approved by the Board of Directors, PTT will follow up and report quarterly to the Investment Management Committee, PTT Management Committee, and the Board of Directors to ensure that investments are utilized for maximum benefit and efficiency. The Group's investment portfolio is regularly monitored and analyzed to improve operational performance and review investment plans. Importance is placed on the critical path to reduce risk levels to be under control, with scheduled completion, under budget, of quality, and following laws and regulations.

Personnel Development to Sustain Business Growth

PTT expands its business through both domestic and international investments, explores opportunities in new ventures, and leverages new technology and innovation to drive growth. However, PTT recognizes that a failure to adequately prepare and develop its personnel to acquire expertise and experience in a timely manner could have adverse effects on business operations and hinder the achievement of long-term goals. Moreover, the ongoing digital and technology transformation are disrupting business operations across various industries. In response, PTT actively promotes and encourages employees to be aware and possess knowledge and understanding in technology, digital trends, and cybersecurity. It supports the utilization of various technologies in the workplace and advocates for adjustments in core competencies to align with the organization's vision, strategy, and direction. This includes fostering adaptability to efficiently keep pace with changes, prioritizing customer orientation by incorporating stakeholder needs into decision-making, and encouraging digital insight to enhance knowledge and understanding of technology, tools, methods, challenges, and new trends, ultimately accelerating individual and team effectiveness. The PTT Leadership and Learning Institute (PLLI) develops employees' competencies through training and provides essential knowledge, understanding, and in-depth skills for each business area via the Functional Academy and on-the-job training.



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Furthermore, PTT has established a structure that facilitates its operations and assigns staff according to business unit requirements. Through career management mechanisms, employee management is conducted by considering workforce plans, identifying critical job positions, and creating individual development plans to help staff members in each profession gain expertise, foster leadership development, and promote learning within the holistic view of the PTT Group. This ensures that PTT has enough qualified executives and staff to support the company's future business growth.

In new business, where staff members might lack sufficient experience or knowledge, PTT has updated its recruitment guidelines for competent personnel with relevant experience and expertise. Additionally, PTT establishes connections with external organizations both domestic and international, including educational institutions and alumni associations that have courses relevant to PTT's business needs. Furthermore, PTT has organized activities to build relationships with potential applicants, such as PTT Career Day, Career Ambassador, and internships. Knowledge management is implemented for Mid-Career employees hired to work in new businesses. This involves sharing knowledge among groups of employees who collaborate to retain knowledge within PTT.

Climate Change Risks

The global community is growing more conscious of climate change. For instance, Thailand stated its stance and specific objectives toward achieving net-zero greenhouse gas emissions in the Paris Agreement, an agreement made under the United Nations Framework Convention on Climate Change to set measures to reduce greenhouse gas emissions at the 26th Conference of the Parties (COP). Investors and financial institutions have adopted climate change risk and opportunity management as one of the factors for investing in businesses that have an impact on the environment, especially in the energy business based on petroleum-based production. The policies will be communicated through the Ministry of Energy to reorient its operation, PTT has put in place the following mitigating and control measures:

- Study climate change risks and opportunities, adhering to the guidelines of the Task Force on Climate-related Financial Disclosures (TCFD) and considering different climate scenarios, to assess potential impacts on business operations and formulate concrete climate management strategies, including transparent information disclosure to investors.
- Announce the intention to achieve Carbon Neutrality by 2040 and Net Zero Emissions by 2050. Establish clean growth targets to reduce greenhouse gas emissions by 15% by 2030 compared to the baseline year of 2020, constituting one-third of PTT Group's long-term targets.
- Establish 3P Decarbonization Pathways linked to the organization's long-term goals, including:
 - Pursuit of Lower Emissions: Reducing greenhouse gas emissions within the production process
 - Portfolio Transformation: Shifting the direction of business operations to focus on future energy growth and increase the proportion of renewable energy production.
 - Partnership with Nature and Society: Increasing carbon dioxide absorption and storage through forest planting and maintenance.
- Establish the PTT Group Net Zero Task Force (G-NET) to provide a well-defined framework for enhancing climate change solutions and set goals and actions through various support mechanisms to effectively achieve Net Zero Emissions.
- Improve the investment consideration criterion by adopting a carbon price mechanism to support projects aimed at reducing greenhouse gas emissions and overseeing the execution of projects emitting greenhouse gases.

Reputation Risks

The environment is changing rapidly and becoming more interconnected, leading various operations, including corporate reputation risks, to inevitably affect each other. The business sector must rethink how to sustain growth and manage risks in the long run. In addition to generating substantial turnover, businesses must be adaptive to meet the needs and expectations of all stakeholders appropriately and timely to achieve their goals.

To fulfill its mission of caring for stakeholders, PTT effectively manages stakeholder relationships and consistently refines and enhances its practices by adhering to stakeholder engagement standards such as the AA1000 Stakeholder Engagement Standard 2015 (AA1000 SES) and the State Enterprise Assessment Model (SE-AM). The SE-AM serves as evaluation criteria, focusing on stakeholder and customer engagement, assessing operational processes, and evaluating the management enablers of state enterprises. This approach is aimed at fostering sustainable growth and earning the trust of society.

PTT compiles and analyzes stakeholders' needs, expectations, and concerns derived from stakeholder opinion surveys on business operations, as well as insights from employees directly involved in stakeholder care, and considers megatrends to synthesize critical issues between stakeholders and PTT. Once identified, PTT designates relevant units to formulate a stakeholder management plan, reporting outcomes to the ERMC quarterly and incorporating the committee's opinions and suggestions for operational enhancements. An annual evaluation of stakeholder engagement is also conducted to assess operations for the subsequent year.

In 2023, PTT revised its plans to promptly address stakeholders' needs, expectations, and concerns amidst changing circumstances. This adjustment aims to meet stakeholder needs swiftly, minimize risks to its reputation, and enhance the overall image of the organization. It reflects PTT's commitment to contribute to society comprehensively through the implementation of various projects.

- **PTT Group Innovation for Community Project** aims to support the grassroots economy in 45 areas in 29 provinces, which has set significant outcomes for communities to increase their net income by at least 10% and more than THB 5,000 per household per month. Smiling innovation learning centers comprising 6 prototypes and 4 self-sufficiency innovation centers were completely established to serve as community learning resources for their career extension. In addition, PTT has developed over 45 potential community products and selected them for distribution through smile community platform, as well as continuously developing 6 community-based tourist attractions nationwide to raise standards and gain international recognition.
- **Smile Community Project**, PTT promotes community product distribution through both online and offline channels, with 1,400 SKUs from 450 communities nationwide, as well as push the project's products through various activities and campaigns such as "Young Influencer Challenge Thailand 2023: Invite U to Create a Smile". PTT, in collaboration with Pracharath Rak Samakkee Rayong (Social Enterprise) Co., Ltd. and Tellscore Co., Ltd., organized a competition to create marketing plans and distribute community products in community projects through 30 youth teams from 10 leading universities in Thailand to provide opportunities for youths to develop online selling skills for community products.
- **PTT Group Model School Project**, PTT has mobilized PTT Group's strengths and knowledge to develop education under the concept of "STEEM 4E" in collaboration with Kamnoetvidya Science Academy School and Vidyasirimedhi Institute of Science and Technology to develop children with academic skills (Science, Technology, Engineering, Mathematics (STEM) and English (E) = STEEM)) and encourage schools to apply them in teaching and learning or 4E, including Ethics and growth mindset, Entrepreneurship, Energy literacy, and Environmental awareness. In 2023, the STEEM+4E program was implemented in 109 schools, with the development of 24 model teachers divided into 10 STEM model teachers, 14 English model teachers, and 11 4E model schools.



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- **Vetiver Development and Campaign Project under the Initiative of His Majesty the King**, PTT in collaboration with the Chaipattana Foundation, the Office of the Royal Development Projects Board (ORDPB), and the Department of Land Development implement a project to expand the use of vetiver for soil and water conservation by organizing training sessions on vetiver planting and handicrafts from vetiver leaves, as well as organizing contests for planting and handicrafts from vetiver leaves. In 2023, Thailand was the host of the 7th International Conference on Vetiver on the topic “Vetiver for Soil and Water Conservation: In Commemoration of His Majesty the King Maha Bhumibol Adulyadej The Great” at Shangri-La Hotel, Chiang Mai in a hybrid format with 1,098 participants from 19 countries around the world.
- **Relief Packages for Communities in Disaster Project**, In 2023, there were 3,000 community beneficiary households in 5 provinces: Tak, Lampang, Chachoengsao, Nakhon Sawan, and Phitsanulok.

Operational and Business Risks

Diminishing Natural Gas Outputs and Continuity of Gas Production

After more than 30 years of production, reserves of natural gas from production fields in Thailand and Myanmar have been largely depleted. Some fields have gradually entered the “Post-Plateau” period, the period stipulated in the Gas Sales Agreements where producers are permitted to slash the daily contract quantity or the daily amount of natural gas to be delivered. Under these circumstances, the chance of getting the same delivery volume as written in the agreements is getting slim. In addition, the gas sales agreements for the Bongkot (G2/61) and Erawan (G1/61) fields ended in 2022 - 2023, respectively, with the government bidding on the G1/61 and G2/61 under the Production Sharing Contract (PSC) regime, which stipulates a minimum combined delivery volume of 1,500 MMSCFD for the entire agreement period of 10 years. PTTEP Energy Development Co., Ltd. (PTTEP ED) (operator) won the bid and was granted the right for petroleum exploration and production. The signing of natural gas purchase agreements for G1/61 and G2/61 fields was completed. Yet, PTTEP could not develop the areas

as planned, resulting in lowered natural gas production in the initial stage and impacting the continuity of gas production from the gas fields, which would affect the business performance of PTT.

In addition, the unrest in Myanmar may result in the risk of natural gas delivery disruption from fields in Myanmar to Thailand. PTT has thus formulated risk management and business continuity plans by establishing a team to work with relevant agencies to monitor the situation and setting operating guidelines, including continuously reporting the situation to the Ministry of Energy. This will ensure that natural gas supply and delivery will not be interrupted, or the volume may not be continuous or may be decreased. PTT has prepared additional LNG procurement to replace the decreasing volume of natural gas and seek new natural gas sources. Procurement of additional natural gas from the Gulf of Thailand and the Thai-Malaysian Joint Development Area area to maintain natural gas supply and delivery without affecting the electricity sector and the country's energy security.

Risks of Significant Changes in Prices and Volume of Petroleum and Petrochemical Sales

Domestic and international factors influencing demand for petroleum and petrochemical products such as the economy, natural disasters, epidemics, trade wars, and geopolitical unrest have a direct impact on price and sales volume, affecting PTT and PTT Group operations. Furthermore, the rise and fall in the production volume of natural gas, crude oil, condensate, petroleum, and petrochemical products, which affects the change in feedstock prices and distribution prices, as well as the spread both domestically and internationally, which is highly volatile, may affect PTT's and PTT Group's operating results and return on investment in the future. In order to mitigate the impact of such volatility, PTT Group has implemented price risk management tools to help manage and prevent the potential impact of price changes. Business operations are thus stabilized, and operating results do not fluctuate dramatically in response to the volatile market situation. PTT Group companies have their own risk management policies in place.

PTT's price risk management policy and procedures are formulated and approved by the Enterprise Risk Management Committee, PTT Management Committee, and Hedging Committee. For PTT Group companies, PTT management serves as a representative on each company's corporate risk management committee to oversee risk management procedures that are consistent with PTT Group Policy. PTT is in charge of monitoring PTT Group companies to regularly report PTT Group's price risk management results to the PTT Management Committee, Enterprise Risk Management Committee, and PTT's Board of Directors.

In addition, to efficiently handle the impact of volatile energy prices, PTT has established price risk management by formulating a business plan to support a variety of scenario planning in various oil price situations, promptly responding to changes and uncertainties that may occur in the future. The Price Strategy and Risk Management team has been appointed under the Petrochemical and Refining Integrated Synergy Management (PRISM), responsible for analyzing world oil price movement and jointly conducting price hedging management among PTT Group companies for the greatest benefit. Today, PTT Group engages in hedging through derivative contracts in both petroleum and petrochemical prices. To this end, meticulous, prudent data analyses are conducted while suitable risk management tools are chosen to fit periods and objectives.

Also in place is a structure and process for supervising risk management with checks and balances of international standards by the International Trading Business Unit. Similarly, a Value at Risk (VaR) is defined for each commercial transaction. A risk status summary report is regularly required for relevant executives and units to control and monitor PTT Group's price risks beyond what is acceptable. Moreover, in the current higher-risk situation, the International Trading Business Unit needs to have tighter risk controls. International

trade staff must closely monitor the market situation to adjust strategies accordingly, along with upgrading measures to control risks in relation to trading partners to prevent the possibility of default due to a lack of liquidity in business operations. For example, changing payment terms from Open Credit to collateral calls as soon as negative information is received on the credit status of business partners, establishing measures to warn and monitor abnormalities in various aspects, including financial credibility and other sanction measures as well as halting or avoiding transactions involving trading partners or countries at risk. Technology for sharing market information has also been applied to enable market situation monitoring for controlling and monitoring to prevent PTT and PTT Group from having higher price risks than the appropriate level.

Compliance with Laws, and Regulations

PTT's business operations are intricate and subject to numerous legal requirements, including those pertaining to energy-related business operations, trade competition laws, the Public Procurement and Supplies Management Act, state fiscal discipline act, anti-corruption laws, personal data protection laws, cybersecurity laws, and changes to relevant laws. These legal requirements may have an impact on PTT's legal liability, reputation, and corporate image. The “Compliance Policy” and “Compliance Framework Guidelines” have thus been released by PTT for directors, executives, and staff members to uphold this concept and fulfill their responsibilities in compliance with all applicable laws and rules. To stay current with legislative changes as well as the business and execution context, regular reviews are implemented. PTT has also produced a Risk Appetite Statement to outline the amount of risk that the business is willing to accept and to establish objectives for tracking and averting the risk of unlawful activity.



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Regarding the compliance procedures, the Compliance Department collects, monitors new laws, and assesses the relevance of new laws to PTT's business operations through various channels such as websites of the Government Gazette, the National Legislative Assembly (NIA), Office of the Council of State, and government agency. In addition, PTT has assessed risks under new laws related to PTT based on Compliance Risk Criteria and defined the details of the organization's legal impact criteria. This is based on penalties under laws related to PTT's business operations, including fines, imprisonment, license revocation, and cessation of work, and consideration of limits according to the authority approved to perform financial work according to PTT Public Company Limited's regulations on Financial Operations B.E. 2563 (2020) and its amendments, as well as defining the risk level of new laws that affect PTT's business operations. The Department also communicates new law information in the form of infographics via e-mail, compliance@pttplc.com, and other important legal materials via electronic learning media such as e-Learning, video clips, online learning, podcasts, and training of GRC Academy: Compliance.

Additionally, in order to manage non-compliance by keeping an eye on, reviewing, and looking for ways to prevent and lessen the likelihood of future recurrence, the Compliance Department works in tandem with the 2nd Line of Defense to assess compliance and confirm whether the 1st Line is operating legally under the new laws. PTT has integrated the Governance, Risk, and Compliance (GRC) work system guidelines to guarantee that PTT's business operations have good governance, adequate internal control, and compliance with applicable laws and regulations, as well as to prevent and reduce the risk of operations that do not comply with relevant laws and regulations. The Governance, Risk, and Compliance Management Committee (GRCCM), PTT Management Committee (PTTMC), Corporate Governance and Sustainability Committee (CGSC), Audit Committee (AC), and PTT's Board of Directors (BOD) are among the committees to which the performance is reported.

PTT has chosen to verify the qualifications of persons with business transactions with PTT by referring to the rules published by PTT Public Company Limited for the Criteria and Qualification Examination of Persons with Business Transactions with PTT. All parties that transact with PTT, including traders, clients, business associates, and joint venture partners, are included in this. PTT's investment practices, in particular, are closely examined to ensure that PTT engages in lawful processes and avoids anomalies in its transactions and investments.

PTT drives its PTT Group Way of Conduct to PTT Group entities to provide uniform management standards and procedures, including supervision and risk management in conformity with applicable laws and regulations.

Risks Arising from Public and Applicable Government Agencies' Policies

On July 31, 2017, the National Energy Policy Council (NEPC) approved a strategy aimed at increasing competition in the natural gas industry, whose goal is to provide better service to natural gas users and foster more competitive bidding for gas supply contracts while boosting procurement efficiency. Furthermore, natural gas prices, a significant factor in the cost of the country's energy, may decline in tandem with fuel prices. This policy for promoting competition has been broken down into three stages by the Ministry of Energy. Eight operators were previously granted shipper licenses by the ERC for natural gas procurement, and the NEPC has now authorized the strategy for Phase 2, where numerous natural gas operators compete in the LNG supply competition.

The Phase 2 natural gas industry restructure might cause PTT's share of the domestic gas market to decline. Even so, PTT is navigating this shift to continue being the guardian of energy security by planning corporate expansion, increasing its competitiveness with new operators, and securing adequate fuels to meet domestic demand. One example is the internal reorganization that took place to fulfill PTT's responsibilities for company expansion to meet regional demand, particularly the LNG Regional Hub, and business agility and competitiveness with new players. In Phase 2, PTT Group received a shipper license so there would be more competition among the New Supply participants.

As energy prices soared due to international political conflict, which has affected the fuel cost for domestic power generation, the government has a policy to manage natural gas to reduce the burden on electricity bills during the energy crisis by allowing PTT to allocate natural gas from the Gulf of Thailand behind natural gas separation plants for residential electricity users first. This affects PTT's Performance in areas where it is unable to pass on increased costs. PTT manages natural gas and procures Spot LNG during low-price periods to reduce the cost of natural gas. In addition, on December 7, 2023, the Committee on Energy Policy Administration (CEPA) approved natural gas management guidelines. The price of natural gas entering and exiting gas separation plants is adjusted to the pool gas price, except for natural gas used to produce LPG for fuel. This would take effect in January 2024 and continue until the criteria for determining the price structure of gas from the Gulf of Thailand entering and exiting gas separation plants are finalized. Moreover, PTT is required to refund the money collected from Gulf gas producers if natural gas is not produced according to the contract to be a discount on natural gas price. The policy directly affects PTT's performance. The Board of Directors and Management of PTT have implemented all necessary management measures to mitigate the risks arising from government policies, aimed at preserving the business performance of PTT and maintaining a balanced outcome for all stakeholders.

PTT has prepared Demand-Supply data to efficiently manage energy demand and procure sufficient LNG to meet the country's demand. PTT worked with relevant agencies through the Execution Operation Team for situation management during the energy price crisis. With more than 40 years of experience in the natural gas business, PTT continues to be able to supply natural gas sufficiently for the country's security as well as maintain its competitiveness amid market fuel price volatility. In addition, PTT may need to develop a risk management plan due to additional government policies.

Disruption of Production and Business Operations

Because of its global operations, both domestic and foreign, PTT is subject to production and business operations disruptions due to human error, faulty machinery, political instability, disasters, and other dangers, in addition to terrorism and diseases. All of these might be harmful to PTT and its major infrastructure. PTT thus values Process Safety Management (PSM) by emphasizing the methodical management and control of operating risks through the application of appropriate tools and management systems, readiness for emergencies and incident management, and the introduction of engineering technology and complex international standards. The PTT Group Oil and Chemical Spill Response Guideline, which enables business operations to proceed even in the event of such incidents, and the PTT Group Oil Spill Remediation Guideline developed to prevent and mitigate environmental impacts and swiftly restore the ecology and biodiversity, are two examples. PTT activates the PTT Group Security, Safety, Health, and Environmental Management Standard and PTT Group Business Continuity Management System Standard (BCMS) for all business units and PTT Group to utilize in developing and connecting with both common systems to reduce the likelihood and impacts of such threats. In order to prevent disruption and protect value-adding operations under PTT's business chain from being disturbed, PTT not only protects these activities



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at sites but also across the entire work process. Furthermore, PTT develops, modifies, and reviews BCMS to guarantee a useful relationship between business units and organizes integrated corporate BCM drills, information system readiness plans, backup office preparation plans (Work from Anywhere), and human resource preparation plans (process to locate key personnel) to guarantee BCMS recertification under ISO 22301.

Following best practices in petroleum and petrochemical industries, PTT has taken out insurance policies to protect its core business assets from business disruption to further insurance coverage for operation suspension. Such a subscription may not be all-inclusive since no insurance company offers such comprehensive insurance. Alternatively, sometimes it could prove uneconomic to buy excessively high-coverage insurance. While PTT believes that its affiliates have insurance policies that are of industrial standards, PTT cannot control the ceilings of PTT Group's insurance policies to cover possible damage. In other words, should properties not be significantly or fully covered, or should insurance companies face severe financial problems causing them to go out of business due to such events, PTT's financial position, business performance, and business opportunities could face grave repercussions.

Risks from Work-Related Accidents

PTT focuses on the management and control of safety risks for its operations systematically and continuously by setting long-term goals to control incidents that cause losses and affect lives, property, and the environment. Targets for accidents that cause injuries to employees and contractors until work stoppage, as well as safety, production, and transportation accidents, must be zero. Risk control processes from hazard indications, risk assessments, risk control measures, and impact reduction are defined by setting work standards equivalent to international standards and creating a safety culture for employees and contractors through knowledge provision and activities to raise awareness of safety. Engineering principles

and tools following international standards are adopted to prevent serious accidents in manufacturing processes, and transportation, together with safety assessment to find risk points, hazardous points, and corrective actions before an accident. Safety management systems such as personal safety, production process safety, and transportation safety are fundamental to the organization-wide and continuous improvement of operations.

Cybersecurity Risks

Cyber attack risks continue to intensify, which can pose risks to the organization in various aspects, such as data breach, ransomware and cyber extortion, image and reputation loss, and business interruption, etc. PTT continuously prioritizes and raises cybersecurity as a corporate risk with close monitoring and outcome measurement annually to ensure the response in case of cyber attack impacts with a capacity for normal business recovery in line with the organization's cyber resilience goals.

PTT is designated as a Critical Information Infrastructure (CII) in energy and utilities according to the Cyber Security Act B.E. 2562 (2019) and is obliged to strictly operate under the Code of Practice and the Cyber Security Standard Framework for government agencies and critical information infrastructure agencies as follows:

1. Implementation of the Cyber Security Standard Framework
 - Risk identification (Identify)
 - Measures to prevent potential risks (Protect)
 - Cyber threat monitoring and surveillance measures (Detect)
 - Response measures when a cyber threat is detected (Response)
 - Measures to heal and recover the damage caused by cyber threats (Recovery)

2. Implementation of the Cybersecurity Audit Plan
3. Cybersecurity Risk Assessment
4. Cyber Threat Response Plan

In 2023, PTT enhanced operational efficiency by investing in technology, increasing process efficiency, and raising awareness of cyber threats among people within the organization, such as:

- Expand the scope of enforcement of 2-Factor Authentication (2FA) both for internal personnel and with partners/ customers for access to work systems that connect directly to the Internet (Internet Application)
- Vulnerability Assessment to regularly identify and close system vulnerabilities, as well as perform Red Team Assessment by experts to identify vulnerabilities and measure the effectiveness of internal protection systems, covering both Information Technology (IT) and Operation Technology (OT).
- Install the Privileged Access Management (PAM) system to increase security of system access at the admin level for both IT and OT.
- Apply Attack Surface Management (ASM) technology to help identify vulnerabilities that organizations have exposed to the Internet to analyze and manage further risks.
- Regularly provide knowledge through various channels such as email, PR, and training courses to raise awareness of cyber threats among employees, as well as recurrently assess employees' knowledge and understanding through phishing test campaigns, etc.
- Enhance PTT's crisis management and business continuity management (BCM) drills by simulating emergency scenarios from cyber threats to prepare to respond and deal with situations in terms of work processes and people.

PTT assigns PTT Digital Solutions Co., Ltd. to operate and provide cybersecurity services to PTT Group, with the Cyber Security Operation Center (CSOC) to be responsible for monitoring abnormalities from cyber-attacks, providing 24-hour service with high-technology tools such as AI & Machine Learning, along with personnel with international certifications, and Cyber Security Incident Response Plan, including coordination with Thailand Computer System Security Coordination Center (ThaiCERT) and other international communities to exchange information of cybersecurity incidents.

Financial Risks

Volatility of the Baht

Changes in the exchange rate between the baht and the U.S. dollar directly and indirectly affect the bulk of PTT's revenue because prices of natural gas, petroleum, and petrochemical products are tied to the world (USD-linked) market prices. In other words, PTT's revenue varies with the value of the baht. Yet, changes in the baht value also affect PTT's margin since the majority of its profits are fixed in the baht currency whereas costs are in the dollar denomination, which is tied to world market prices, as are selling prices. Fluctuation of the baht affects PTT's net book profit/loss because of PTT's and subsidiaries' outstanding foreign loans. Yen-denominated loans leverage participating swaps to convert loans into dollars to agree with dollar-denominated revenue. That way, PTT manages to counter most of the risks of yen fluctuation against the dollar.



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To ease risks of baht fluctuation, PTT balances its foreign currency loans with its foreign-currency revenue (that is, taking a natural hedge) while managing its foreign-currency deposits and purchasing forward foreign currencies for smart repayment and commercial transactions, including imported natural gas and crude oil, trading of domestic products in baht but USD-linked in value, and appropriate product exports. PTT has also developed a finance policy as an efficient, uniform guideline for itself and PTT Group, which includes terms for various risk management practices that could affect PTT's financial position.

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Financial Support to Affiliated Companies

PTT invests in new projects, expands its business, or improves operations for continued growth through newly established companies and/or joint ventures with strategic partners and/or within the PTT group companies. If the project is in the initial stages or the financial position is not strong enough, shareholders, including PTT, must provide financial support during the project's construction (Cost Overrun Support). If the company encounters liquidity challenges during commercial operations due to force majeure or a business downturn and necessitates financial assistance from shareholders, financial support for each case may be extended through a Sponsor Support Agreement, and/or subordinated debt, and/or equity, and/or extending the credit limit, and/or trade credit period, and/or granting loans from shareholders, and other available options. PTT will consider providing financial support if it is necessary and beneficial to both PTT and the PTT Group in the long term. PTT believes that implementing such policies and actions will foster sustainable strength for the companies within the PTT Group.

When providing financial support to its affiliates in various forms as mentioned above, PTT cannot guarantee their ability to repay loans or credit, nor can it ensure they won't encounter financial difficulties or require further support from PTT, potentially impacting PTT's performance and financial standing. If either PTT or a company within

the PTT group defaults under a shareholder support agreement, it may prompt creditors to demand immediate repayment (Acceleration), further affecting PTT's financial position. Moreover, PTT cannot confirm that it won't increase its investment proportion beyond 50% or take control of management in these group companies if it deems such actions more beneficial. In the event PTT decides to assume management control, it must prepare consolidated financial statements by combining the financials of these group companies with PTT's own financials from the date of gaining control, potentially impacting PTT's overall financial position as it must adhere to Thai financial reporting standards.

However, PTT maintains a process for screening and approving investments, coupled with close monitoring of the PTT Group's performance through various committees, including the Investment Committee and the Finance and Accounting Cooperation Management Committee. The PTT Group Way of Conduct disseminated throughout PTT Group companies to ensure consistent management aligned with international standards and guidelines, timely risk management, and to minimize impacts on the PTT Group.

Securing of Funds

The businesses of PTT and PTT Group require massive pre-paid capital investment. While PTT closely monitors and manages business risks, there may be deviations in the actual investment capital required compared to projected plans. Due to PTT's and PTT Group's commitment to fostering long-term growth and upholding a good corporate governance, PTT intends to invest in prudent business expansion, considering various funding sources and giving due consideration to approved capital structuring by PTT's Board of Directors during the annual corporate planning round. This is done to align with the risk appetite and maintain crucial financial ratios comparable to peer companies. Continuous monitoring of factors influencing investment capital sourcing assures PTT that it can secure sufficient funds for future business expansion at a suitable cost of funds.

2.2.2 Investment Risks for Shareholders

Risks from the Major Shareholder's Management

As of December 31, 2023, the Ministry of Finance was PTT's major shareholder with 14,598,855,750 shares, or 51.11% of all issued and paid-up capital, which entitles it to vote at the AGM. Yet, most significant agenda items are required by PTT's Articles of Association to pass with three-quarters of the AGM votes, including amendments to the memorandum of association and the articles of association, capital increase or decrease, debenture issuance, company mergers, company liquidation, company sale or transfer (whole or partial), acquisition or transfer of other companies (public or private), engagement in, amendment, or termination of lease agreements for entire or partial company business, delegation of other parties to manage the business, or mergers with other parties to share profits or losses, and voting to dismiss any director ahead of term completion. If an agenda item concerns a matter in which the ministry as a major shareholder has vested interests, including related transactions, acquisition, or sale of assets from/to the ministry, the ministry cannot vote on such an item. In addition, PTT has required independent directors to account for at least half of the Board; it currently has 10 out of 13 on the Board, who must command expertise and useful experience to PTT and must engage in no conflicts of interest with PTT. It also appointed the Audit Committee (made up of three independent directors without vested interests in PTT) to monitor its business and look after shareholders' interests so that the business may proceed transparently in line with PTT's corporate governance code.

Risks of Uncertain Returns on Investment for Shareholders

PTT's share prices may rise or fall in a volatile fashion depending on various factors beyond its control, including

- Prices of petroleum, petrochemicals, or other relevant reference product prices
- Change in policies, rules, regulations, requirements, or terms affecting the industry and/or PTT
- Economic conditions, crisis, or unusual situations such as geopolitical tensions, oil price wars.

These factors could depress share prices below what investors paid for and/or higher than their sold portions, putting investors at risk from uncertain returns on investment.

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Risks from Dividend Affordability Below Investors' Expectation

PTT's affordability is subject to several factors, including capital budget and capital reserve for business expansion, loan repayment, and cash flow from operating activities. If these factors affect PTT's affordability of the annual dividends or interim dividends or both, it may be at risk of paying dividends at a lower rate than investors' expectations. Yet, PTT's dividend policy is at least 25% of net profit after deducting all reserves under the law and company regulations.

2.2.3 Risks Facing Investing in Foreign Securities (If the Issuer is a Foreign Company)

-None-



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3. Driving Business towards Sustainability



Sustainability Performance Highlights 2023



Environmental

Direct and Indirect Greenhouse Gas Emissions Targets Achieved

PTT:
10.13

million tons of carbon dioxide equivalent (Target: Not exceeding 11.5 million tons of carbon dioxide equivalent)



PTT Group:
41.59

(domestic and international)
million tons of carbon dioxide equivalent (Target: Not exceeding 51.5 million tons of carbon dioxide equivalent)

3P Decarbonization Pathways Progress



Pursuit of Lower Emissions

● PTT is implementing carbon capture and storage (CCS) projects to capture carbon dioxide from the production processes in the Gulf of Thailand region. Additionally, PTT Group is collaboratively studying the CCS feasibility under the PTT Group CCS Hub Model.

● Enhancing the efficiency of the gas separation plant by constructing Unit 7 to replace Unit 1. The construction is expected to be completed by 2024.

● Process optimization initiatives will also be undertaken, such as the Carbon Dioxide Removal Unit (CDU) capacity unlocking project for Units 5 and 6 of the gas separation plant.



Portfolio Transformation

Completely diverted all investments in the coal business and revise long-term target in 2030 to increase investments in renewable energy.



Partnership with Nature and Society

In collaboration with the government and local communities to increase green area nationwide, covering terrestrial and mangrove forests through the Nature-based Solution of carbon sequestration. In 2023, PTT has planted approximately 86,173 rai of new forest, which is higher than the target of 75,000 rai.



Social

PTT Group Innovation for Community Project



- **Smart Farming**
Developed integrated models in 45 areas, across 29 provinces.
- **Smart Marketing**
Developed 45 community products and 6 community-based tourism destinations
- **Community Knowledge Management**

Total Recordable Injury Rate (TRIR) for employees is 0.033 per 200,000 hours worked and 0.028 per 200,000 hours worked for contractors.

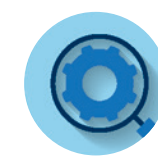
Continuous zero major truck accident rate per 1,000,000 kilometers

The proportion of donation compared to the total social investment budget is

26.83%

which is below the target of not exceeding 30%.

The Human Capital Index (HCI) has achieved its target of



Governance

No cases of non-compliance with significant legal implications in operations.

The assessment result for the National Anti-Corruption Commission's Integrity and Transparency Assessment (ITA) are at a PASSED, Good level.



Human Rights

Human Rights Due Diligence conducted, covering the operations of PTT and PTT Group

of	across	totaling	is
17	31	81	0
companies	countries	areas	Human rights violation

Honored ESG Awards



ESG Ratings



- Sustainability
- S&P Global Ratings: ESG Credit Indicators
- MOODY'S



3.1 Policy Commitments and Targets for Responsible Business Conducts

Under the visionary statement "Powering Life with Future Energy and Beyond", PTT is dedicated to conducting its business towards sustainability. This commitment involves aligning business operations with sound corporate governance and a strong responsibility towards society and the environment. This dedication is in line with the principles outlined in various policies, as follows:

Sustainability Management Policy

This reflects the commitment to manage material sustainability topics in 3 dimensions: Environmental, Social, and Governance (ESG), integrating into every aspect of PTT's business operation. PTT has established the "PTT Sustainability Management Policy", signed by the Chairman of PTT's Board of Directors and the President and CEO. After conducting a thorough review of the policy implementation and performance by PTT's Board of Directors in 2023, it was found that the policy continues to comprehensively cover the company's material sustainability topics and effectively convey them throughout the organization with an efficient sustainability management process.

Human Rights Statement

PTT is dedicated to upholding human rights for all stakeholders, including employees, local communities, business partners and their employees, following all applicable laws, regulations, the Universal Declaration of Human Rights, international covenants, standards, and best practices at every stage of our value chain. This commitment is outlined in the "PTT Human Rights Statement", signed by the President and CEO.

PTT's human rights due diligence is systematically integrated into the organization's sustainability management process. This involves continuous monitoring, evaluation, and review of effectiveness and performance.



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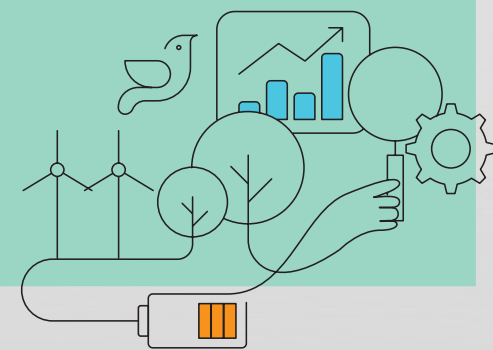
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Corporate Governance Policy

To demonstrate our commitment to conducting business with good governance, excellent management, and creating values for all stakeholders, the Board of Directors has declared **PTT's Corporate Governance Policy** signed by the Chairman of the Board of Directors. This policy outlines 6 principles for corporate governance at PTT: Accountability, Responsibility, Equitable Treatment, Transparency, Vision to Create Long-term Value, and Ethics. The Board of Directors, executives, and employees must adhere to and implement these principles earnestly. PTT's Board of Directors reviews the policy annually to ensure its relevance and appropriateness.

Furthermore, PTT demonstrates its commitment to managing various important issues through several specific policies, such as Risk Management Policy, Internal Control Policy, and Compliance Policy, to ensure legal compliance, regulations, anti-corruption, and corporate social responsibility policies. These policies encompass quality, security, safety, occupational health, and environmental concerns. Details of these policies can be found on PTT Website. Apart from implementation within the organization, PTT also disseminates these policies to PTT Group and supply chain partners. Its implementation is promoted and monitored through various tools. More information can be found on PTT Website under the Sustainability section.



Driving Policy into Practice

To drive each policy into concrete practice throughout the organization and value chain, PTT operates through processes, mechanisms and approaches in 3 main forms.

1 Implementation of PTT's Sustainability Management Policy through strategic direction-setting, business planning, risk management, and KPI setting

Sustainability material topics such as climate-related risks and opportunities are taken as input factors in reviewing the long-term goals for 2030 in preparing the business plan for 2023 - 2027. They are integrated into the enterprise risk management, and then taken as key performance indicators – the State Enterprise Assessment Model (SE-AM) KPI for the President and CEO and the Corporate KPI for the Senior Executive Vice President level. The performance progress is reviewed and monitored by the Management Committee and the Board of Directors.

2 Integration into the PTT's Sustainability Management Master Plan for Social and Environmental Responsibility for 2021 - 2025 (2nd Edition)

PTT's Sustainability Management Master Plan for Social and Environmental Responsibility for 2021 - 2025 (2nd Edition) consists of sustainability strategic direction, short-term/ medium-term targets, indicators, action plans for sustainability material topic management. The business plans from functional units are reviewed annually, with an approval from the Board of Directors, in accordance with the Master Plan's direction to ensure process integration and budget planning.

3 Management by the process owner responsible according to the organizational structure

In managing each sustainability material topic, process owners within the organizational structure will be responsible for determining mechanisms, approaches, processes, or guidelines for policy implementation. Examples include:

- Establishing structures for governance and internal control processes for each policy.
- Establishing regulations and operational guidelines, such as PTT's Rule on Complaints and Whistleblowing against Fraud, Malpractice, Misconduct, and Non-Compliance with Laws or Organizational Regulations; Corporate Governance, Ethical Standards and Code of Business Ethics Handbook.
- Defining corporate or functional KPIs related to the material topics.
- Developing project or initiatives with well-defined plans.
- Conducting training and various communication materials.
- Monitoring and reporting outcomes to relevant committees.

Revision of PTT's Sustainability Management Master Plan for Social and Environmental Responsibility for 2021 - 2025 (2nd Edition)

In 2023, relevant departments reviewed the details of the strategic management framework to align with various input factors such as government policies, standards, diverse practices, and changing business plans. Approved by the Corporate Governance and Sustainability Committee (CGSC), the revised 2nd Edition was released as the sustainability strategy direction for 2024 with the following details:



Governance: "Corporate Governance and Performance Excellence"

consists of 3 strategic approaches:

- Adhering to good corporate governance and ethics principles.
- Adapt to changes, accelerate growth, and drive the economy forward.
- Enhancing sustainable value chain management.



Social: "People's Well-being"

consists of 3 strategic approaches:

- Promoting a safe working environment and respect the human rights principles.
- Enhancing employees' readiness to support future business growth.
- Creating shared values and elevating the quality of life for communities and society.



Environmental: "Sustainable Production and Consumption"

consists of 2 strategic approaches:

- Developing the business towards a low-carbon society and environmentally friendly business practices.
- Utilizing resources efficiently, while adhering to the principles of a circular economy.

Key Enablers:

- Technology and innovation
- Stakeholder management

PTT mandates a review and evaluation of the quality and effectiveness of sustainability management processes, covering the implementation of policies and management of sustainability material topic to analyze and improve processes and performance. Progresses are presented to the relevant committees quarterly according to the governance structure. Details regarding the policy implementation and management of each sustainability material topic and progress towards sustainability strategy implementation can be found under Section 3.4, "Overview of Sustainability Material Topic Management and Performance" and on PTT Website.



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Progress Summary of the Sustainability Strategic Direction

Sustainability Strategic Direction	Targets			Performance against 2023 Targets	Support for the 20-year National Strategy	Support for the SDGs		Additional Information		
	Indicators	Short-term Targets 2023	Long-term Targets			Integrated into Core Business	Collaborate with Other Stakeholders			
 Governance: Corporate Governance and Performance Excellence	Adhering to good corporate governance and ethics principles	Zero non-compliance with legal implication	PTT: 0	PTT and PTT Group within 2025: 0	No cases of non-compliance with significant legal implications in operations	✔	The 6 th strategy: Public Sector Rebalancing and Development	 16.5 16.6 16.10	 17	 Additional information
	Adapting to changes, accelerate growth, and drive the economy forward	Fostering growth by increasing investment in Future Energy and Beyond businesses	-	To exceed 30% profit share from these business groups within 2030	Currently in progress	🔄	The 2 nd strategy: National Competitiveness Enhancement	 7.1 7.2 7.3  8.1 8.2  9.4 9.5	 17	 Additional information
		Increasing renewable energy production capacity	-	15 gigawatts by 2030	4.9 gigawatts	🔄			 17	 Additional information
 Environmental: Sustainable Production and Consumption	Developing the business towards a low-carbon society and environmentally friendly business practices	Limiting PTT and PTT Group's direct and indirect greenhouse gas emissions (Scope 1 and 2) domestically and internationally	PTT Group: ≤ 51.5 million tons of carbon dioxide equivalent PTT: ≤ 11.5 million tons of carbon dioxide equivalent	PTT Group: 15% reduction by 2030 compared to the 2020 emissions PTT: To achieve Carbon Neutrality by 2040 and Net Zero Emissions by 2050 covering PTT's owned operations and PTT's wholly owned subsidiaries	PTT Group: 41.59 million tons of carbon dioxide equivalent PTT: 10.13 million tons of carbon dioxide equivalent	✔	The 5 th strategy: Eco-friendly Development and Growth	 6.6  7.1 7.2 7.3  13.1 13.2 13.3  14.2  15.2 15.4 15.5	 17	 Page 158 Additional information
	Utilizing resources efficiently, while adhering to the principles of a circular economy	Applying the principle of the circular economy in the PTT Group's business operation to achieve the level of circular economy application according to the British Standards Institution: Framework for implementing the principles of the circular economy in organizations – Guide (BS 8001: 2017)	PTT Group: Level 1.83	PTT Group: Level 3 by 2030	PTT Group: Level 2.76	✔	The 5 th strategy: Eco-friendly Development and Growth	 6.3  12.2 12.5	 17	 Additional information
		Waste management by PTT Group's principle of circular economy	PTT Group: ≥ 42%	PTT Group: ≥ 50% by 2030	PTT Group: 42%	✔		 6.3  12.2 12.5	 17	 Additional information
 Social: People's Well-being	Promoting safe working environment and respecting the human rights principles	Lost Time Accident (LTA)					The 4 th strategy: Social Cohesion and Just Society	 3.4 3.6 3.9  8.5 8.7 8.8  5.1 5.2  17	 Page 174 Additional information	
		Employee	0	0 by 2030	0	✔				
		Contractor	0	0 by 2030	3	⚠				
		Total Recordable Injuries Rate (TRIR) per 200,000 working hours								
		Employee	≤ 0.046	0 by 2030	0.033	✔				
		Contractor	≤ 0.056	0 by 2030	0.028	✔				
		Process Safety Event (PSE) according to the API RP 754 standards								
		Tier 1	0	0 by 2030	0	✔				
		Tier 1+Tier 2	≤ 1	0 by 2030	1	✔				
		Human rights complaints	0	0 by 2030	0	✔				
Creating shared values and elevating the quality of life for communities and the society	Social investment compared to PTT only operating profit	1 - 3%	1 - 3% by 2025	1.08%	✔	The 3 rd strategy: Human Capital Development and Strengthening The 4 th strategy: Social Cohesion and Just Society	 6.6  7.1 7.2  8.1 8.3 8.4  12.a 12.b  14.2  15.1 15.2 15.4  1.5  2.3 2.4  4.1 4.3 4.4  10.1 10.2	 1.4 1.5 1.7  17	 Page 181 Additional information	
	Proportion of donation compared to the total social investment budget	≤ 30% of the total social investment budget	≤ 30% of the total social investment budget by 2025	26.83%	✔					
	Social Impact Assessment (SIA) and Social Return on Investment (SROI) compared to the investment costs	Achieving the target or exceeding the investment cost	Achieving the target or exceeding the investment cost by 2025	Achieved the targets for all projects	✔					
	Net return on investment of PTT Group Innovation for Community Project	> 10% of the previous revenue	-	The average revenue increased by over 10% compared to the previous revenue	✔					
	Human Capital Index (HCI) Score	≥ 76	83 by 2030	80	✔					The 3 rd strategy: Human Capital Development and Strengthening



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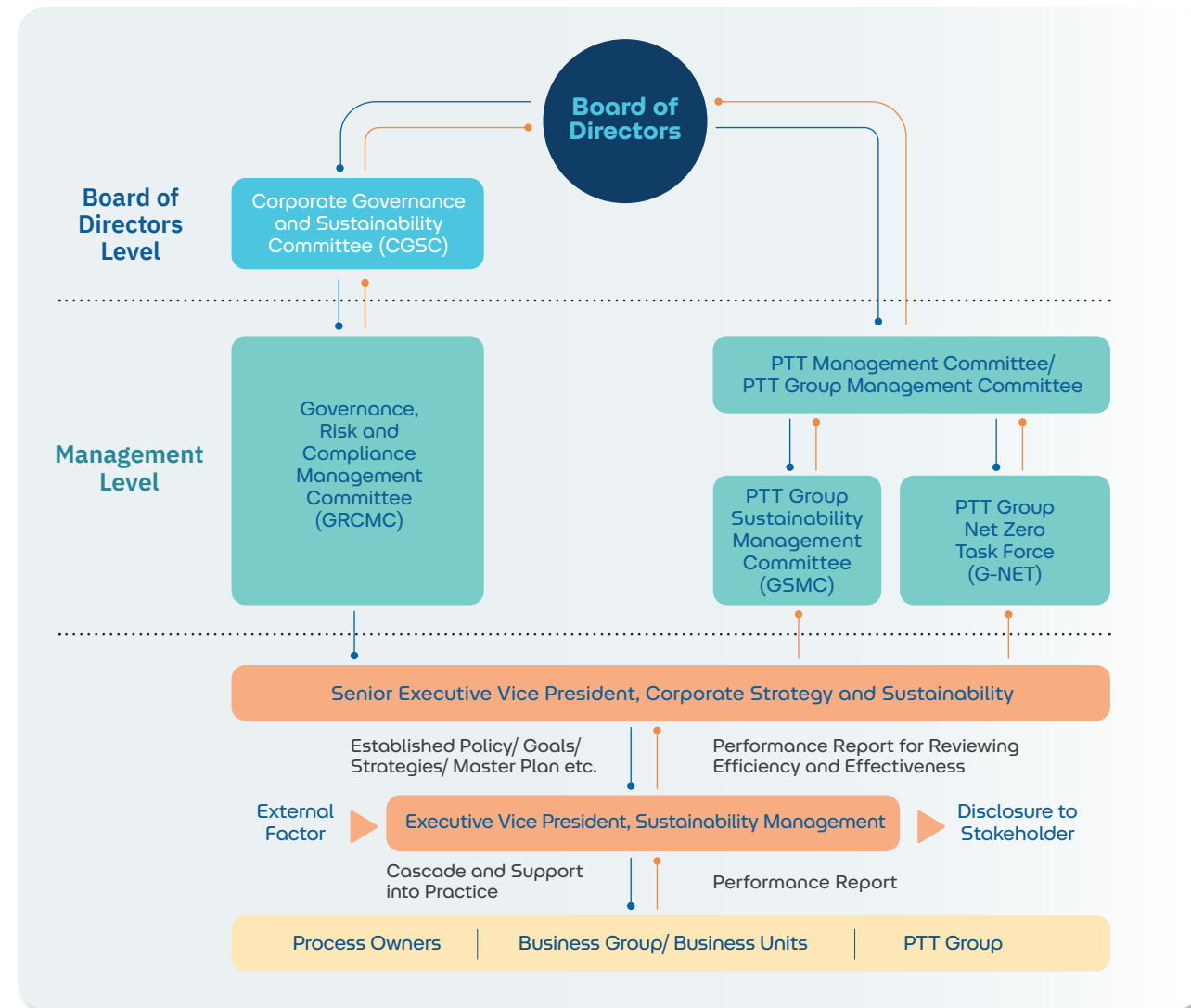
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Sustainability Governance Structure

PTT's Board of Directors assign the **Corporate Governance and Sustainability Committee (CGSC)** to oversee sustainability management per the commitments outlined in various corporate responsibility policies, including the **Governance Risk and Compliance Management Committee (GRCMC)** and the **PTT Group Sustainability Management Committee (GSMC)** under management-level. The CGSC evaluates and preliminarily reviews the sustainability management process and performance. **Executive Vice President, Sustainability Management** under the supervision of the **Senior Executive Vice President of the Corporate Strategy and Sustainability**, is also designated to be responsible for implementing the policy, strategic directions, masterplan, and action plans, in collaboration with other departments responsible for managing each sustainability material topic. The effectiveness and efficiency of process and performance

are presented to GRCMC, GSMC and CGSC quarterly for the management review. Furthermore, the CGSC reviews and approves the materiality assessment result, and PTT's Board of Directors approve the information disclosed in the 56-1 One Report.

To enhance the knowledge and understanding of PTT's overall sustainability management processes among PTT's Board of Directors' members who already possess expertise and experience in sustainability, PTT provides an orientation, and additional internal and external training courses and evaluates the performance of the PTT Board members in overseeing corporate governance. This ensures that the board can efficiently carry out its duties according to the details provided in Section 2, Governance, on pages 232 - 369. More information can be found on PTT Website.



More details of the committees responsible for overseeing sustainability material topics, both at the management and board levels can be found in the table of Sustainability Material Topic Impacts and Management on pages 151 - 155. Additionally, further details are available on PTT Website.

Sustainability Partnerships and Collaborative Networks

PTT is aware that driving Thailand towards economic strength, ensuring the quality of life for Thai citizens, and fostering sustainable stability and balance in all dimensions requires genuine and continuous cooperation across all sectors, both domestically and internationally. Therefore, PTT emphasizes continuously strengthening partnerships and collaboration with networks and sustainability partners, both internally and externally. These may include government agencies, international organizations, trade associations, institutions, and non-profit organizations consistently seeking to contribute. This commitment is grounded in policies regarding good corporate governance, risk management, legal compliance, organizational regulations, anti-corruption and anti-bribery efforts, guidelines for good governance, ethical standards, and business conduct. In considering decisions regarding support or collaboration with these partners and networks, PTT ensures thorough transparency and accountability.

PTT identifies its positioning of support or participation in sustainability partnerships and collaborative networks to support the organization's vision, strategic direction, and long-term sustainability goals. These encompass all sustainability issues and areas where PTT conducts its business to drive Thailand towards a sustainable low-carbon society collectively, addresses climate change promptly, and supports the long-term goal of achieving Net Zero Emissions by 2050, with an interim target of Carbon Neutrality by 2040. Consideration is given to supporting networks and partnerships in sustainability with primary objectives:

1. Developing and promoting development of good practices in sustainability, human rights and security, safety, occupational health, and environmental management (SSHE) to align with PTT's vision towards Future Energy and Beyond.
2. Supporting business operations in line with Thailand's policies and objectives, advancing the United Nations Sustainable Development Goals (SDGs) towards a low-carbon society, and achieving Carbon Neutrality and Net Zero Emissions targets per the Paris Agreement.

PTT strongly supports the networks and partnerships through membership fee, as well as actively participating in various means, such as serving as chairpersons or committee members of networks or task forces. More details are on PTT Website under the Sustainability section, subheading Sustainability Network.

Supporting the Sustainable Development Goals

PTT emphasizes the integration of the United Nations Sustainable Development Goals (UN SDGs) into its operations, encompassing all 17 goals. These goals are divided into two groups: **"Integrated into Core Business"**, which includes 10 goals (3, 6, 7, 8, 9, 12, 13, 14, 15, 16) integrated into strategic directions, indicators/targets, and organizational business plans. These UN SDGs are reflected in company's key sub-goals, projects, and important initiatives, as shown in "Linkage with the United Nations Sustainable Development Goals, Indicators, Targets, and Performance of PTT in 2023 table" on PTT Website under the Sustainability section. The second group, **"Collaborate with Other Stakeholders"**, comprises 7 goals (1, 2, 4, 5, 10, 11, 17). These goals are considered in analyzing and developing relationship-building plans with stakeholders to expand mutual benefits with networks and relevant stakeholders in the future. Progress in achieving all 17 UN SDGs and supporting sustainable development goals can be further explored in related sustainability topics on PTT Website.





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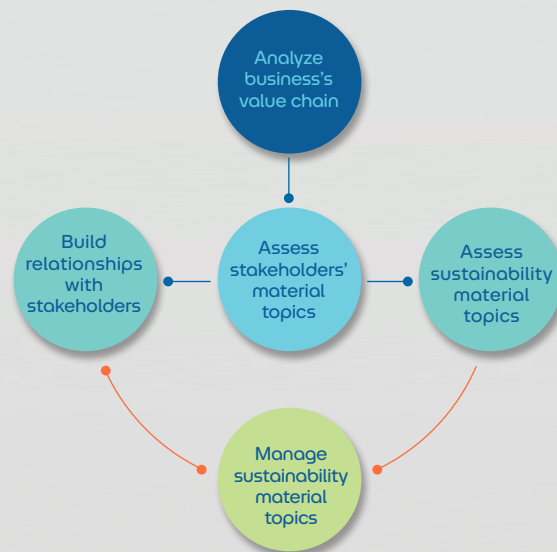
3.2 Stakeholder Analysis in Business Value Chain

Stakeholder Engagement's Objective

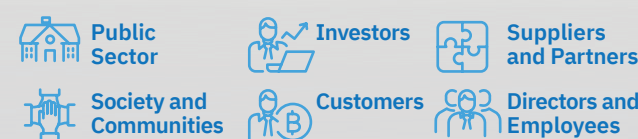
Stakeholder Engagement aims to allow stakeholders to express their opinions and participate in operations. PTT is committed to ensuring balanced care for all stakeholders, a crucial mission. This involves fostering their engagement on key issues and responding appropriately to needs, expectations, and concerns in a timely and suitable manner. PTT's stakeholder management is guided by the international standard AA1000 Stakeholder Engagement Standard 2015 (AA1000 SES) and the criteria for focusing on stakeholders and customers according to the State Enterprise Assessment Model (SE-AM). This ensures systematic and efficient operations that support PTT's sustainable growth and gain the trust of all stakeholder groups.

Stakeholder Impacts Management in the Business Value Chain

PTT establishes guidelines for analyzing and managing both positive and negative issues or impacts arising or likely to arise from its business operations and activities, both directly and indirectly within the company's value chain. These guidelines cover Environmental, Social, and Governance impacts including human rights. The approach is as follows:



PTT's Stakeholder Groups consist of 6 categories:



Analyzing the Business Value Chain

In 2023, PTT analyzed the value chains of all 3 core business groups and 15 supporting business departments according to the organizational structure. Internal and external stakeholders to the organization are identified to analyze impacts on stakeholders from business operations, products, and/or services, as well as the organization's value chain on the economy, environment, and society including human rights. This includes identifying stakeholders' needs, expectations, and concerns to identify issues aligned with organizational problems. Each department will conduct this during the preparation of their annual business plans to fully integrate stakeholder engagement plans and sustainability management plans into the business plans and budgets of each department. These will be presented to the PTT board for approval before implementation in the following year.

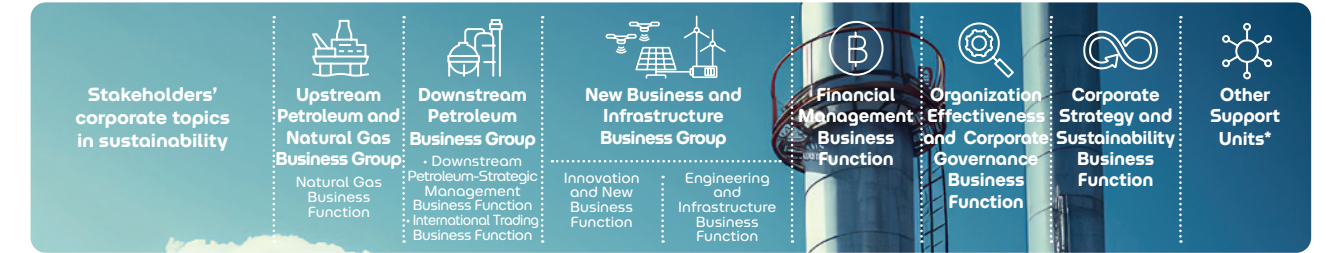
There are 10 organizational topics including:

Brand & Trust	Brand refers to PTT's image and the stakeholders' perception towards PTT, or products and services; whereas Trust refers to credibility, reliability, and confidence.
Climate Change	Climate change, whether occurred from natural causes or anthropogenic activities
Compliance/ Transparency	Compliance refers to legal and regulatory compliance. Transparency refers to clarity of corporate disclosure, whether positive or negative information.
Customer Experience	Interactions between the customers and PTT, as well as business relations to build awareness, encourage trainings, and support purchases and services.
Energy Transition	Shifting towards new energy infrastructure
Financial Performance	Financial - centric performance of operation
Future Business	New businesses, such as Renewable Energy, Energy Storage, EV Value Chain, Hydrogen Technology, Life Science, AI, Robotics and Digitalization, etc.
Information Security & Data Privacy	Information Security refers to data security. Data Privacy refers to the protection of personal data, by providing protection and complying with the laws.
Organization & Employee	Corporate and employee development
Safety, Health & Environment	Security, safety, occupational health, and environment

Here is the QR code to access the organizational issue video.



Annual value chain analysis result of each business functions in 2023



Environmental	Upstream Petroleum and Natural Gas Business Group	Downstream Petroleum Business Group	New Business and Infrastructure Business Group	Financial Management Business Function	Organization Effectiveness and Corporate Governance Business Function	Corporate Strategy and Sustainability Business Function	Other Support Units*
Climate Change							
Safety, Health & Environment	●	●	●				
Social							
Brand & Trust	●	●	●	●	●	●	●
Organization & Employee					●		
Safety, Health & Environment	●	●	●				
Governance							
Brand & Trust	●	●	●	●	●	●	●
Compliance/ Transparency	●		●	●	●		●
Customer Experience	●	●	●	●	●		
Energy Transition	●			●	●		
Financial Performance	●	●		●	●		
Future Business	●		●	●	●	●	●
Information Security & Data Privacy			●				
Organization & Employee	●				●	●	



*Remark: Other support units include Office of General Counsel, Office of Corporate Audit, Corporate Reputation and Social Responsibility Department, and Company Secretary and Office of General Counsel Corporate Relation.

Building Stakeholder Relationships

PTT gathers and analyzes stakeholders' needs, expectations, and concerns through surveys conducted among stakeholders and employees directly responsible for stakeholder engagement. This information and global trends are used to compile key issues between stakeholders and the organization.

Once stakeholders' importance and issues are prioritized and linked to organizational issues, a plan is developed to build stakeholder relationships. Progress is then monitored, with selected organizational-level issues being tracked and reported quarterly to the Corporate Plan and Management Committee (CPRC) and the Enterprise Risk Management Committee (ERM). This allows for adjustments based on committee feedback, including assessing stakeholder engagement and commitment annually to review operations for the following year.

In 2023, four key issues were being monitored at the organizational level:

- 1) Brand & Trust
- 2) Climate Change
- 3) Energy Transition
- 4) Future Business

In alignment with PTT's vision of "Powering Life with Future Energy and Beyond", there has been an increased focus on

investment in "Future Energy and Beyond" to achieve a profit margin of over 30% by 2030. Additionally, there is a commitment to reduce greenhouse gas emissions by 15% by the same year, compared to the emissions in 2020, to achieve the intermediate target of Carbon Neutrality by 2040 and Net Zero Emissions by 2050 (ahead of the country's target year of 2065). Within PTT and its wholly owned subsidiaries, efforts are being undertaken to engage internal and external stakeholders to foster employee participation towards these objectives. This involves promoting collaborative ideas for change and driving investment plans to stimulate the Thai economy.

Stakeholder Engagement Score

The target for stakeholder engagement score is set at an excellent level (≥ 80). The score for the 2023 is 85 points, which exceeds the target, reflecting PTT's overall responsiveness to stakeholders at a very high level.

	2020	2021	2022	2023
Target	≥80	≥80	≥80	≥80
Performance	83	86	86	85



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Stakeholder Engagement Result



Stakeholders
Engagement Channel

- Monthly consultation meetings with the public sector
- Quarterly update meetings with the public sector
- Information disclosure via PTT Website and other online media
- PTT Group's operation site visits
- Annual general meeting of shareholders
- Opportunity Day
- Online meetings
- Digital roadshow with international investors via online channels
- Customer visits to raise awareness and foster correct understanding
- Online meetings and discussions with clients
- PTT NGV Station Application
- 1365 Contact Center
- Online media platforms such as LINE: PTT Natural Gas and PTT NGR Website: Customer Service Center

Stakeholders' Needs
and Expectations

- CLIMATE CHANGE**
 - Promote policies on greenhouse gas control/absorption and efficient resource utilization/environmental conservation into practice
 - Actively participate in providing feedback and valuable information
 - Become a leader in greenhouse gas management
- COMPLIANCE/ TRANSPARENCY**
 - Ensure energy security and support the public sector policies
 - Provide easy-to-understand, sufficient, timely, and transparent disclosure of information, addressing issues comprehensively
 - Ensure good corporate governance operation that promotes fair competition and free trade
- FUTURE BUSINESS**
 - Continuously develop new joint ventures in the future
 - Conduct business that supports and aligns with government policies
- SAFETY, HEALTH & ENVIRONMENT**
 - Promote Safety of Life and Property
 - Minimize environmental impact from operations through stringent standards and controls
- ENERGY TRANSITION**
 - Expand into the clean energy business utilizing natural gas
 - Achieve performance reflecting the shifts in future energy business
 - Invest in companies adding values to society and the environment
- FINANCIAL PERFORMANCE**
 - Invest in companies with good performance, stability, growth with good returns
 - Have the ability to repay debts
 - Ensure good governance in management
- FUTURE BUSINESS**
 - Expand investments into new ventures
 - Produce and consume in a way that creates value for society and is environmentally friendly
- CUSTOMER EXPERIENCE**
 - Access to quality and environmentally friendly products and services at fair prices
 - Work system is convenient and flexible
- FUTURE BUSINESS**
 - Provide Environmentally friendly production and consumption
 - Develop clean energy at fair prices
 - Expand electric vehicles and electric charging stations nationwide

Examples of
Key Performance

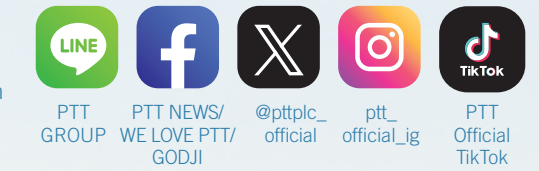
- CLIMATE CHANGE**
 - PTT serves as the Thailand Carbon Neutral Network (TCNN) chairman, comprising over 500 leading organizations nationwide. This network acts as a leading platform advocating for greenhouse gas reduction and expediting policy proposals to the government to elevate the country's greenhouse gas reduction standards to international levels
- COMPLIANCE/ TRANSPARENCY**
 - Participate in meetings/ discussion with public sector to take suggestions and provide feedback beneficial to various projects
- FUTURE BUSINESS**
 - Communicate and raise awareness of PTT's new business directions
- SAFETY, HEALTH & ENVIRONMENT**
 - Organize a public hearing to collect the public sector's opinions relating to PTT's projects and implement the feedback for improvement
 - Collaborate with the public sector and communities' leaders to open for community concerns and suggestions
- ENERGY TRANSITION**
 - Communicate the direction and progress of PTT's business development efforts
- FINANCIAL PERFORMANCE**
 - Communicate PTT's strategies and directions to build investor confidence through shareholder meetings and online platforms
 - Disseminate information to shareholders regarding financial status and vital financial ratios through various channels, including communicate investors, analysts, and fund managers through Analyst Meetings and Roadshows both domestically and internationally
- FUTURE BUSINESS**
 - Establish relationships and cooperations in joint business operations
- CUSTOMER EXPERIENCE**
 - Elevate customer experience by analyzing business weaknesses to identify areas for improvement continuously
 - Instill confidence in products and services, provide communication and offer training courses as requested by customers
 - Organize PTT's CRM (Customer Relationship Management) and CSR (Corporate Social Responsibility) activities to foster customer engagement
- FUTURE BUSINESS**
 - Build relationships and collaboration in conducting joint business ventures



Stakeholders
Engagement Channel

- Community visits for engagement
- Public hearing for communities per work plans
- 1365 Contact Center
- PTT Website or email pttvoice@pttplc.com
- Report grievance via email: grchelpdesk@pttplc.com or pttvoice@pttplc.com

• Online media: such as



Stakeholders' Needs
and Expectations

- BRAND & TRUST**
 - Promote and contribute to solving national economic issues
 - Develop the society, quality of life, and the environment
 - Ensure reliable and transparent management with good governance
- SAFETY, HEALTH & ENVIRONMENT**
 - Promote safety of life and property
 - Preserve/ restore community environment environmentally friendly and community-safe consumption and production
 - Reduce air pollution from construction project
 - Address and promptly resolve community issues

Examples of
Key Performance

- BRAND & TRUST**
 - Continuously communicate and promote understanding of PTT's vision
 - Support communities through various projects:
 - **Innovation for Community Project**
Utilizing knowledge, expertise, innovation, and technology to support farmers to become Smart Farmers in 45 areas (29 provinces), developing and elevating community products to more than 1,400 SKUs, from 450 communities and continuously developing community-based tourism in 6 areas nationwide.
 - **PTT Group Model School Project**
Developing education for 109 schools under the concept "STEEM 4E" with Kamnoetvidya Science Academy and Vidyasirimedhi Institute of Science and Technology to enhance students' skills in STEM (Science, Technology, Engineering, Mathematics) and English language, along with teaching the 4E principles (Ethics and Growth Mindset/ Entrepreneurship/ Energy Literacy/ Environment Awareness). The goal of 2023 is to emergence of 24 STEM model teachers, 11 of 4E model schools.
 - **Green Globe Institute**
Awards given to communities and individuals conserving natural resources and sustainable environments, utilizing local knowledge, emphasizing community participation, and sharing knowledge and award-winning works for further benefit.
- The Development and Campaign on the Utilization of Vetiver according to the Royal Initiative Project**
In collaboration with the Chai Pattana Foundation, Office of the Royal Development Projects Board (ORDPB), and Land Development Department, this project aims to expand vetiver grass usage to conserve soil and water. It includes training on vetiver grass cultivation and competitions. In 2023, Thailand hosted The Seventh International Conference on Vetiver in Chiang Mai province with 1,098 participants from 19 countries worldwide.
- SAFETY, HEALTH & ENVIRONMENT**
 - Visit sites to build community's confidence in safety measures, prepare for emergencies, and take feedback to improve operations
 - Meet with community leaders to promptly address complaints and requests systematically and fairly while listening to feedback and instilling confidence in the community
 - Communicate information and construction plans in the areas to inform the community and receive feedback and concerns



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Stakeholders
Engagement Channel

Stakeholders' Needs
and Expectations

Examples of
Key Performance



Suppliers and Partners

Directors and Employees

- Annual supplier seminar
- Supplier communication channel, such as procurement website and emails
- PTT Online procurement and vendor system, comprises
 - PTT e-purchase system
 - PTT e-bidding
 - ESG Self-Assessment for suppliers for PTT and PTT Group suppliers

- Monthly Relation Affairs Committee meetings
- Joint social activities between executives and employees
- Business functions meetings
- PTT Board meeting

BRAND & TRUST

- Develop capacity for long-term business collaboration
- Procurement information is easily accessed, and suppliers are confident with PTT's transparent procurement process
- Promote job opportunities for SMEs and enhance mutual capabilities in responding to changes
- Enhance efficient work processes

COMPLIANCE/ TRANSPARENCY

- Comply with rules and regulations
- Achieve transparent and traceable good governance and clearly communicate work process and utilize technology

ENERGY TRANSITION

- Encourage business cooperation during the transition towards full-fledged free trade
- Proactively support constructive information and feedback

FUTURE BUSINESS

- Collaborate to establish new businesses, foster continuous cooperation for the future, and provide accurate consultation and information regarding new business operations

ORGANIZATION & EMPLOYEE

- Achieve stability and progress, along with excellent benefits and compensation
- Work with an organization that adapts to changes, accelerates growth, and utilizes technology to enhance operational efficiency
- Develop employee skills to support future business needs
- Establish understanding and confidence in PTT's operations

INFORMATION SECURITY & DATA PRIVACY

- Ensure data security in the collection and usage
- Fully understand and comply with the Personal Data Protection Act (PDPA)

BRAND & TRUST

- Communicate the progress of operations, including:
 - 1) Investment plans that support future growth
 - 2) Maintenance of business performance amidst economic slowdowns
 - 3) Collaboration management within the PTT Group through supply chain management

COMPLIANCE/ TRANSPARENCY

- Implement digital procurement systems in the procurement process, allowing vendors to conduct transactions online, thereby enhancing efficiency, convenience, and modernization
- Communicate the procurement processes of PTT and guide utilizing various systems to enhance knowledge and understanding among vendors through vendor seminars and other communication channels such as procurement websites and emails

ENERGY TRANSITION

- Foster understanding of PTT's business operations

FUTURE BUSINESS

- Foster relationships and cooperations in conducting business together

ORGANIZATION & EMPLOYEE

- Review employees' skill sets, knowledge, and abilities that align with the new business model
- Enhance welfare benefits to be suitable for the current economic conditions and comparable to companies in the same industry group
- Revise the compensation structure to align with job performance and enhance performance-driven initiatives
- Organize collaborative activities with the PTT Group's committees to foster an understanding of the group's business operations

INFORMATION SECURITY & DATA PRIVACY

- Provide education and raise awareness about cyber threats
- Offer knowledge on legal compliance, such as the Personal Data Protection Act, and ensure data management practices adhere to legal standards

Remark: Additional details regarding the vision and strategic direction of stakeholders in PTT can be found on PTT Website

3.3 Stakeholder Impact Management in Business Value Chain

Sustainability Materiality Assessment

The process of sustainability materiality assessment at PTT is aligned with the Global Reporting Initiatives (GRI) Universal Standards 2021 and the Corporate Sustainability Reporting Directive (CSRD) requirements. The assessment identifies sustainability risks and opportunities covering Environmental, Social, and Governance dimensions, considering human rights throughout the organization's business operations. The material topics take into consideration the actual and potential impacts, both positive and negative. It evaluates the impacts on stakeholders, society, and the environment (Impact Materiality) and the impacts of external factors on the organization's financial performance (Financial Materiality) throughout the value chain, following the concept of Double Materiality. Due diligence materiality assessment is conducted annually and integrates into the annual enterprise risk assessment process to review changes in the context of internal/external factors and evolving circumstances, with 4 main steps as follows:



Consider internal factors (such as vision, mission, strategic objectives, organizational risks, and operations/ activities) and external factors (such as standards, requirements, best practices, global trends, and relevant risks), as well as consider material topics from PTT Group and industry peers. Additionally, PTT also analyzes internal and external stakeholders' needs and expectations throughout the value chain from organizational activities through surveys/ public hearing/ interviews for material topic grouping and prioritization.

Identify actual and potential impacts, both positive and negative, in Environmental, Social, and Governance dimensions with the consideration of human rights impacts throughout the organization's operations. It starts from actual and potential negative impacts that may happen in the future. This includes those the organization causes, contributes to, or is directly linked to for business benefits from the organization's value chain. Next, identify the positive impacts that have occurred and have potential in the future to deliver value for sustainable development.

Assessing the impacts on society and the environment (Impact Materiality) and the impacts on the organization's financial performance (Financial Materiality) by analyzing both quantitative and qualitative aspects of both positive and negative impacts.

Negative impacts:

When evaluating the potential impacts, it is important to consider both the negative and positive impacts. The severity of negative impacts should be assessed by considering their scale, scope, and whether they are irremediable. Additionally, the likelihood of negative impacts occurring in the future should also be taken into account.

Positive impacts:

The significance of positive impacts should be evaluated by considering their scale and scope. The potential positive impacts that are likely to occur in the future should be determined by considering both their scale, scope, and the likelihood of occurrence.

Prioritize the impacts and select materiality topics for management and disclosure purposes in the 56-1 One Report and PTT Website. The company conducts a thorough analysis of the Impact Materiality on society and the environment and the Financial Materiality on the organization's financial performance. This assessment undergoes a collaborative review with relevant functions and experts. It is all under the oversight and approval of PTT's committees at the management and board levels, including the Governance, Risk and Compliance Management Committee (GRCMC) and the Corporate Governance and Sustainability Committee (CGSC), respectively. In addition, PTT engages external experts and agencies to review the process and outcomes of the materiality assessment. This is to ensure completeness, accuracy, reliability, and transparency. The company considers observations from these experts and external agencies to continuously improve operational processes and information disclosure practices.



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Materiality Assessment Result



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56-1 One Report 2023
PTT Public Company Limited

Following the 2023 materiality assessment, the top 3 priority topics and the issues that have changed from 2022 are as follows:

● **Climate Action** remains a top priority following the previous year, as it remains an internationally significant global agenda. The issue was emphasized during the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP27) to limit the increase in temperature to 1.5 degrees Celsius compared to pre-industrial levels. As a national energy company under the Ministry of Energy, PTT has a mission to reduce Thailand's greenhouse gas emissions in the energy sector. Therefore, PTT integrates climate change risks and opportunities assessment into its annual strategic planning and risk management processes. This involves considering energy transition risks, financial impacts related to climate change, and identifying new business opportunities in the transition to a

low-carbon economy. PTT has set long-term targets and strategies to prepare for this risk by transitioning its business toward "Future Energy and Beyond". These targets include New Growth, Business Growth, and Clean Growth through Portfolio Transformation. These strategies have been clearly outlined in the organization's strategic plan, which aligns with the vision of "Powering Life with Future Energy and Beyond".

● **Innovation and Technology** have increased their ranking significantly due to new business development and expansion in which innovation and technology play important roles. Companies are focusing on developing new sustainable products and services that cater to the needs of their current and future stakeholders. This includes supporting the energy transition following the vision "Power Life with Future Energy and Beyond", which involves expanding into new businesses that go

beyond energy, adjusting investment portfolios to include low-carbon businesses, such as renewable energy, electric vehicles, and life sciences.

PTT, in particular, emphasizes the importance of promoting creativity and innovation both within and outside the organization. This includes developing new products and services, improving work processes, and creating new businesses that improve efficiency and effectiveness. These efforts aim to increase business competitiveness and achieve sustainability goals. To achieve these goals, PTT has set 'New Growth' corporate target for increasing revenue from growth in the future energy value chain and expanding into new businesses. The company has also developed the "PTT Innovation Management Master Plan" to guide its operations and strategies. In addition, the business expansion has a potential impact on the "water management" in the future involving physical and transition risks that may arise from climate change.

● **Occupational Health and Safety** PTT employees and contractors are at risk of exposure to hazards arising from their work in the oil and natural gas industry that may lead to irreparable health injuries/ illnesses or loss of life. All of these can financially result in the cost of property damage, loss of income from business disruption, remedies, fines, etc. PTT is therefore committed to improving management, safety, and business continuity of the company to be efficient, flexible, and ready to accept all types of risks without affecting business operations and stakeholders. PTT has set strategic direction "Promote safe working environment and respecting the human rights principles" in the "Sustainability Management Master Plan" in the Social dimension to leverage occupational health and safety operations, such as compliance with basic and task-specific safety rules, health surveillance, analysis and management of process safety event risks, PTT health reporting system, and transportation safety management.

The table shows the impacts on the management and governance of key sustainability issues.



Climate Action

- Direct and indirect GHG emission and reduction
- Methane emission management
- Energy efficiency
- Financial implications and other risks and opportunities due to climate change
- Climate change mitigation and adaptation
- Net Zero Emissions

Positive Impact

- + Cost savings through energy efficiency
- + Enhanced reputation and stakeholder trust
- + Access to new markets and customer segments
- + Innovation opportunities and new revenue streams
- + Creation of green jobs for low carbon society
- + Reduced environmental impact and promotion of public health

Negative Impact

- Increased operational costs from business disruptions in owned operation and supply chain, damage to infrastructure, regulatory and legal pressures, etc.
- Ecosystem degradation and biodiversity loss
- Economic disparities leading to health public risks, food and water insecurity, displacement and forced migration, etc.

Material Topic Management Plan
PTT's Sustainability Management Master Plan for Social Responsibility and Environment

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Governance Committee Board of Directors Level

- Corporate Governance and Sustainability Committee
- Enterprise Risk Management Committee
- PTT's Board of Directors Management Level
- Governance, Risk and Compliance Management Committee
- PTT Group Sustainability Management Committee
- Corporate Plan and Risk Management Committee
- PTT Management Committee
- Functional Level
- Corporate Strategy and Sustainability

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PTT Public Company Limited



Water

- Water withdrawal and consumption from shared sources
- Water accessibility, conservation, and consumption
- Wastewater impact management
- Circular economy for water management

Positive Impact

- + Cost savings through efficient water use
- + Enhanced reputation and stakeholder trust
- + Innovation opportunities and new revenue streams
- + Conservation of natural resources and ecosystems
- + Increase access to clean water and improve public health

Negative Impact

- Increased operational costs from business disruptions in owned operation and supply chain, damage to infrastructure, regulatory and legal pressures, etc.
- Environmental degradation and water scarcity
- Social conflict and inadequate access to resources

Material Topic Management Plan
PTT's Sustainability Management Master Plan for Social Responsibility and Environment

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Governance Committee Board of Directors Level

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- PTT's Board of Directors Management Level
- Governance, Risk and Compliance Management Committee
- PTT Group Sustainability Management Committee
- PTT Management Committee
- Functional Level
- Corporate Strategy and Sustainability



Spills

- Oil, gas, and chemical spills

Positive Impact

- + Minimized financial losses and liabilities
- + Preservation of reputation and stakeholder trust
- + Protection of ecosystems and safeguarding public health

Negative Impact

- Financial losses and long-term damage to reputation
- Environmental contamination, economic loss, and public health risks

Material Topic Management Plan
PTT's Sustainability Management Master Plan for Social Responsibility and Environment

Additional Information
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Remarks:

- Human Rights Impact
- Article 3: Right to Life
- Article 4: Freedom from Slavery
- Article 5: Freedom from Torture
- Article 7: Right to Equality Before the Law
- Article 8: Right to Remedy
- Article 12: Right to Privacy
- Article 17: Right to Own Property
- Article 18: Freedom of Religion or Belief
- Article 20: Freedom of Assembly and Association
- Article 22: Right to Social Security
- Article 23: Right to Work
- Article 24: Right to Rest and Leisure
- Article 25: Right to Adequate Standard of Living
- Ref: Universal Declaration of Human Rights (UDHR), Amnesty International

Additional information is available within this report
Additional information is available on PTT Website

Cause of Impact

- ➔ Cause
- ➔ Contributes to
- ➔ Directly linked to

Stakeholders

- Public Sector
- Society and Communities
- Investors
- Customers
- Suppliers and Partners
- Directors and Employees



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Biodiversity

- Biodiversity protection and ecosystem restoration
- Sustainable land and natural resource use
- List the locations of operations that caused or contributed to involuntary resettlement
- Environmentally conscious development of urban and rural areas



Waste

- Waste management (waste generated, waste diverted from disposal, waste directed to disposal)
- Circular economy for waste management



Emissions

- Emission management such as VOCs, NOx, SOx, etc.
- Other pollution such as brightness, vibration, magnetic interference, radiation, etc.

Positive Impact

- + Enhanced ecosystem services for ecosystem health and resilience, economic reliance, recreational opportunities, and cultural benefits
- + Climate change adaptation
- + Conservation network, public participation and awareness adaptation

Negative Impact

- Financial losses and long-term damage to reputation
- Disruption of ecological balance and human well-being

Governance Committee Board of Directors Level

- Corporate Governance and Sustainability Committee
- PTT's Board of Directors
- Governance, Risk and Compliance Management Committee
- PTT Group Sustainability Management Committee
- PTT Management Committee
- Corporate Strategy and Sustainability

Material Topic Management Plan

PTT's Sustainability Management Master Plan for Social Responsibility and Environment



Positive Impact

- + Cost saving through resource efficiency
- + Innovation in Circular Economy across operations and value chain
- + Protection of ecosystems and safeguarding public health

Negative Impact

- Financial losses and damage to reputation
- Environmental contamination and public health risks

Material Topic Management Plan

PTT's Sustainability Management Master Plan for Social Responsibility and Environment



Positive Impact

- + Enhanced operational efficiency
- + Reduced environmental impact and promotion of public health

Negative Impact

- Financial losses and damage to reputation
- Environmental contamination and public health risks

Material Topic Management Plan

PTT's Sustainability Management Master Plan for Social Responsibility and Environment



Remarks:

Human Rights Impact	Article 8: Right to Remedy	Article 22: Right to Social Security	Additional information is available within this report
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Article 7: Right to Equality Before the Law	Article 20: Freedom of Assembly and Association	Ref: Universal Declaration of Human Rights (UDHR), Amnesty International	

Cause of Impact

- Cause
- Contributes to
- Directly linked to

Stakeholders

- Public Sector
- Society and Communities
- Investors
- Customers
- Suppliers and Partners
- Directors and Employees



Occupational Health and Safety

- Occupational health and safety management system, risk assessment, investigate incidents
- Safety, occupational health, and work environment, that may cause occupational injury/ safety to employees and operators
- Services related to health, consultation, trainings, health promotion, and communication with employees and operators
- Prevention and mitigation of occupational health and safety impacts directly linked by business relationships
- Process safety
- Travel, truck and marine transportation safety
- Community safety
- Emergency, crisis, and business continuity management to prevent impacts on business, communities and the environment

Positive Impact

- + Reduced workplace accident and injuries
- + Increased productivity and business competitiveness
- + Lower insurance and healthcare costs
- + Enhanced quality of life for employees, contractors and communities

Negative Impact

- Financial losses and damage to reputation
- Health risks for workers and communities

Governance Committee Board of Directors Level

- Corporate Governance and Sustainability Committee
- PTT's Board of Directors
- Governance, Risk and Compliance Management Committee
- PTT Group Sustainability Management Committee
- PTT Management Committee
- Corporate Strategy and Sustainability

Material Topic Management Plan

PTT's Sustainability Management Master Plan for Social Responsibility and Environment



Positive Impact

- + Enhancing quality of life and promoting local community employment, including aligning with state policies that support the involvement of private sector and state enterprises in supporting social enterprises
- + Establishing relationships and community participation to foster understanding and mitigate impacts on organizational image
- + Promoting self-directed learning potential throughout all stages of life, covering essential infrastructure development, creating educational opportunities, fostering skills and creativity, aiming for equality in various dimensions, and reducing social inequalities.

Negative Impact

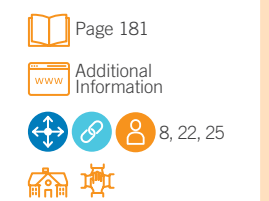
- Activities and business operations throughout the value chain (such as the construction of plants, natural gas pipeline laying, production processes, product transportation, etc.) may result in negative impacts across various dimensions, including the environment, biodiversity, quality of life in local communities, human rights of local communities, and community displacement.

Governance Committee Board of Directors Level

- Corporate Governance and Sustainability Committee
- Governance, Risk and Compliance Management Committee
- PTT Management Committee
- Corporate Reputation and Social Responsibility

Material Topic Management Plan

PTT's Sustainability Management Master Plan for Social Responsibility and Environment



Remarks:

Human Rights Impact	Article 8: Right to Remedy	Article 22: Right to Social Security	Additional information is available within this report
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Article 4: Freedom from Slavery	Article 17: Right to Own Property	Article 24: Right to Rest and Leisure	Additional information is available on PTT Website
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Cause of Impact

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Employment Practices

- Labor management relations
- Non-discrimination and harassment incidents
- Freedom of association and collective bargaining
- Equal remuneration
- Employee engagement
- Performance appraisal and career management
- Talent attraction and retention
- Child labor
- Forced or compulsory labor
- Modern slavery
- Supply chain management and supplier risk assessment

Positive Impact

- + Human resources with skills, knowledge, abilities, experience, and expertise in future energy and emerging businesses beyond the energy sector
- + Equal remuneration elevates employees' quality of life and enhances organizational solid commitment
- + Maintaining and promoting diversity within the workforce (ethnicity, religion, gender, age, etc.) to foster the exchange of learning in terms of perspectives, cultures, insights, and experiences
- + Managing supply chains transparently and ethically from the source to the end, emphasizing economic returns while considering social and environmental impacts, and creating value with partners and collaborators

Negative Impact

- Ineffective and fair human resource management may lead to satisfaction and consequently impact work efficiency and organizational commitment
- Developing the potential of underperforming employees may result in new employees needing help to fill the roles of those who resign or retire adequately
- Risks arising from inefficient procurement and operations of partners and collaborators may impact business operations, such as increased operational costs, interruptions in supply chain processes, and complaints from partners and collaborators

Governance Committee

- Board of Directors Level**
 - Corporate Governance and Sustainability Committee
 - PTT's Board of Directors Management Level
- Management Level**
 - Corporate Human Resources Committee
 - Human Resources Management Committee
 - Structure, Job Weight and Manpower Committee
 - Employee Management Committee for Potential Groups and Scholarships
 - Human Resources Group Alignment & Coordination Management Committee
 - Procurement Strategic Alignment Committee
 - Supplier Selection Committee
 - Approved Vendor List Committee
- Functional Level**
 - Organization Effectiveness and Corporate Governance

Material Topic Management Plan

- Human Resources Management and Development Plan
- PTT Learning Organization Master Plan
- PTT's Sustainability Management Master Plan
- Product and Service Procurement Related Business Plans

Additional Information
4, 5, 7, 8, 18, 20, 23, 24



Innovation and Technology

- Innovation development processes and extension to business development and new business (New S-curve)
- Promoting innovation and technology application in production, products and services

Positive Impact

- + Promoting innovation and technology utilization in business operations (production processes, products, services, etc.) to advance towards new business opportunities, catering to customers and partners, fostering competitiveness, and generating returns for investors

Negative Impact

- Rapidly changing innovations and technologies may impact various aspects of business operations, such as innovation capital, employee skills and abilities, and unexpected profit outcomes.

Governance Committee

- Board of Directors Level**
 - Enterprise Risk Management Committee
 - PTT Idea to Commercialization Gate Committee: PTT I2C Gate Committee
 - PTT Innovation Management Committee
- Management Level**
 - PTT Group Technology Committee
 - PTT Group Digital Steering Committee
 - PTT Management Committee
- Functional Level**
 - Innovation Institute

Material Topic Management Plan

- PTT Innovation Management Master Plan

Page 191 Additional Information
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Digitalization

- Information technology, cybersecurity, and privacy protection
- Digital technology adaptation to transform the organization's business process and activities

Positive Impact

- + Effectively safeguarding information, protecting against cyber threats, and ensuring privacy instills trustworthiness among stakeholders
- + Implementing digital technologies to enhance business processes for greater efficiency

Negative Impact

- Leakage of sensitive organizational and stakeholder data to external sources can lead to detrimental effects on business operations, such as increased expenses, inability to deliver products and services, loss of trust from stakeholders, and loss of sensitive information

Governance Committee

- Board of Directors Level**
 - Corporate Plan and Risk Management Committee
- Functional Level**
 - New Business and Infrastructure

Material Topic Management Plan

- Technology and Digital Master Plan

Additional Information
8, 12

Remarks:

- Human Rights Impact
- Article 3: Right to Life
- Article 4: Freedom from Slavery
- Article 5: Freedom from Torture
- Article 7: Right to Equality Before the Law

- Article 8: Right to Remedy
- Article 12: Right to Privacy
- Article 17: Right to Own Property
- Article 18: Freedom of Religion or Belief
- Article 20: Freedom of Assembly and Association

- Article 22: Right to Social Security
- Article 23: Right to Work
- Article 24: Right to Rest and Leisure
- Article 25: Right to Adequate Standard of Living
- Ref: Universal Declaration of Human Rights (UDHR), Amnesty International

- Additional information is available within this report
- Additional information is available on PTT Website

Cause of Impact

- Cause
- Contributes to
- Directly linked to

Stakeholders

- Public Sector
- Society and Communities
- Investors
- Customers
- Suppliers and Partners
- Directors and Employees



Economic Contribution

- Economic value distribution such as employee wages and benefits, dividend payment, income taxes paid to the government, and investments for social welfare
- Financial investment performance and contribution
- Public policy support and political contribution
- Government subsidies



Product Responsibility

- Fair and truthful marketing and compliance of concerning product and service information
- Emerging customer needs
- Consumer complaints and disputes service, support, and settlement
- Assessment and protection of the health and safety impacts of products and services
- Consumer data and privacy protection



Governance and Ethics

- Good and ethic corporate structure and governance process
- Anti-competitive behavior
- Anti-corruption and transparency
- Risk management aligned with international standards
- Tax strategy and policy
- Compliance with law, regulation, and requirement
- Business positioning in supporting new rules, regulations, and policies
- Remunerations of board director and management

Remarks:

- Human Rights Impact
- Article 3: Right to Life
- Article 4: Freedom from Slavery
- Article 5: Freedom from Torture
- Article 7: Right to Equality Before the Law

- Article 8: Right to Remedy
- Article 12: Right to Privacy
- Article 17: Right to Own Property
- Article 18: Freedom of Religion or Belief
- Article 20: Freedom of Assembly and Association

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- Additional information is available within this report
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Cause of Impact

- Cause
- Contributes to
- Directly linked to

Stakeholders

- Public Sector
- Society and Communities
- Investors
- Customers
- Suppliers and Partners
- Directors and Employees

Positive Impact

- + Creating returns from business operations for stakeholders
- + Sharing economic value, such as employee income, compensation, benefits, annual dividends, taxes paid to the government, and investments for social welfare
- + Supporting state policies, social development, quality of life, and environmental sustainability

Negative Impact

- Non-transparent taxation and receiving financial assistance from the state in business operations may lead to illegal financial flows and corruption
- Non-transparent state policies may contribute to corruption, cronyism, or undeserved benefits for specific organizations

Material Topic Management Plan

- Related Business Plans

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22

Positive Impact

- + Developing environmentally friendly products and services that are high quality and meet the needs and expectations of customers
- + Providing knowledge and information about products and services that benefit consumer decision-making
- + Protecting consumer data and privacy

Negative Impact

- Products and services that do not adhere to health and safety standards or regulations may harm the organization and customers, such as health impacts, complaints, disputes, or legal actions
- Privacy violations and customer data loss may adversely affect the organization's reputation and credibility

Material Topic Management Plan

- PTT's Customers and Marketing Management Plan

Additional Information
8, 12, 17

Positive Impact

- + Conducting business with integrity, ethics, transparency, and a stance against corruption and collusion, complying with laws, regulations, and rules, which positively influences operational outcomes by reducing expenses from fines and enhancing the organization's image
- + Promoting ethical practices throughout the supply chain
- + Establishing fair compensation for board members, executives, and employees
- + Fostering fair market competition and free trade

Negative Impact

- Increased expenses due to fines result in financial strain, while damage to the organization's image and reputation can hinder its ability to conduct business effectively

Material Topic Management Plan

- PTT's Sustainability Management Master Plan for Social Responsibility and Environment

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Value Creation towards Sustainability

Inputs



- 28,562,996,250 shares of issued and additional paid-in capital
- THB 3,367,203 million in revenue from products and services in 2022
- THB 491,288 million from EBITDA (Earnings before Interest, Tax, Depreciation, and Amortization) in 2022

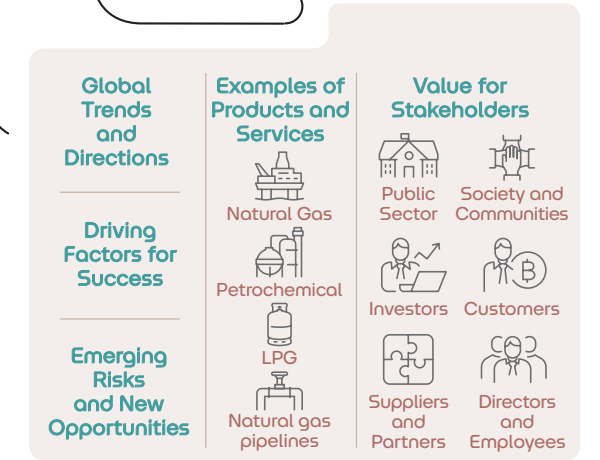
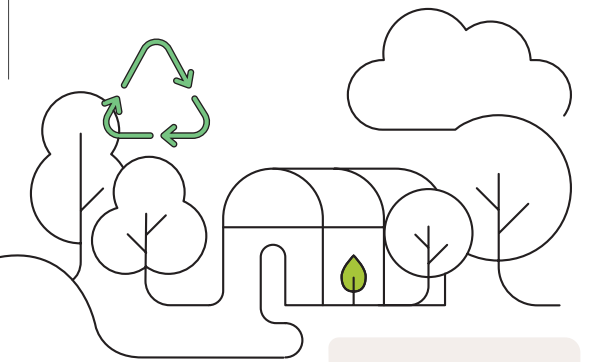
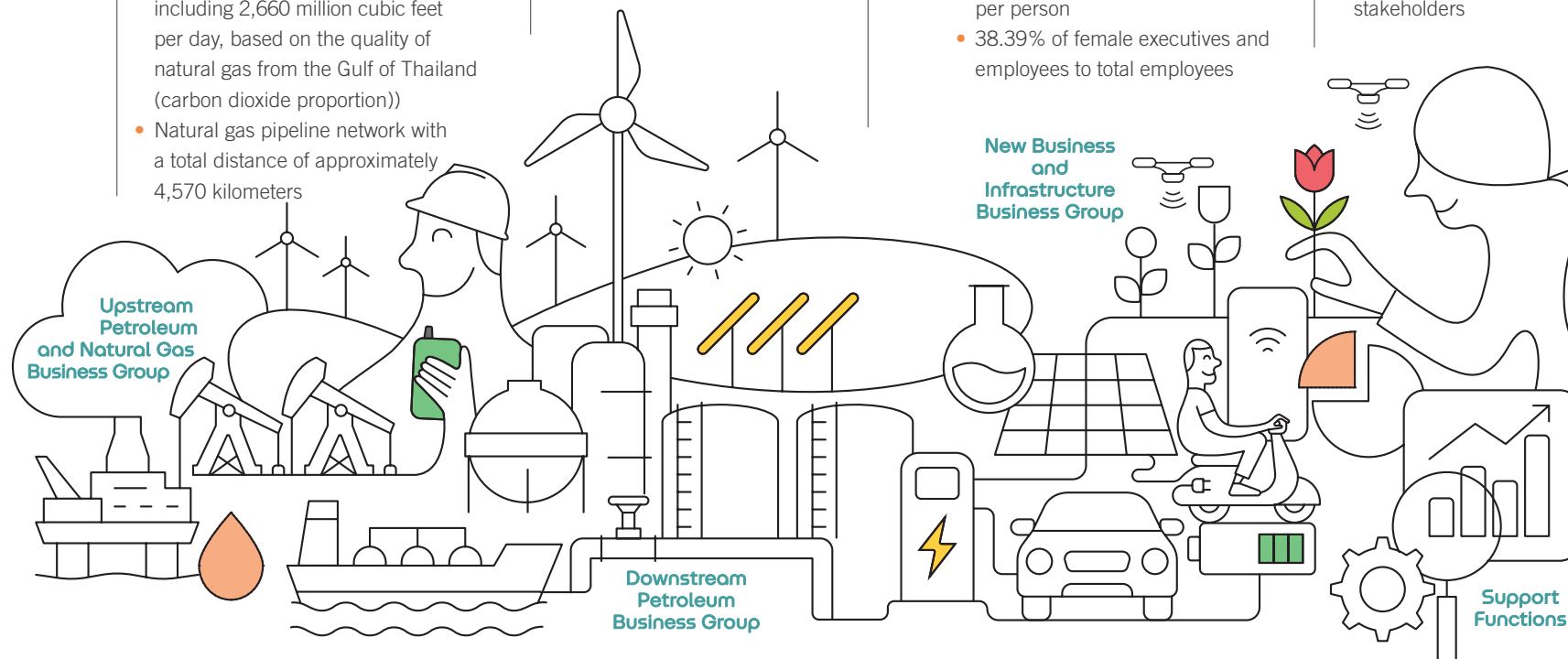
- Production and research facilities
- Infrastructure such as natural gas pipelines and petroleum terminals
- 6 Gas Separation Plants with a total production capacity of 2,870 million cubic feet per day (In 2022, the total capacity of the Gas Separation Plants, including 2,660 million cubic feet per day, based on the quality of natural gas from the Gulf of Thailand (carbon dioxide proportion))
- Natural gas pipeline network with a total distance of approximately 4,570 kilometers

- Intellectual properties
- Licensed technology, innovations, and other initiatives
- Research fund of THB 502 million

- 3,574 PTT employees
- Skills and experience of employees, suppliers, and business partners
- Average training hours for executives and employees: 46.11 hours
- Average training cost for executives and employees: THB 30,513.87 per person
- 38.39% of female executives and employees to total employees

- Relationship between PTT and stakeholders
- Brand and reputation
- Budget for social investment THB 1,018.79 million
- Collaboration with stakeholders

- Renewable and non-renewable natural resources
- Budget for environmental investment: THB 492 million



- THB 3,144,551 million in revenue from products and services
- THB 426,895 million from EBITDA (Earnings before Interest, Tax, Depreciation, and Amortization)
- Net debt/ EBITDA ratio 1.67 times
- Net profit per share THB 3.92 per share
- Dividend payments from annual operations THB 57,126 million
- Taxes and payments to government for public infrastructure and administration: THB 41,865 million

- Production and research facilities
- Infrastructure such as natural gas pipelines and petroleum terminals
- Gas Separation Plants: 6 units with a total production capacity of 2,870 million cubic feet per day (In 2023, the Gas Separation Plants' capacity to separate natural gas totaled 2,660 million cubic feet per day, based on the quality of natural gas from the Gulf of Thailand (including carbon dioxide proportions))
- Natural gas pipeline network with a total distance of approximately 4,570 kilometers

- 16 new products and 32 patent applications
- Revenue from research and development by PTT Innovation Institute amounted to THB 81,812,047

- Human capital return on investment 298 times
- Employee engagement score 82%
- Employee turnover rate Male employees 1.45 Female employees 1.18
- Employee succession rate 100%

- 100% community engagement with local communities in the operational areas
- Stakeholder engagement score 85 points
- No community conflicts

- PTT's greenhouse gas emissions:
 - Direct emissions (Scope 1) 10.13 million tons of carbon dioxide equivalent
 - Indirect emissions (Scope 2) (market-based) 0.19 million tons of carbon dioxide equivalent
 - Indirect emissions (Scope 2) (location-based) 0.18 million tons of carbon dioxide equivalent
- PTT Group's greenhouse gas emissions:
 - Direct emissions (Scope 1) 40.73 million tons of carbon dioxide equivalent
 - Indirect emissions (Scope 2) (market-based) 0.87 million tons of carbon dioxide equivalent
- Percentage of water recycled and reused per total volume of water withdrawal (freshwater) 6.89%
- Reforestation project of 1 million rai in honor of His Majesty the late King Bhumibol Adulyadej the Great to sequester an average of 2.14 million tons of carbon dioxide equivalent annually, yielding benefits valued at over THB 280 million annually

PTT Business Operations

Value Creation



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3.4 Overview of Sustainability Material Topic Management and Performance

Under the policy of conducting business responsibly across various domains, which is implemented through the management process of key sustainability issues as detailed in sections 3.1 - 3.3 of PTT, presenting an overview of the goals, plans, operational outcomes, and progress of significant projects in managing key sustainability issues for the first 3 quarters of the year 2023. This includes problems that have changed in the past year and issues of interest to stakeholders, as documented in the 56-1 One Report. These issues encompass **climate action**, **water management**, **occupational health and safety**, **corporate citizenship**, and **innovation and technology**. Please refer to PTT Website under the Sustainability section for further details on other important issues.

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Climate Action

Positive and Negative Impacts

PTT is aware that the activities, products, and services in the oil and natural gas business, which are the organization's main activities, inevitably release greenhouse gas directly and indirectly throughout the value chain. These emissions lead to positive and negative impacts on various dimensions, ranging from environmental factors causing global warming to changes in climate that have other complex and diverse consequences. These consequences include impacts on biodiversity and changes in people's lives and quality of life, affecting societies in various parts of the world, including Thailand.

All sectors globally and in Thailand prioritize and elevate addressing climate change as an urgent global agenda. This inevitably affects PTT's business operations directly. Since 2021, PTT has incorporated the risks and opportunities from climate change into its strategic direction and long-term goals until 2030, including corporate targets such as Business Growth, New Growth, and Clean Growth. These goals reflect the commitment to transforming the business towards a low-carbon society, aiming for Net Zero Emissions by 2050 to the activities conducted by PTT and its wholly owned subsidiaries, which PTT holds 100% shares, not only positively impact the environment but also drives the country's economy. This contributes to positive social impacts by creating employment opportunities, improving the quality of life for citizens and society, enhancing the knowledge and skills of employees from new businesses, and may also receive tax incentives.



Material Topic Management

Indicators	Performance Targets		Performance against 2023 Targets
	Short-term Targets 2023	Long-term Targets	
<ul style="list-style-type: none"> ● SE-AM KPI and Corporate KPI* ● Functional KPI ● KPIs aligned with PTT's Sustainability Management Master Plan for Social Responsibility and Environment 2021 - 2025 ● Quality, Safety, Health, and Environment (QSHE) KPIs 2023 for PTT and its subsidiaries 	<p>PTT: Direct and indirect greenhouse gas emissions not exceeding 11.5 million tons of carbon dioxide equivalent</p> <p>PTT Group: Direct and indirect greenhouse gas emissions (domestically and internationally) not exceeding 51.5 million tons of carbon dioxide equivalent</p>	<p>PTT: Achieve Carbon Neutrality by 2040 and Net Zero Emissions by 2050</p> <p>PTT Group: 15% reduction by 2030 compared to 2020 emissions</p>	<p>PTT: 10.13 million tons of carbon dioxide equivalent</p> <p>PTT Group: 41.59 million tons of carbon dioxide equivalent</p>

* SE-AM and Corporate KPIs measure eco-efficiency performance from PTT's emission intensity

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Contribution to the United Nations Sustainable Development Goals (UN SDGs)



Key Action Plans for 2023

Continuing the 3P Decarbonization Pathways from the previous year:

- Pursuit of Lower Emissions
- Portfolio Transformation
- Partnership with Nature and Society

Overall Management Approach

PTT manages the impacts of climate change at every stage of its business operations, incorporating it as a key input into the organization's strategic direction in 2021. **Long-term targets for 2030** reflect the commitment to earnestly transform business practices towards Business Growth, New Growth, and Clean Growth, aligning with the corresponding strategic directions embedded in the organizational vision and cascaded into operational plans at all levels, including business units, departments, and subsidiaries within PTT Group. These goals are further translated into organizational and departmental performance indicators to drive consistent and aligned actions.

Additionally, PTT sets ambitious **mid-term targets for Carbon Neutrality by 2040 and Net Zero Emissions by 2050**, surpassing national targets. This endeavor encompasses direct actions

by PTT and its wholly owned subsidiaries supported by governmental measures. **The 3P Decarbonization Pathways**, closely linked and aligned with the long-term goals for 2030, guides these efforts. Furthermore, the establishment of the **PTT Group Net Zero Task Force (G-NET)**, comprising senior executives from PTT Group companies, supports and drives initiatives aligned with the 3P Decarbonization Pathways.

PTT monitors and summarizes progress on business plans and targets for business unit level committees and presents overall reports to management and the board. These structures are designed to review, provide guidance, and advocate for close-quartered action every quarter.

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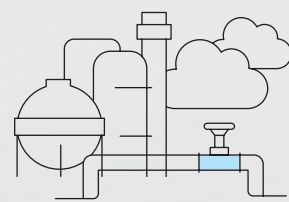
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3P Decarbonization Pathways

linked to the organization's long-term target for 2030, serve as a framework for collaborative action within PTT Group. Key action plans/ projects include the following:



Pursuit of Lower Emissions

Interconnected with the Clean Growth target to maximize the reductions in greenhouse gas emissions throughout the processes

Operational Activities

- Carbon Capture and Storage (CCS)
- Carbon Capture and Utilization (CCU)
- Utilization of renewable energy and hydrogen energy in the process
- Implementation of energy conservation and efficiency projects
- Offsetting greenhouse gas emissions through carbon credits

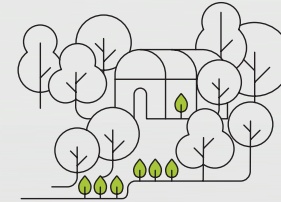


Portfolio Transformation

Generating growth from Future Energy businesses by increasing the proportion of the Green Portfolio and managing the Hydrocarbon Portfolio

Operational Activities

- Promoting growth in the future energy sector
- Increasing the proportion of renewable energy production
- Decreasing investment in fossil fuel
- Supporting the adoption of electric vehicles in Thailand



Partnership with Nature and Society

Increasing the carbon sequestration through Nature-based Solutions, such as planting and maintaining forests and expanding green spaces

Operational Activities

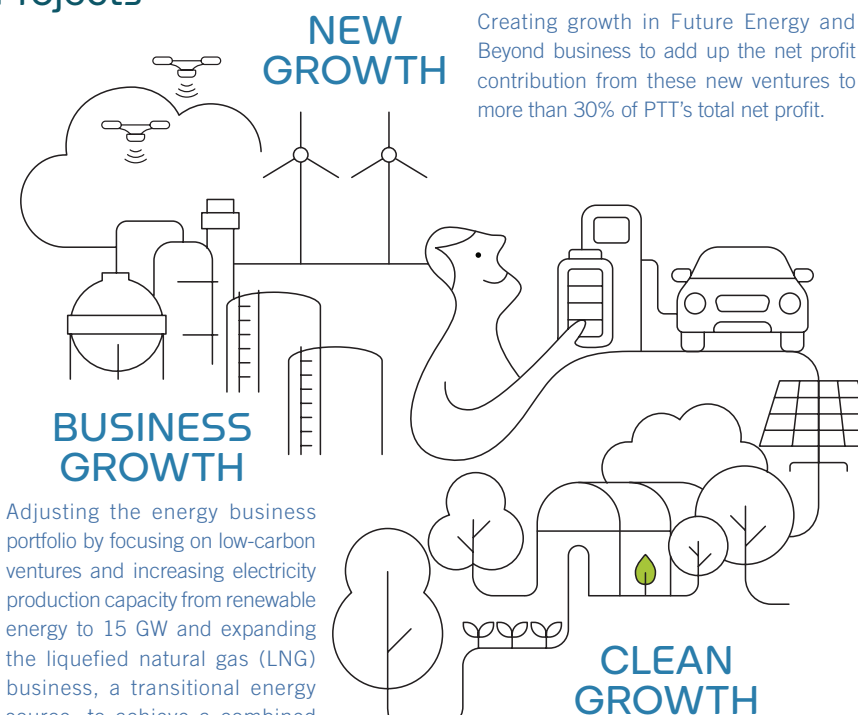
- PTT conserves 1,600,000,000 square meters (1 million rai) of the forest through the reforestation project of 1 million rai in honor of His Majesty the late King Bhumibol Adulyadej since 1994
- PTT has planted 1,600,000,000 square meters (1 million rai) of new forests covering terrestrial and mangrove forests and another 1,600,000,000 square meters (1 million rai) in collaboration with PTT Group

Progress of Key Plans/ Projects

Review of the Corporate Targets and Strategic Direction

In 2023, PTT reviewed its long-term goals for 2030, adjusting the Business Growth target by increasing the electricity production capacity target from renewable energy from 12 GW to 15 GW, aligning with the accelerated energy transition. Additionally, it decreased the target for electricity production capacity from conventional power from 8 GW to 5 GW.

PTT's long-term targets 2030 for Business Growth, New Growth, and Clean Growth are summarized as follows:



Furthermore, the organization will review its strategic direction to ensure clarity and alignment with the evolving long-term targets. This reflects readiness to adapt from conventional hydrocarbon-based businesses while accelerating the development and expansion of new ventures, including Future Energy and Beyond, to mitigate risks and impacts on stakeholders resulting from climate change. Moreover, it seeks opportunities arising from the energy transition trend and the direction of Thailand's new industrial development.

PTT's investment in existing businesses has the direction of 'Prolong Existing Business' by increasing competitiveness and generating profits for as long as possible while new businesses are being developed. The strategic directions are as follows:

- **Operational Excellence:** Implementing productivity improvement programs across PTT Group to reduce costs and enhance competitiveness.
- **Group Synergy:** Creating synergy through various platforms within PTT Group to prepare for situations such as oil supply surplus and intensified competition in anticipated challenging markets.
- **Business Portfolio Transformation:** Adjusting the business portfolio to accommodate energy transition.
- **Thailand-Cambodia Overlapping Claims Area (OCA):** Accelerating the development of OCA resources to ensure gas supply stability from domestic sources.

The 'Ignite Future Energy and Beyond' direction focuses on generating significant returns for PTT before the existing business deteriorates from the energy transition trend by creating an Execution Roadmap and an Exit Strategy.

Between 2023 and 2030, PTT Group prepared a 5-year investment plan totaling approximately THB 1.135 trillion. In 2023, THB 190,544 million was disbursed to enhance energy security, maintain competitiveness, foster business growth within PTT Group, and collectively drive industry objectives and the country's S-Curve. Additionally, targets and investment directions were set for 2030, emphasizing investments in high-yield assets and expediting investments in future energy and new businesses to support sustainable business growth. Furthermore, PTT has divested its coal business by selling all shares in Indonesia in February 2023.

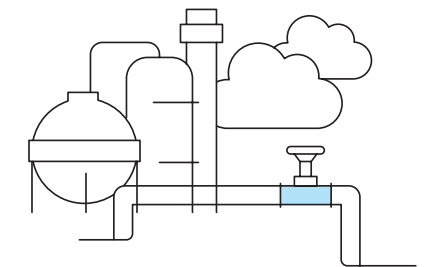
Further details regarding the nature of operations, procurement, and distribution of future energy and non-energy businesses can be found in section 1.2, pages 63 - 109. Significant changes and developments within PTT, including its transition towards future energy and non-energy businesses over the past 3 years, are elaborated in section 1.1.2, pages 46 - 61. Furthermore, key performance outcomes aligned with PTT's vision and strategy in 2023 are outlined on pages 8 - 13.

Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

PTT integrates climate risk and opportunity analysis into its strategic planning and organizational risk management processes by incorporating Climate Scenario Analysis following Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). This enables the assessment and understanding of both physical and transitional risks associated with climate change and their impacts on business operations over different time horizons. The evaluation covers various business groups within PTT, including upstream and downstream petroleum businesses, infrastructure businesses, and natural gas businesses. Furthermore, PTT applies the disclosure criteria outlined in IFRS2 related to climate change risks and opportunities, which is aligned with TCFD.

For further details, please visit PTT Website.

3P Decarbonization Pathways



Pursuit of Lower Emissions

Carbon Capture and Storage (CCS)

The project involves capturing and storing carbon dioxide emissions from production processes in the Gulf of Thailand area. Additionally, it explores the feasibility of storing carbon dioxide emissions in nearshore regions on the eastern coast. This initiative is conducted under internal collaboration within PTT Group to study the PTT Group CCS Hub Model jointly. Progress in this endeavor includes:

Offshore: This project captures carbon dioxide emissions at production sites and is operated by PTTEP. There are 2 leading areas: the Arthit Field and the Lang Lebah Field. The Arthit gas field marks Thailand's inaugural endeavor in this field. It is estimated that this initiative could reduce greenhouse gas emissions by approximately 1 million tons of carbon dioxide per year. It is undergoing the front-end engineering design (FEED). The project is scheduled for implementation by 2027.



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● **Nearshore:** The project in the nearshore areas of the Eastern Thailand region aims to capture and store approximately 6 million tons of carbon dioxide per year. Plans are in place to commence project operations by the year 2030. In 2023, a study report was prepared for the Carbon Capture and Storage (CCS) project in the Eastern Thailand region, known as the Eastern Thailand Carbon Capture and Storage Hub: CCS Hub (White Paper), to reduce Thailand's greenhouse gas emissions. This was presented to the government on behalf of PTT Group through the Climate Change Policy Committee. Additionally, an estimation of the cost for carbon capture at each production process (CO₂ Capture Cost Estimation & Prioritize), feasibility studies for gathering and transportation, and the CCS Business Model were jointly studied to be utilized in future investment planning.

Furthermore, PTT Group has collaborated to establish the Thailand Carbon Capture, Utilization, and Storage Alliance (TCCA) with leading educational institutions, private companies, government agencies, and public organizations. The objective is to create a strong collaborative platform and drive CCUS technology in all dimensions. This initiative aims to push carbon capture and storage (CCS) collectively projects sustainably and support the country's goals to reduce greenhouse gas emissions.



Carbon Capture and Utilization (CCU)

The Rayong Gas Separation Plant, PTT Innovation Institute, and OR have jointly conducted a study to explore the potential development of business and market opportunities for products derived from sodium bicarbonate separated at the gas separation plant. These products, such as food, pharmaceuticals, animal feed, and chemicals, can be utilized domestically and internationally across various industries. This initiative aims to enhance PTT Group's business capabilities while reducing carbon dioxide emissions and promoting self-reliance by reducing imports of raw materials/ products from foreign sources. Currently, Sodium Bicarbonate (SODANA project) has received investment approval and is in the process of construction bidding. An MOU has been signed for Animal Feed Protein, with the completion of product and market-proof.

Furthermore, PTT is continuously studying the feasibility of other products, such as methanol, which serves as a key ingredient in adhesive resin production in the furniture industry and as a primary feedstock for biodiesel production. However, the current dependency on high imports necessitates further study to domestically produce methanol, which would help reduce carbon dioxide emissions, substitute imports, and alleviate trade imbalances. Currently, this is in the preliminary engineering study phase.

Renewable Energy in the Operational Areas

PTT has installed solar panels to replace electricity usage from the grid in several locations. In 2023, additional solar panels were installed in operational areas, including:

- PTT Innovation Institute installed floating and rooftop solar panels with a total capacity of 1.60 megawatts. The institute generates renewable energy from solar panels and wind turbines, totaling 1.68 megawatts.
- For the Natural Gas Transmission System, solar panels have been installed across all zones, including operational and maintenance areas of the shoreline stations and the Chonburi Operation Center. The total capacity is 1.46 megawatts.
- For the Natural Gas Vehicle unit, the maximum electricity production capacity is approximately 9 kilowatts.
- At the Eastern Economic Corridor Innovation Project, also known as Wang Chan Valley, the maximum electricity production capacity is around 50 kilowatts. Renewable energy is anticipated to generate approximately 4,670 megawatt-hours of electricity for operations annually, resulting in an estimated avoidance of 1,878 tons of carbon dioxide emission per year under Scope 2.

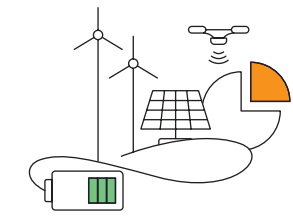
Furthermore, PTT has replaced the corporate vehicles, including executive fleet vehicles, with Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV). In 2023, 60 vehicles were replaced, contributing to an estimated reduction of approximately 127 tons of carbon dioxide emission annually.

Process Improvement and Energy Efficiency Implementation

PTT is investing in constructing Gas Separation Plant Unit 7 to replace Gas Separation Plant Unit 1, with a budget of approximately THB 18,000 million. The commercial operation date (COD) is planned for 2024. The design of the cooling system for the production process aims to enhance efficiency and reduce operational risks by utilizing the cooling capacity from liquefied natural gas, consequently reducing greenhouse gas emissions by 112,000 tons of carbon dioxide equivalent per year compared to Gas Separation Plant Unit 1.

In 2023, the Rayong Gas Separation Plant carried out various projects to upgrade and enhance energy efficiency. These initiatives collectively led to an estimated reduction in energy consumption of approximately 5,700 MMBTU per year, consequently resulting in a reduction of roughly 690 tons of carbon dioxide emission per year.

Furthermore, PTT encouraged employee participation in productivity improvement projects, focusing on process improvement to increase productivity, reduce expenses, generate additional revenue, and minimize idle time. In 2023, employees proposed over 47 environmental projects, including 10 projects related to circular economy initiatives, 4 projects targeting electricity consumption reduction, 4 projects aimed at reducing fuel usage, 2 projects focusing on water conservation, 2 wastewater reduction projects, 3 waste management projects, and 22 projects involving equipment modifications in the production process to reduce greenhouse gas emissions.

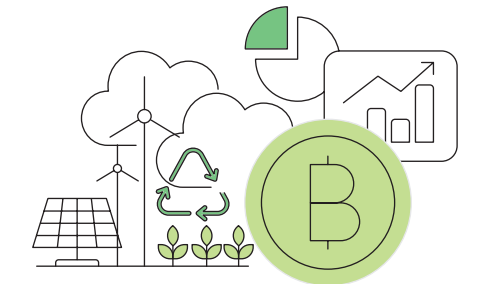


Portfolio Transformation

Realignment of Investment Direction

In February 2023, PTT terminated all investments in the coal business by selling PTT Mining Limited (PTTML) shares to companies under the Astrindo group in Indonesia. Investments in Renewable Energy, electric vehicles, and ventures Beyond Energy will be conducted through companies within PTT Group, which have made significant progress.

Internal Carbon Price Mechanism for PTT's Investment Consideration



PTT considers an internal carbon price as one of the tools used to evaluate investment decisions in projects that contribute to reducing greenhouse gas emissions and mitigating the impacts of climate change. This approach aligns with PTT's commitment to transitioning towards a low-carbon society. The internal carbon price mechanism, set at USD 20 per ton of carbon dioxide equivalent, was expanded in 2022 to cover all projects or plans requiring approval from the Strategic Investment Management Committee (SIMC) and PTT's Management Committee beyond green investment projects. This mechanism is applied to assess the investment viability of projects that reduce greenhouse gas emissions, such as utilizing renewable energy within operational areas or considering projects that convert carbon dioxide emissions into useful resources. Furthermore, PTT promotes PTT Group to apply the internal carbon price mechanism, enabling subsidiaries to incorporate it into their project screening or selection processes. This ensures that PTT's subsidiaries can choose projects to reduce greenhouse gas emissions in line with PTT's emission reduction targets.



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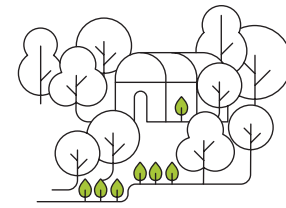
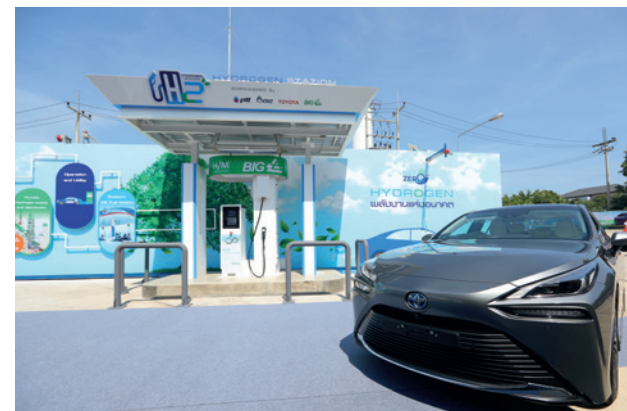
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Hydrogen Fuel Project

Using hydrogen gas as a fuel either within engines or in conjunction with fuel cells and through electrochemical processes to convert it into usable energy have several advantages. It is a clean energy source that does not produce pollutants and has the potential for usage comparable to traditional fuels. Consequently, PTT has established the Hydrogen Thailand group to drive hydrogen and fuel cell technologies as new alternative energies toward a low-carbon society.

PTT Innovation Institute has developed a strategic plan to establish a hydrogen business portfolio, which has received approval from PTT's Board of Directors. A hydrogen business development task force has been formed to push towards achieving these goals. Currently, they are exploring investment opportunities in the green hydrogen alongside domestic and international partners. Additionally, collaborations have been established with PTT Oil and Retail Business Public Company Limited (OR) and Bangkok Industrial Gas Co., Ltd. (BIG), Toyota Tsusho Corporation (TTTC), Toyota Daihatsu Engineering & Manufacturing Co., Ltd. (TDEM), and Toyota Motor Thailand Co., Ltd. (TMT) to study and develop future energy projects. As part of this effort, a pioneering hydrogen fuel station has been opened for testing hydrogen fuel cell electric vehicles, with Thailand's first Mirai (Toyota) hydrogen fuel cell electric vehicle being tested for operation in Thailand. The testing is conducted through a shuttle service between U-Tapao Airport in Chonburi province and nearby areas for tourists and passengers. Technical data from real-world usage is collected to foster awareness and support future expansion initiatives.

In 2023, the Hydrogen Business Development Task Force conducted a study to prepare for developing hydrogen business readiness in Thailand. Collaboratively, they produced a White Paper covering the potential applications and challenges of hydrogen in Thailand's future. This paper outlined the necessary support from the government sector and proposed operational plans to be presented to relevant governmental entities for future action.



Partnership with Nature and Society

Collaboration with the Government to Expand Green Spaces

On the auspicious occasion of the 50th anniversary of His Majesty the late King Bhumibol Adulyadej the Great's accession to the throne, the Royal Forest Plantation Project has been implemented by PTT since 1994. The project has focused on reforestation and rehabilitating degraded forest areas, spanning 1 million rai nationwide. Additionally, efforts have been made to develop conservation networks and sustainable forest management practices, including mobilizing volunteer forest rangers and collaborating with environmental organizations to conserve soil, water, and other related resources.

As of 2023, PTT remains committed to expanding green spaces to enhance carbon sequestration through natural means. Plans are underway to increase terrestrial and mangrove forest areas by an additional 1 million rai by 2030, along with continuous monitoring and maintenance activities. This includes conducting surveys and tracking the carbon dioxide absorption outcomes from forests in each country region.

By signing this memorandum of understanding, the collaboration between PTT Group, the Royal Forest Department, the Department of National Parks, Wildlife, and Plant Conservation, and the Department of Marine and Coastal Resources is formalized. This represents a partnership between the public and private sectors in theory and practice. Examples of collaboration include supporting research activities and sharing academic data, expanding areas for carbon dioxide absorption and carbon storage, and engaging local communities in forest conservation and biodiversity preservation efforts.

Furthermore, an event called "Life Power: Transforming One Sapling into Two Million" was organized on August 8th, 2023, at the Forest Plantation Site managed by PTT, located in the protected national forest areas of Wang Phloeng, Muang Khom, and Lam Narai Forest, in Maha Phot district, Saraburi province. The event saw the participation of 450 individuals who planted over 4,500 trees. This marked the initial step towards planting an additional one million rai of forest. PTT has received support for and successfully grown over 86,173 rai (across 25 provinces), surpassing the initial target of 75,000 rai. This effort is in conjunction with registering reforestation projects under the Thailand Voluntary Emission Reduction program (T-VER), aiming to elevate forest restoration practices to meet scientific standards.

In driving community engagement efforts, PTT has signed agreements for collaborative forest planting and maintenance with 2 community enterprises: the Mae Song Community Enterprise in Taopun sub-district and the Forest Conservation and Promotion Community Enterprise in Huaimai sub-district, both located in Song district, Phrae province. These community enterprises are pioneers in Thailand, providing forest planting and maintenance services.

PTT has signed a collaboration agreement regarding community forest restoration with the Community Forest Management Committee of Nong Thitson, Nachuek district, Mahasarakham province. This marks the first community forest in Thailand to participate in carbon credit-sharing initiatives. Furthermore, PTT has partnered with AI and Robotics Ventures (ARV) Company, a subsidiary of PTTEP, to utilize satellite imagery and unmanned drones to survey and analyze data to select areas with potential for reforestation.



Collaboration of Government Agencies and Various Networks

PTT collaborates with the Ministry of Natural Resources and Environment, the Office of Natural Resources and Environmental Policy and Planning (ONEP), the Department of Climate Change and Environment (DCCE), and the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) to organize the Thailand Climate Action Conference (TCAC) 2023. TCAC aimed to drive practical actions to reduce greenhouse gas emissions and transition Thailand towards a sustainable, low-carbon society. Additionally, PTT participated in the Climate Action Leader Forum under the Ministry of Natural Resources and Environment, alongside TGO, ONEP, Mahidol University, and the United Nations Development Programme (UNDP). These forums invited leaders from various sectors to exchange perspectives, experiences, and roles in contributing to global warming mitigation efforts, aiming for sustainable development.

In addition to these initiatives, PTT serves as the Chair of the Thailand Climate Neutral Network (TCNN), which ONEP established. TCNN comprises more than 500 organizations from all sectors, including government agencies, private sectors, educational institutions, international organizations, and non-profit organizations. Through 4 working committees focusing on policy, carbon markets, climate finance, and technology and innovation, TCNN promotes collaboration to elevate greenhouse gas reduction efforts, fostering sustainable growth within a climate-friendly society. TCNN aims to drive policy-driven actions, elevate standards for greenhouse gas reduction globally, and serve as Thailand's leading network towards achieving Carbon Neutrality and Net Zero Emissions goals.

As a member of TCNN, PTT holds the role of Climate Action Leading Organization (CALO) and participates in the Climate Neutral Now program under the United Nations Framework Convention on Climate Change (UNFCCC). In 2023, PTT was recognized as one of the 16 outstanding CALOs in Thailand based on assessments of measurement, reporting, and reduction performance. Furthermore, PTT collaborates with the TCNN to develop policy proposals for government support in greenhouse gas reduction efforts, presenting these proposals to relevant government agencies such as the Department of Climate Change and Environment, the Ministry of Natural Resources and Environment, the Ministry of Energy, and the Ministry of Finance, to inform future climate change action plans.

Furthermore, PTT collaborates with PTTEP and TGO to develop methodologies for Carbon Capture and Storage (CCS) in subsurface geological formations, marking the first such methodology in Thailand. This initiative aims to establish guidelines for voluntary greenhouse gas reduction projects under the Premium Thailand Voluntary Emission Reduction program (Premium T-VER). Additionally, PTT participates in developing criteria and certification guidelines for net greenhouse gas emissions with TGO. These guidelines serve as a framework for organizations in Thailand to work towards achieving Net Zero Emissions goals by providing feedback and suggestions aligned with international standards and tailored to Thailand's context.



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Improvement of Greenhouse Gas Accounting and Reporting

PTT has established accounting and reporting systems for greenhouse gas emissions, absorption, and storage data, covering direct emissions (Scope 1), emissions from energy use (Scope 2), and other indirect emissions (Scope 3). These systems have been continuously improved to align with international standards by enhancing methodologies, operational guidelines, and digital reporting systems.

PTT's greenhouse gas emissions (Scope 3) include additional significant company activities; combustion of petroleum fuel products sold, waste disposal from production processes, and business travel, which have the potential and opportunities to reduce greenhouse gas emissions. Additionally, the company has started outlining operational frameworks in 2024 for PTT Group to avoid Scope 3 emissions from waste disposal activities, aiming to achieve a reduction of 0.67 tons of carbon dioxide equivalent per ton of total waste generated.

In 2023, there was a review and enhancement of the accounting and reporting practices, with an expanded reporting scope covering various projects and activities of the PTT Group. This encompassed the Wang Chan Valley Project of PTT, activities of G1/61, G2/61 (South), and Yadana of PTTEP, HDPE1 plastic pellet production units of NVK Co., Ltd. and GC EST Co., Ltd. (subsidiaries of GC), the 4th and 5th phases of GLOW Energy Power Plants, GSPC's GLOW SPP2 and GLOW SPP3 power plants, as well as OR's powder mixing plant, bakery plant, and Café Amazon distribution center.

Key Performance:

PTT's Direct and Indirect Greenhouse Gas Emissions

Unit: Million tons of carbon dioxide equivalent

Scope 1, 2 & 3	2020	2021	2022	2023
Direct greenhouse gas emissions (Scope 1)	11.13	11.44	9.71	9.93
Indirect greenhouse gas emissions (Scope 2) (location-based)	0.21	0.23	0.22	0.18
Indirect greenhouse gas emissions (Scope 2) (market-based)	0.22	0.28	0.28	0.19
Other indirect greenhouse gas emissions (Scope 3)				
- Combustion of petroleum fuel products sold by PTT	75.12	74.02	70.73	73.66
- Waste disposal from production processes	N/A	N/A	N/A	0.0036
- Business travel	0.0010	0.0002	0.0036	0.0032

Remarks:

- Direct and indirect greenhouse gas emissions by PTT encompass activities conducted solely by PTT.
- From 2020 to 2022, Scope 3 greenhouse gas emissions only included emissions from the combustion of fuels sold by PTT. Starting from 2023, PTT's Scope 3 emissions cover fuel combustion from PTT's sales, waste generated in operations, and business travel.
- PTT's Scope 2 greenhouse gas emissions come from the purchase and use of electricity and power from solar cells installed and operated within the Innovation Institute, the Nakhon Si Thammarat Gas Separation Plant, the Wang Chan Valley Project, the natural gas pipeline operation system, and the operations of the natural gas unit for vehicles.
- Market-based Scope 2 emissions data comes from activities using electricity from the transmission system and purchased electricity from private power plants like GPSC and GC.
- The sources of emission factors and Global Warming Potential (GWP) references are based on IPCC AR6.
- Standards, methodologies, assumptions, and/or calculation tools used are referred from GHG Protocol and API compendium.
- PTT's greenhouse gas emissions target covers direct emission (Scope 1) and indirect emission (Scope 2) from market-based only.

It was found that there was a slight increase in the volume of market-based Scope 2 greenhouse gas emissions compared to the previous year. This increase was attributed to the increased electricity purchases to meet the growing demand from the expanded operational scope. Meanwhile, the volume of direct Scope 1 greenhouse gas emissions decreased from the previous year due to primary factors such as reduced production and distribution of electricity from the GPSC's oil-fired power generation processes, in line with the business plan and agreements between GPSC and the Electricity Generating Authority of Thailand.

Carbon Footprint for Organization (CFO)

According to TGO criteria, PTT has compiled data on greenhouse gas emission from various organization activities, covering direct and indirect greenhouse gas emission in 2022, totaling 10.87 million tons of carbon dioxide equivalent. Additionally, carbon dioxide uptake from forest planting and maintenance activities in 2022, under the auspices of the Reforestation Project, which has been ongoing since 1994, amounted to 0.90 million tons of carbon dioxide equivalent. The PTT's Carbon Footprint for Organization has been certified by Thailand Greenhouse Gas Management Organization (Public Organization) on March 11, 2024. For further details, please visit the Sustainability section on PTT Website.

PTT Group's Direct and Indirect Greenhouse Gas Emissions^{1,8}

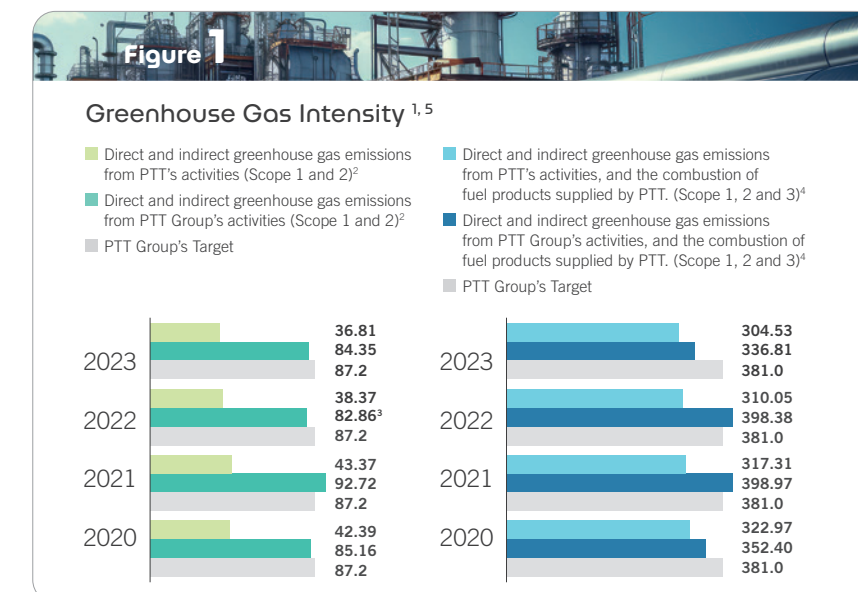
Unit: Million tons of carbon dioxide equivalent

	2020	2021	2022	2023	
Scope 1 & 2	Direct greenhouse gas emissions (Scope 1) ^{2,3}	43.47	47.27	45.39	40.73
	Biogenic CO ₂ emissions	N/A	N/A	0.004 ⁷	0.007
	Indirect greenhouse gas emissions (Scope 2) (location-based)	1.01	1.12	0.65	0.86
	Indirect greenhouse gas emissions (Scope 2) (market-based) ^{2,3}	1.69	1.46	0.86	0.87
Scope 3 ^{2,3}	Use of sold products ^{4,5,6}	116.15	113.48	132.13	134.26
	Fuel- and energy-related activities ⁹	N/A	N/A	N/A	0.05
	Waste generated in operations	N/A	N/A	0.04	0.01 ¹⁰
	Business travel ¹¹	N/A	N/A	0.004	0.01 ¹²
	End-of-life treatment of sold products ¹³	N/A	N/A	N/A	0.90

Remarks:

- The data scope under the operational control format covers companies where PTT directly holds more than 20% of shares and is a major shareholder or indirect shares of 100%, including joint venture companies with equal major shareholdings. Greenhouse gas emissions under these companies cover those held directly by companies where PTT has over 20% of shares and is a major shareholder or indirect shares of 100%, including joint venture companies with equal major shareholdings.
- Based on operational data from 2020, reporting on direct and indirect greenhouse gas emissions, including the operations of GC overseas, is estimated to release approximately 0.31 million tons and 0.01 million tons of carbon dioxide equivalent, respectively.
- Data for 2019 - 2022 for the PTT Group underwent recalculations due to:
 - Expansion of the organizational boundary resulting from operations in the PTTEP's Block 2 area in 2022, the expansion of reporting scope covering companies within the TOP (TLB, TOPSPP, TPX, LABIX) and GC (BPE, EOE, GCL, GCME, GCMP, GCO, GCP, BPA, Phenol, GCS, ME I&II, NPS S&E, TPRC, TTT) groups, the consolidation of TOP and TP (Thai Oil Power) operations in 2021, and the acquisition of power and steam generation operations of the GLOW Group by GPSC in 2019.
 - Operational boundaries have expanded due to increased reporting on ORPC, HGP, office space utilization in EnCo and Rayong, GC's Lab, Innovation 2, and Workshop facilities, storage tanks and yards of IRPC, LPGB Blender Songkhla, and lubricant distribution centers in Bang Pakong by OR.
 - Activities initiated by power generation units in the PTTLNG area will be added in 2020.
- Data on other indirect greenhouse gas emissions (Scope 3) includes the combustion of fuel products distributed by PTT and OR (natural gas, gasoline, diesel, aviation fuel, kerosene, liquefied petroleum gas, and fuel oil). As part of its State Enterprise Assessment Model (SE-AM) KPI, PTT manages the quantity of Scope 3 greenhouse gas emissions by setting targets to reduce both direct and indirect emissions (Scope 1 and 2) per unit of product sold by PTT.
- The scope of the data on other indirect greenhouse gas emissions (Scope 3) for 2019 to 2021 includes PTT and OR.
- The data on other indirect greenhouse gas emissions (Scope 3) from 2022-2023 from PTT Group encompasses the burning of fuel products distributed by PTT, GC, TOP, IRPC, and OR. These emissions are calculated based on the fuel sales data provided by the Department of Energy Business, with fuel used for customer manufacturing processes accounting for approximately 42% of the total.
- Reporting on biogenic CO₂ emissions has commenced.
- The reporting of organizational greenhouse gas emissions is expanding to include operational activities. Once the necessary enhancements are completed, data will be updated for reporting in subsequent disclosures.
- Scope 3 greenhouse gas emissions data covers activities related to energy losses from purchasing electricity from external producers by PTT Group for internal use within the PTT Group.
- Scope 3 greenhouse gas emissions data covers waste disposal from the PTT, PTTEP, GC, IRPC, GPSC, OR, and TTM production processes.
- Scope 3 greenhouse gas emissions data for 2022 includes business travel by air for PTT, PTTEP, and GPSC.
- Scope 3 greenhouse gas emissions data for 2023 includes business travel by air for PTT, PTTEP, IRPC, GPSC, PTT LNG, PTT TANK, and TTM.
- Scope 3 greenhouse gas emissions data for 2023 include the disposal of petrochemical product residues by GC and IRPC, which are part of PTT's product distribution group.

Unit: Kilograms of carbon dioxide equivalent per barrel of crude oil



Remarks:

- The data scope under the operational control format covers companies where PTT holds direct ownership exceeding 20% and is either the majority shareholder or indirect ownership of 100%, including joint venture companies with equal significant shareholding proportions. Greenhouse gas emissions under these companies cover those with direct ownership exceeding 20%, either majority or 100% indirect ownership, and joint venture companies with equal significant shareholding proportions.
- It is calculated from PTT Group's greenhouse gas emissions and the sales volume of fuel products by PTT and OR.
- It is calculated from the greenhouse gas emissions disclosed in the Annual Report 2021.
- It is calculated from PTT Group's direct and indirect greenhouse gas emissions, as well as the sales volume of fuel products by PTT and OR, within the organization's scope between 2022 and 2024.
- Target setting and reporting on the greenhouse gas intensity are under consideration for adjustment due to the organization's ongoing expansion of greenhouse gas data collection to encompass its operations. Upon completion of any adjustments, data will be updated for disclosure in subsequent reports.



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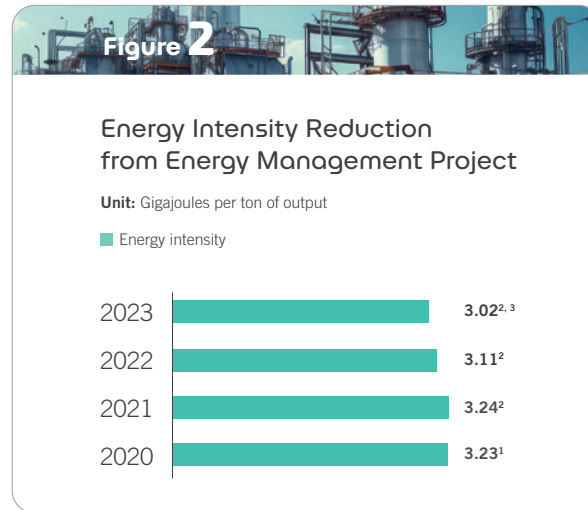
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Remarks:

- 1 Data coverage includes PTT's Rayong Gas Separation Plant, PTTEP, GC, TOP, and IRPC.
- 2 Data coverage includes PTT's Rayong and Khanom Gas Separation Plants, PTTEP, GC, TOP, and IRPC.
- 3 The energy intensity reduction results of 2023 are estimated based on the performance from quarters 1 to 3.

Further details can be found on PTT Website.

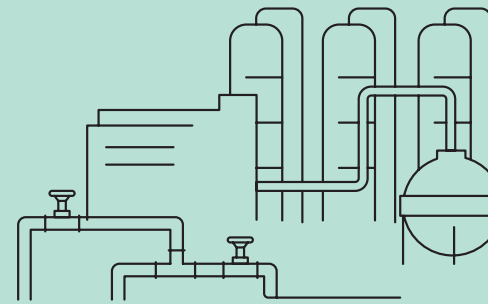
Feedbacks from Stakeholders

"PTT, in collaboration with the Department of Climate Change and Environment (DCCE), organized the TCAC 2023 event as a demonstration of commitment towards achieving the Carbon Neutrality by 2040 and Net Zero Emissions by 2050, surpassing the country's targets. This initiative includes investments in the energy sector for future growth and other areas to promote Green Growth. Furthermore, the DCCE's future missions, such as climate change adaptation, establishing climate change and environmental transformation centers, promoting sustainable urban development, and drafting plans for "Nationally Determined Contributions (NDC) Action Plan on Mitigation 2021 - 2030" and the Climate Change Act..., relying on cooperation from collaborative networks in climate change and environment from all sectors, including PTT."



Dr. Phirun Saiyasitpanich
Director General
of Climate Change and
Environment Department

Future Plans



The findings and data compiled from the decarbonization activities, spanning from upstream to downstream, will be utilized to establish targets for reporting and managing Scope 3 emissions, which hold significant implications for PTT and its affiliated entities in the future.

Further details can be found on PTT Website.



Water Management

Positive and Negative Impacts

PTT places great importance on water management due to the increasing demand for water driven by economic expansion. The company and its subsidiaries rely on water as a vital raw material. Wastewater generated from production processes may pose environmental risks, impacting communities, society, and agriculture. Additionally, the escalating impact of climate change, evident in phenomena like El Niño and La Niña, exacerbates these effects rapidly and intensively.

Therefore, PTT is committed to comprehensive and continuous water management to ensure its operations do not adversely affect community water rights. This commitment aligns with legal requirements and operational guidelines outlined in Thailand's national water resource management strategy. Furthermore, PTT recognizes the opportunities in water management business ventures poised for domestic and regional growth.

Material Topic Management

Indicators	Performance Targets		Performance against 2023 Targets
	Short-term Targets 2023	Long-term Targets	
o QSHE KPIs <ul style="list-style-type: none"> Water withdrawal intensity of operations as specified The water consumption of office building as specified 	<ul style="list-style-type: none"> ≤ 0.291 cubic meters per ton of product ≤ 144 liters per person per day 	<ul style="list-style-type: none"> Target for 2030: ≤ 0.272 cubic meters per ton of product Target for 2030: Reduce by 10% compared to the baseline data in 2013 	<ul style="list-style-type: none"> 0.257 cubic meters per ton of product 124 liters per person per day

Contribution to the United Nations Sustainable Development Goals (UN SDGs)



6.3, 6.4, 6.5 | 12.2 | 17



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Key Action Plans for 2023

- **Water Supply Management**
 - Developing the PTT Group Central Water Management Dashboard to serve as a tool for monitoring water conditions and quality from primary reservoirs in the Eastern Region, including measures and progress in managing water diversion among various water sources.
 - Creating a PTT Group's crisis management handbook and business continuity plan to support drought resilience.
- **Water Demand Management**
 - Implementing water management based on the principles of the 3Rs.
 - Water Footprint Assessment according to ISO 14046 standards.
 - Implementing Greywater Recycle systems in PTT's main office buildings.
 - Studying, developing, and installing rainwater treatment systems in PTT's headquarter buildings.
 - Studying to enhance the efficiency of water utilities used in PTT Group's plants.
 - Sharing knowledge on water-related technology and process improvement measures, including the arrangement of Water Excellent Contest 2023 within PTT Group.
 - Installing Zero Liquid Discharge (ZLD) technology at Gas Separation Plant Unit 7.

Remarks:

- Operations as specified is the Rayong Gas Separation Plant.
- Office building as specified is the PTT Headquarter building.

Overall Management Approach

PTT strategically manages water resources by integrating efforts across the entire PTT Group, emphasizing conservation, maximizing water efficiency, reducing consumption, and harnessing reclaimed water to minimize wastewater generation. This approach aligns with the principles of the Circular Economy, fostering awareness of water value and seeking business opportunities. PTT conducts water risk assessments, addressing physical water quantity and quality risks, utilizing international assessment tools such as AQUEDUCT, WBCSD Global Water Tool, CERES Aqua Gauge, and Water Footprint Assessment. Legal and reputational risks are also analyzed, and comprehensive risk management plans are developed to mitigate water-related impacts systematically. For further details, please visit the Sustainability section on PTT Website.

PTT has established 2 levels of water management as follows:

1. Holistic Water Management and Establishing Water Resource Resilience for PTT Group

In terms of supply, PTT has established a comprehensive strategy to manage water resources with the government and external stakeholders to ensure an adequate water supply for PTT Group and fairness for all parties involved. This includes seeking alternative water sources to reduce reliance on public water sources, fostering internal collaboration within PTT Group to manage water during emergencies, improving water usage in production processes, machinery, operations, and maintenance to enhance water efficiency, and facilitating mutual benefits among PTT Group's plants/ companies through water management. PTT also conducts analyses to compare water usage efficiency within the group and promotes adopting best practices. Furthermore, PTT outlines strategies to enter water-related businesses that are suitable and aligned to enhance water resource sustainability for PTT Group. This includes establishing a **PTT Group's water management project** under the Downstream Petroleum Business Group to ensure direct accountability.

2. Effective Water Management in Operation

PTT places great importance on the efficient use of water resources in operational areas as part of Quality, Security, Safety, Health, and Environment (QSHE) management. This commitment is clearly articulated in the "PTT Group QSHE Policy", with strategic QSHE goals and annual targets communicated accordingly. Control measures are implemented to manage water withdrawal in production facilities and office buildings, focusing on increasing reuse and recycling. Progress towards these objectives is monitored, measured, and reported regularly to respective area and departmental managers, supported by sustainable governance structures for continuous performance review and improvement every quarter.

PTT is aware of the impact of its wastewater quality on neighboring communities and the environment. Therefore, it rigorously controls wastewater quality before discharge to ensure compliance with stringent legal standards.

Progress of Key Plans/ Projects

Water Supply Management

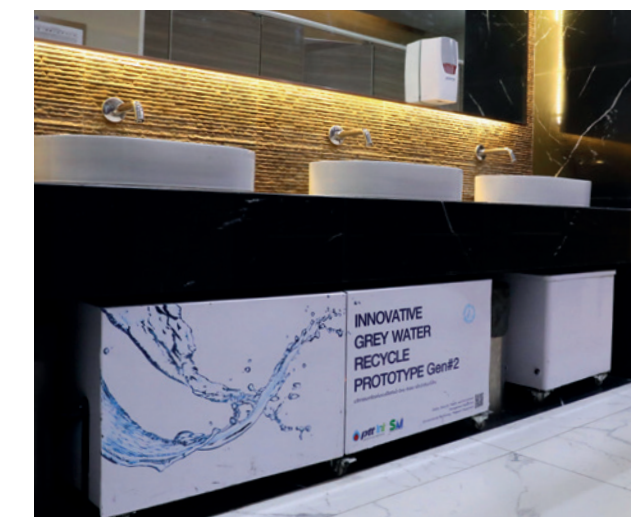
Development of the PTT Group Central Water Management Dashboard

The development of the PTT Group Central Water Management Dashboard is a tool designed to collect and display water management data for stakeholders within PTT Group. It enables monitoring of water situations in the Eastern Region, which serves as a primary production base for the group. This dashboard is capable of presenting key data, including:

- Climate forecasting
- Water situation in the Eastern Region
- Measures and preparedness for water management to prevent water shortages
- Water quality monitoring
- Summary of tropical storm risk
- Drought prevention and mitigation measures

PTT Group's Emergency Water Management Plan and Crisis Management Handbook and Business Continuity Management Guidelines for Drought Preparedness

To foster collective preparedness within PTT Group, plans for emergency water management and a crisis management handbook, along with business continuity management guidelines to address drought risks, have been prepared. These initiatives aim to enhance readiness to address unforeseen events and provide operational guidance for stakeholders, enabling efficient and cohesive responses. Additionally, they aim to instill confidence in the company's stakeholders regarding their roles and responsibilities within PTT Group.



INNOVATIVE GREY WATER RECYCLE PROTOTYPE Gen#2

Water Demand Management

Water Management based on the Principles of the 3Rs

PTT and PTT Group have adopted the principles of the 3Rs, namely Reduce, Reuse, and Recycle, to enhance water management efficiency at the source. This involves implementing various technologies and projects to improve water management practices continually. Some significant examples include:

- The conversion of the cooling water system at the power plant from an open to a closed system has significantly reduced water usage.
- The project to utilize residual heat energy from the blow-down tank helps reduce the amount of water used for cooling before being discharged into the wastewater treatment system and using blow-down water for watering plants.
- The Reverse Osmosis Intermediated project aims to maximize water usage benefits by recycling water for cooling purposes.
- The project to reuse condensate water in the steam production process contributes to water conservation.
- At the Gas Separation Plant Unit 5, wastewater from the dehydration process is utilized as makeup water for the Acid Gas Removal Unit (AGRU), reducing makeup water usage by 17,500 cubic meters annually.
- Desalination projects by GC and TOP can reduce water usage by up to 10 - 20%.
- Conduct feasibility study of managing water resources through an Eco-Industrial approach aims to reclaim treated wastewater for reuse, enhancing water management within PTT Group.

Expansion of Greywater Recycle Innovation Prototype Projects

PTT Innovation Institute has researched and developed a prototype Greywater Recycle innovation. This innovation involves treating water from hand washing and reusing it for sanitary purposes. It utilizes Advanced Membrane Filtration and Ultraviolet (UV) Disinfection technologies, enabling water to be recycled at up to 90 liters per hour. The treated water meets the standards outlined in the United States Environmental Protection Agency (U.S. EPA) Guidelines by effectively removing impurities, color, odor, and pathogens.

In 2023, Greywater Recycle systems were installed for testing at Building 2 and 6 at the PTT Headquarter. The study findings revealed that recycled water from hand washing amounted to 33 cubic meters, averaging 3.8 liters per hour.



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Rainwater Treatment Installation

PTT Innovation Institute has conducted research and developed a prototype of rainwater treatment system designed to collect and enhance the quality of rainwater for use in the cooling towers of the office building's air conditioning system. This system incorporates multimedia filtering (MMF) technology and UV Disinfection, utilizing Internet of Things (IoT) technology to control and monitor operations through a mobile application dashboard. It can significantly reduce water usage in the office building by up to 1,000 cubic meters per year. The rainwater treatment system effectively removes impurities, color, odor, and various pathogens, ensuring water quality suitable for use in the cooling towers. In 2023, the rainwater treatment system was installed and operational in the PTT Headquarter building. According to monitoring results, recycled water from the system amounted to a total of 136 cubic meters, averaging 15.5 liters per hour.

Study of Water Demand Performance Improvement

In collaboration with companies within the group, PTT has undertaken a study to enhance water utility efficiency. This study involves gathering data from leading factories participating in the study to assess water usage efficiency and analyze potential improvements. The study examines the feasibility and cost-effectiveness of projects, including technical suitability. Some projects yield benefits beyond enhancing water usage efficiency, such as reducing energy consumption and minimizing losses.

Water Excellent Contest 2023

PTT organized the Water Excellent Contest 2023 for PTT Group to promote water conservation, maximize water efficiency, and raise awareness of valuable water usage, particularly in the production. Furthermore, it aimed to share knowledge on water management, encompassing conservation practices aligned with the principles of a circular economy. In 2023, 5 projects from various units and companies within PTT Group participated in the contest, collectively reducing freshwater consumption by 2.85 million cubic meters per year. Additionally, knowledge exchange activities were organized to share technology insights and improvement measures to enhance water efficiency within PTT Group. For further details, please visit the Sustainability section on PTT Website.

Installation of Zero Liquid Discharge (ZLD) Technology at Gas Separation Plant Unit 7

PTT is committed to controlling, preventing, and minimizing environmental adverse impacts from selecting technologies to engineering design. Therefore, Gas Separation Plant Unit 7 has planned to install ZLD technology, which involves recycling treated wastewater for reuse without discharging water outside the system. This initiative has led to a reduction in water usage compared to the gas separation plant unit 1.

Water Business

The water management project of PTT Group outlines strategies to enter the water business to enhance capabilities in water management for PTT group, both in terms of supply and demand. This will be achieved through collaborative efforts with business partners to continuously fortify the group's water resilience. Additionally, this initiative aims to generate revenue for PTT Group.

Network and Collaboration

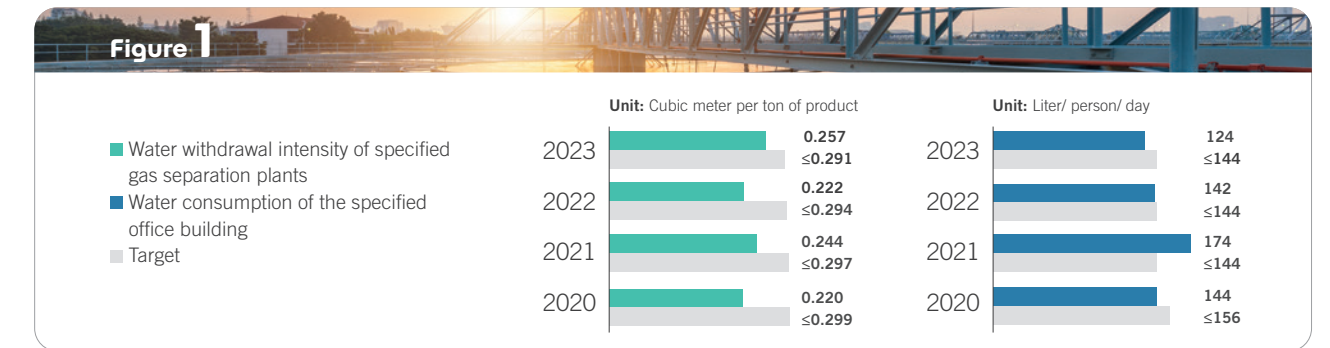
Eastern Region Water Management Working Group

Collaborating with the Eastern Region Water Management Committee, comprised of various government agencies such as the Department of Irrigation, Provincial Waterworks Authority, Industrial Estate Authority of Thailand, Electricity Generating Authority of Thailand, Department of Royal Rainmaking and Agricultural Aviation, as well as representatives from the private sector. The collaboration aims to monitor and drive efforts to prevent water shortages and develop water sources sustainably. This includes continuously assessing and monitoring the water situation, including water availability and rainfall levels, to prepare for water management and risk mitigation and minimize impacts on the environment, agriculture, fisheries, communities, and businesses. Additionally, it involves continuously monitoring the water management policies of government, private, and local agencies.

Water and Environment Institute for Sustainability (WEIS) and the Federation of Thai Industries (FTI)

PTT Group consistently plays an essential role and holds positions on the Board of Directors of the Water and Environment Institute for Sustainability (WEIS), which is overseen by the Federation of Thai Industries. In 2023, there was monitoring of the issues regarding water management in the eastern region, which was trending to potentially impact the operations of PTT Group. This was due to phenomena like El Nino, resulting in below-average rainfall in certain areas and potential water shortages. Besides, PTT Group closely discussed with the Federation of Thai Industries and related government agencies to formulate practical proposals for sustainable water management, spanning urgent, medium-term, and long-term strategies. These proposals have been submitted to the government. Further details, please visit the Sustainability section on PTT Website.

Key Performance:



Remark:

- In 2021, the water withdrawal intensity of office buildings increased significantly due to COVID-19. PTT announced a Work@Home policy for employees, substantially reducing the number of people entering the buildings. Consequently, calculating the water withdrawal intensity, represented by the ratio of water usage to the number of building occupants, led to a higher value.

In 2023, PTT incurred no actual expenses or opportunity costs arising from any violations related to water management.

Feedbacks from Stakeholders

"The industrial sector plays a crucial role in water management in the Eastern Region. The PTT Group is a primary industrial water user, particularly in the EEC area. The involvement of PTT Group in the Keyman Water War Room working group of the Eastern Region is, therefore, essential for efficiently supporting and promoting sufficient overall water management."



Mr. Kriangsak Phumnak
Deputy Director
Office of Irrigation
Region 9, Department of Irrigation

"Circular Economy is a key strategy for PTT Group. One of our missions is to manage water use efficiently and reuse it responsibly."



Mr. Prasong Intaranongpai
Senior Executive
Vice President,
Downstream Business Group
Alignment

"Participation of PTT Group as a member of the board in Water and Environmental Institutions for Sustainability, the Federation of Thai Industries, is crucial. It enables collaboration with other industrial stakeholders to support and promote government policies and propose solutions to address issues that reflect the needs of the private sector to the government effectively."



Mr. Jaturong Worawitsurawatthana
Executive
Vice President,
Downstream Business Group
Group Planning

Future Plans

- Expanding the implementation outcomes of Greywater Recycling and Rainwater Treatment system, along with strategies for applying the 3Rs principles to manage and enhance water usage efficiency, support resource utilization, and continuously reduce the impacts of water pollution.
- Further expansion entails roles and fostering collaboration with government sectors and external stakeholders to drive the development of water sources. This involves establishing policies and managing water resources sustainably across all sectors, promoting appropriate practices, and scaling up water usage efficiency within the production processes of PTT Group. This aims to reduce dependence on public water sources, continuously minimize community and stakeholder impacts from water usage, and seek and expand partnerships with business expertise to fortify water resilience within PTT Group and generate revenue from new business ventures.

More details can be found on PTT Website.



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Occupational Health and Safety Positive and Negative Impacts

Due to the awareness of the significant impact of PTT's operations throughout the value chain, both in activities conducted directly by PTT and those carried out by regular contractors and external subcontractors such as maintenance contractors, product transporters, and others, there is an acknowledgment that negative consequences and occupational health and safety risks can occur to employees, communities, and external stakeholders. This includes potential disruptions to business costs in the event of accidents or emergencies resulting in injuries, illnesses, fatalities, or property damage. Therefore, PTT places paramount importance on systematic safety and occupational health management, covering all aspects of workplace safety and environmental conditions, production process safety, vehicle safety, and emergency incidents and crises.

PTT has implemented standard management systems and engineering tools complied by laws, regulations, and international standards to identify potential risks and establish measures for control, prevention, and reduction of risks to an acceptable level in all activities and operational areas systematically. This includes design stages, production processes, storage, usage, maintenance, inspection, testing, and transportation or movement of products, including hazardous chemicals. Various appropriate management methods and formats have been designated to prevent adverse impacts and promote positive impacts in protecting the labor rights of employees, ensuring a conducive and safe working environment internationally, and improving the health and quality of life of communities and societies.

Material Topic Management

Indicators	Performance Targets		Performance against 2023 Targets
	Short-term Targets 2023	Long-term Targets	
<ul style="list-style-type: none"> ● SE-AM KPI and Corporate KPI: Safety Management Effectiveness: <ul style="list-style-type: none"> • Lost Time Accident (LTA) for employees and contractors • Total Recordable Injuries Rate (TRIR) per 200,000 hours worked for employees and contractors • Process Safety Event (PSE): Tier 1 ● KPIs aligned with PTT's Sustainability Management Master Plan for Social Responsibility, and Environment 2021 - 2025 <ul style="list-style-type: none"> • LTA • TRIR • PSE ● Indicators in QSHE targets <ul style="list-style-type: none"> • LTA • TRIR • PSE • Total Recordable Occupational Illness Rate (TROIR) per 200,000 hours worked for employees • Major car accidents • Major truck accident rate (case per 1,000,000 kilometers) • Major marine transportation accident rate (case per 1,000 vessels voyage number in port) 	<ul style="list-style-type: none"> • LTA (person) for employees and contractors is zero • TRIR per 200,000 hours worked (employees ≤ 0.046 contractors ≤ 0.056) • PSE (case) (tier 1 is zero and total of tier 1 and 2 ≤ 1) • TROIR per 200,000 hours worked (employees ≤ 0.084) • Major car accident is zero • Major truck accident rate (case per 1,000,000 kilometers) is zero • Major marine transportation accident rate (case per 1,000 vessels voyage number in port) is zero 	<ul style="list-style-type: none"> • All indicators for 2030 are at zero 	<ul style="list-style-type: none"> • In 2023, all indicators met the targets except for the LTA and the number of major car accidents: <ul style="list-style-type: none"> • LTA Employees = 0 • LTA Contractors = 3 • TRIR: Employees = 0.033 and Contractors = 0.028 • PSE: Tier 1 = 0 and total of PSE: Tier 1 and PSE Tier 2 = 1 • TROIR Employees = 0 • Major car accidents = 1 • Major truck accident rate = 0 (case per 1,000,000 kilometers) • Major marine transportation accident rate = 0 (case per 1,000 vessels voyage number in port)

Contribution to the United Nations Sustainable Development Goals (UN SDGs)



Key Action Plans for 2023

- Promoting safety awareness and build behavior-based safety culture.
- Strengthening PTT Life Saving Rules Execution.
- Health Surveillance and Fitness to Work Assessment.
- Implementing Bow Tie Analysis techniques and Barrier Validation principles within PTT Group.
- Elevating safety management for vehicle and transportation usage.
- Drilling integrated business continuity management plans.
- Developing an Incident and Non-conformance Report Web Application.
- Applying production process safety management in PTT operational areas.
- Inspecting and assessing risks and safety in PTT operational areas.

Overall Management Approach

PTT establishes **PTT Group Quality, Security, Safety, Health, and Environment (QSHE) policy**, last reviewed and updated in 2023, to demonstrate commitment and provide a framework for managing risks and impacts related to QSHE that may occur at every stage of business operations. This includes compliance with laws, regulations, organizational standards, and relevant commitments. The policy is communicated to employees and contractors throughout PTT's supply chain to ensure consistency and alignment in implementation. For further details, please visit the Sustainability section on PTT Website.

In the deployment of policies into practice, annual and long-term goals for 2030 have been established, with clear action plans outlined in the Sustainability Management Master Plan for Social Responsibility, and Environment 2021 - 2025. Furthermore, an organizational-level key performance indicator which are Safety Management Effectiveness has been designated to measure management effectiveness from top management down to line managers. This includes indicators such as the Lost Time Accident (LTA), Total Recordable Injuries Rate (TRIR), and Process Safety Event (PSE). Progress reports on goal achievements and organizational indicators are regularly reported to the Board of Directors through the governance structure at both management and board levels every quarter. Additionally, performance and effectiveness results are transparently communicated to stakeholders to foster understanding, awareness, and responsiveness. This includes listening to needs and expectations and providing opportunities for employees and contractors to participate, provide suggestions, and contribute to continuous improvement efforts.

Safety and Occupational Health Management System

PTT stipulates that the management of security, safety, occupational health, and environmental aspects is one of the fundamental components of **PTT's Integrated Management System (PIMS)**. The details of requirements are benchmarked against international standards. Every operational area of PTT, including gas separation plants, natural gas transmission systems, natural gas for vehicles mother stations, PTT headquarter building, and PTT Innovation Institute, must apply this management system. Internal assessments are conducted annually, and certification is sought against international standards such as ISO 9001 for quality management systems, ISO 14001 for environmental management systems, ISO 45001 for occupational health and safety management systems, and ISO 22301 for business continuity management systems. As a result, PTT has consistently received awards for outstanding workplace safety, occupational health, and environmental practices at the national level.





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Progress of Key Plans/ Projects

Safety, Occupational Health, and Workplace Conditions

PTT emphasizes systematic and continuous management to control security, safety, occupational health, and workplace conditions risks. Plans and goals are set to prevent and manage incidents that may result in injuries or illnesses of employees and contractors, property damage, and environmental impact. In 2023, significant operations included:

- Promoting safety awareness and build behavior-based safety culture

PTT has established and promoted a continuous safety culture, initiating the Incident and Injury Free (IIF) project at the Rayong and Khanom gas separation plants. This project integrates the IIF principles, consisting of five steps: planning, assessment, engagement, skill-building, and sustainable execution. The safety culture principles are also applied to the operation of the natural gas transmission system. In 2023, efforts to enhance safety awareness and behaviors included training sessions conducted for personnel across all operational areas and safety improvements implemented through Small Group Activity (SGA) initiatives. As a result of these efforts, the safety culture score for the natural gas transmission system operation increased from 4.16 to 4.36 out of 5, and there was a 10% reduction in the number of accidents compared to the previous year. PTT plans to improve the safety culture further and expand its impact throughout the organization.

- Strengthening PTT Life Saving Rules Execution

PTT has developed PTT Life Saving Rules visual media and leaflets to communicate knowledge and understanding to employees and contractors working on-site. These materials aid in promoting safe operations, reducing the risk of accidents, injuries, and illnesses arising from work. Additionally, PTT reviews work procedure documents, hazard identification, risk assessments, and reporting of substandard conditions and actions. Clear protocols for exercising the Stop Work Authority and the Right to Refuse Work have been established to empower employees and contractors to reject unsafe tasks without repercussions. This promotion and advocacy have significantly decreased accidents involving employees and contractors in 2023.

- Health Surveillance and Fitness to Work Assessment

PTT hires occupational physicians to conduct workplace assessments, interview employees and contractors, and review Health Risk Assessment (HRA) guidelines to cover all hazardous tasks. They also outline procedures for environmental workplace assessments, health check-ups, sampling methods, and sample submissions. Additionally, they establish control measures to reduce health risks and impacts. Annual occupational health check-ups are provided to employees, and analysis of health check-up data and medical treatment visits showed that most office workers have non-communicable diseases. In 2023, introductory occupational health courses were organized, covering basic principles of ergonomics, computer-related tasks, and manual material handling for office and operational staff. Deepening knowledge and addressing ergonomic issues in computer work, hearing loss prevention, medical emergency management, and ongoing health promotion programs such as Walk and Run Fun and Fit, and Fight Fat Fun were undertaken to promote employees' overall health. Health knowledge was also disseminated through email newsletters titled "Good Health". Furthermore, procedures, criteria, and operational guidelines related to occupational health were developed and improved to enhance PTT and its subsidiaries occupational health management in line with international standards.

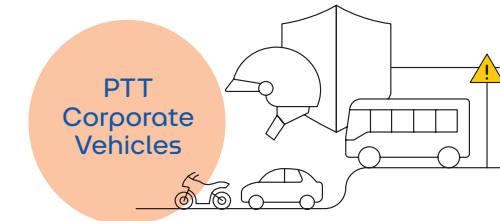
Safety Management in Production Processes

PTT and PTT Group apply the Bow Tie Analysis technique, Barrier Validation, and Major Accident Event (MAE) to analyze and manage safety risks in the production process, aiming to continuously control severe accidents in operational areas. In 2023, the application of Bow Tie Analysis was expanded to 2 additional operational regions, namely Onshore Compressor Station No. 4 (OCS4) and Khao Hin Sorn Compressor Station (KCS). Additionally, Barrier Validation was extended to 2 more areas, Gas Separation Unit 5 and 6. This was the critical processes for examining equipment and personnel control measures. Furthermore, efforts have been made to develop and enhance safety operation standards in PTT's and subsidiaries' operational areas to prevent and mitigate severe impacts from serious accidents such as fires, explosions, and hazardous chemical leaks. In 2023, Bow Tie Analysis was applied to operational areas with high risks, covering 90% of the total target areas, with plans to extend its application to all areas.

In 2023, PTT organized Safety Risk Assessment and Assurance in its operational areas by experts from globally recognized consulting firms specializing in process safety management. They assessed the readiness of equipment integrity and the management systems for Process Safety Management (PSM). This initiative aimed to elevate safety standards in the operational practices of natural gas separation, gas transmission pipeline systems, and natural gas for vehicles stations across all 24 areas.

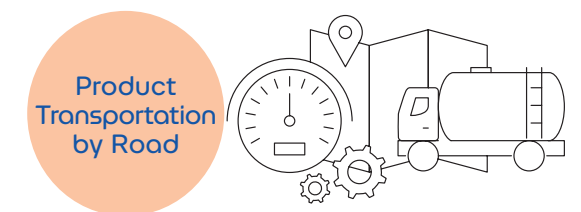
Safety Management in the Use of Automobiles and Transportation of Petroleum Products

PTT is committed to enhancing safety management in the use of automobiles and transportation to ensure efficiency and aims to minimize severe accidents. To accomplish this, PTT has undertaken the following initiatives:



Relevant Stakeholders: Executive, Employees, and Contractors, Particularly the Drivers

- In 2023, PTT conducted the Safe Driving Challenge for employees and contractors who drive vehicles, utilizing the Advance Safety Vehicle (ASV) system to assess and monitor driving behavior and renew driver's licenses automatically for those who demonstrate safe driving behaviors according to the set criteria. A total of 229 individuals participated, and from the driving behavior assessment results in 2023, it was found that the average score increased to 97.7%.
- PTT implemented the "100% Safety Helmet project" through the 21-day Helmet Challenge activity to promote helmet usage among employees, contractors, and personnel working in PTT's headquarters, including the Board of Investment (BOI) office staff who commute to work using motorcycles. A total of 221 individuals participated in the project. Following the project's conclusion, data analysis revealed that the helmet usage increased from 72% to 80%.
- A knowledge-enhancing video series on safe driving was developed and uploaded to the YouTube channel "Good Drive Good Life". This channel serves as a platform to promote awareness, understanding, and consciousness regarding safe driving practices among employees, contractors, and external stakeholders. <https://www.youtube.com/@gooddrivegoodlife>



Relevant Stakeholders: Contracted Transportation Companies

- Developing "Advanced Analytics for Road Safety" systems involves analyzing transportation data related to petroleum product transportation, including driver behavior, vehicle maintenance records, and transportation routes. The system aims to track accident probabilities, monitor potential risks, and compile reports on transportation efficiency.
- Conducting the "Risk in Road Safety" activity aims to promote and instill safety awareness in petroleum product transportation among drivers. The process involves the following steps:
 - Drivers report any identified risk spots along transportation routes, specifying potential hazardous risks in those areas.
 - PTT reviews the data and assesses the severity of risks based on reported incidents by drivers and accident statistics in those risky areas. PTT conducts thorough area inspections and risk assessments if high risks are identified.
 - Results from the risk assessments are used to determine corrective, preventative, or risk reduction measures for high-risk areas.
 - Information on identified risks is communicated to the contracted transportation companies through PTT Group Transportation Safety Management Task Force.
 - Awards are presented to the contracted transportation companies and drivers based on specified criteria. In 2023, there were 264 participants in the program, and 354 risk points were reported. These points were documented in the database and reported in PTT Group Transportation Safety Management Task Force meetings.





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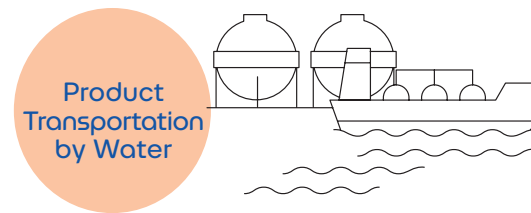
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Relevant Stakeholders: State Railway of Thailand

- Developing standards and safety operation guidelines for rail transportation in collaboration with the State Railway of Thailand aims to align rail transport standards with international regulations such as the Regulation Concerning the International Carriage of Dangerous Goods by Rail (RID).
- Conducting emergency management and crisis response drills for rail transportation jointly with PTTEP, the State Railway of Thailand (SRT), community leaders, and government agencies in Phitsanulok province. This scenario involves a train derailment incident while towing a crude oil tanker train at the Bueng Phra Oil Depot in Bueng Phra sub-district, Mueang district, Phitsanulok province. The objective is to educate and instruct employees, contractors, community members, and government agencies on proper emergency procedures. Additionally, the exercise aims to enhance confidence among the community and local organizations regarding emergency management and response. Following the drills, assessments will be conducted to evaluate effectiveness and efficiency. Additionally, feedbacks from stakeholders will be solicited to inform future improvements and enhancements in emergency response management.



Relevant Stakeholders: Shipping Contractors

- Supporting and advocating the adoption of the Marine Terminal Information System (MTIS) within PTT Group to enhance the safety and environmental preservation standards of the group's marine terminals. This initiative includes facilitating the sharing of best practices in maritime transportation safety among companies within PTT Group, such as the group's practical management of water transportation and implementation of the Vessel Online Tracking System.
- Collaborating with PTT Group, consisting of PTTEP, TOP, IRPC, GC, OR, PTT Tank, and PTT LNG, to develop a strategic plan and operational roadmap aimed at enhancing the maritime transportation of products within PTT Group and its contracted transport companies to international safety standards and best practices. This strategic plan encompasses

6 key areas, which are Legal Compliance, Organizational Management, Contractor Management, Management of Aging Assets, Employee Capability Enhancement for those working in offices, ports, and aboard ships, and Cultivating a Safety Culture among management, employees, and contracted transportation companies to achieve the goal of zero accidents in maritime transportation.

Emergency, Crisis and Business Continuity Management

PTT has revised its Emergency and Crisis management plan to align with the National Disaster Prevention and Mitigation Plan for 2021-2027. This aims to integrate coordination and data linkage systematically and efficiently with relevant government agencies. In 2023, PTT reviewed its emergency and crisis management guidelines, incorporating the Incident Command System (ICS) for emergency and crisis management drills at the provincial level, collaborated with the Department of Disaster Prevention and Mitigation, provincial government agencies in Rayong, and companies within PTT Group. The objective was to ensure that executives and all units understand their roles and responsibilities, harmonize emergency and crisis management processes, and maintain business continuity seamlessly.

Additionally, disaster prevention and mitigation exercises were conducted in Rayong province (Level 2 disaster readiness) in Map Ta Phut Industrial Estate, surrounding industrial areas, and the port area of Map Ta Phut district, Rayong province. These exercises covered geological disasters, floods, strong winds, chemical hazards, radiation, and evacuation drills. During the drills, the provincial governor served as the incident commander, and communication was established between the PTT Group Emergency Management Center (GEMC) and the emergency management centers of GC and PTTLNG through remote video conferencing systems.

PTT has also reviewed, adjusted, and enhanced its business continuity management system. It also conducts drills for business continuity plans in emergencies resulting from cyber-attacks, rendering all systems unusable. In such cases, the President and Chief Executive Officer serve as the chairpersons, with executives from the Crisis Management Center (CMC) participating in the exercises. Coordination extends to the business group's emergency management centers, including PTT DIGITAL, through remote video conferencing systems. In 2023, PTT maintained its certification for business continuity management standards (ISO 22301) from the Management System Certification Institute (Thailand) (MASCI).

Development of an Incident and Non-conformance Report Web Application

PTT has developed an Incident and Non-conformance Reporting System to provide a channel for employees to report incidents or deviations encountered. This system covers accidents, near-miss incidents, substandard acts and conditions, and non-compliance with laws, regulations, or operational procedures. Data collected through this system is analyzed to identify systematic controls and risk reduction measures. In 2023, significant system enhancements were made, including adding functions for importing accident data from car insurance companies received by PTT. This includes tracking driver records, improving data utilization for incident summary reporting, and meeting user needs more effectively. There were 6,087 reports generated, reflecting a high safety consciousness, awareness, and positive employee attitudes toward safety.

Key Performance against PTT's Targets

Indicators		2020	2021	2022	2023
Lost Time Accident: LTA (person)					
Target	Employees	0	0	0	0
	Contractors	0	0	0	0
Performance	Employees	1	0	0	0
	Contractors	2	0	0	3
Total Recordable Injury Rate (TRIR) time per 200,000 hours worked					
Target	Employees	≤ 0.066	≤ 0.066	≤ 0.053	≤ 0.046
	Contractors	≤ 0.080	≤ 0.080	≤ 0.064	≤ 0.056
Performance	Employees	0.089 or equals to 0.445 per 1,000,000 hours worked	0 or equals 0 per 1,000,000 hours worked	0.063 or equals to 0.315 per 1,000,000 hours worked	0.033 or equals to 0.163 per 1,000,000 hours worked
	Contractors	0.109 or equals to 0.545 per 1,000,000 hours worked	0.038 or equals to 0.210 per 1,000,000 hours worked	0.038 or equals to 0.190 per 1,000,000 hours worked	0.028 or equals to 0.138 per 1,000,000 hours worked
Total Recordable Occupational Illness Rate (TROIR) time per 200,000 hours worked					
Target	Employees	≤ 0.120	≤ 0.108	≤ 0.096	≤ 0.084
Performance	Employees	0 or equals to 0 per 1,000,000 hours worked	0 or equals to 0 per 1,000,000 hours worked	0 or equals to 0 per 1,000,000 hours worked	0 or equals to 0 per 1,000,000 hours worked
PTT's Process Safety Event (PSE) Tier 1* (time)					
Target		0	0	0	0
Performance		2	1	0	0
PTT's Process Safety Event (PSE) Tier 1 and Tier 2* (time)					
Target		≤ 1**	≤ 1**	≤ 1	≤ 1
Performance		0	0	1	1
Major Truck Accident Rate*** (time per 1,000,000 kilometers)					
Target		0.027	0.014	0	0
Performance		0	0	0	0

Remarks:

*Reporting accidents in Tier 1 and Tier 2 production processes at PTT is referenced according to the standards set forth by the American Petroleum Institute (API) API RP 754. Safety-related accidents in major and catastrophic production processes occurring in the natural gas transmission pipelines outside the operational areas are reported.

** 2020 - 2021 PTT used goal indicators and performance from Tier 2.

***Severe accidents in shipping product transportation refer to an incident arising from the operation of a product transport vehicle. As the liable party, PTT directly or indirectly causes losses impacting individuals, property, the environment, and local communities, as defined.



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PTT conducts systematic investigations to determine the causes of accidents and has developed measures to prevent recurrence. This includes thoroughly reviewing operational procedures, training sessions to reinforce PTT Life Saving Rules, and extracting lesson learned from past incidents.

Cooperation with Various Partners and Networks



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PTT recognizes and prioritizes the importance of safe driving to reduce road accidents in Thailand. Therefore, relevant public and private sector agencies were invited to collaborate, such as the Department of Disaster Prevention and Mitigation (DDPM), the Department of Land Transport, highway districts, insurance companies, provincial public health offices, and PTT Group. The "Good Drive Good Life campaign" was promoted in Rayong province to enhance awareness and consciousness of safe driving among individuals, road users, and communities. In 2023, various activities for schools and communities are conducted as follows:

- **The "Safe Schools, Secure Communities" campaign**, in collaboration with the Provincial Road Accident Prevention Plan Management Committee (SRAP) in the Eastern Region, promotes safety in school driving by providing knowledge on identifying dangers and risks associated with driving within school premises and surrounding areas. The initiative offers consultation, guidance, and encouragement for participating schools to develop measures tailored to the needs of each community to address risks related to driving safety within school premises and surrounding areas. Under the concept of "Learn, Play, Plan, and Implement Road Accident Prevention Measures," the campaign also supports budget allocation to address identified school risk points. A total of 9 schools participated in the initiative.
- **The "New Generation Drivers, Safe Riding" activity**, in collaboration with the Department of Land Transport and NPC Safety and Environmental Service Company Limited, provided training on safe motorcycle driving techniques to obtain motorcycle driving licenses. The training was conducted for students from 4 schools, with 275 students trained and issued motorcycle driving licenses.
- **The "Volunteer Spirit for Road Safety" activity** aims to enhance knowledge and skills in accident prevention driving within the community. Training sessions on defensive driving techniques were organized for community leaders from 7 communities, totaling 46 individuals. They were then encouraged to disseminate or raise awareness about road safety within their families, organizations, or those under their supervision, with a ratio of 1 trained individual reaching out to 10 others.

- **The road risk assessment and mitigation project** utilized data on road risk points from the Rayong Provincial Office of Disaster Prevention and Mitigation (DPM) and accident data from relevant government and private sector networks over the past 3 years for analysis. The analysis identified 4 high-risk points, for which risk reduction measures were developed to guide the addressing and prevention of accidents. These measures were then presented to the Rayong Provincial DPM as a framework for future problem-solving endeavors.
- **The Godji Knowledge Series videos** aim to promote safe driving techniques on social media platforms. PTT has created 3 episodes on the criteria for deducting points from driving licenses, 6 episodes on safe car driving techniques, and 8 episodes on motorcycle driving techniques, totaling 17 episodes. These videos guide participants in safe driving techniques through Facebook Good Drive Good Life.



Security Network

PTT is committed to developing a security management system and establishing a national security network in collaboration with governmental and private sectors. This aims to strengthen PTT's security management meets national and international standards.

In 2023, PTT, the Office of the National Security Council, the National Intelligence Agency, the Central Investigation Bureau, the Special Branch Bureau, Chulalongkorn University, and the Mass Rapid Transit Authority of Thailand jointly hosted the "CI-SEC 2023" on September 12 - 13, 2023, at the Energy Complex (EnCo). The objective was to establish a network for exchanging information, and experiences in security governance among governmental entities, security agencies, research and innovation institutions, and related educational institutions. The conference was attended by 419 participants from over 140 organizations, including PTT, state-owned enterprises, educational institutions, international organizations, and security agencies at strategic and operational levels.

Feedbacks from Stakeholders

"PTT is committed to managing security, safety, occupational health, and environment (SSHE) matters by international standards. This commitment involves establishing and reviewing policies, objectives, plans, and operational measures annually to ensure readiness to adapt to changes, support proactive business operations, and accommodate new business ventures aligned with the organization's vision. Additionally, management systems are continuously improved to foster a conducive work environment, free from accidents, ensuring efficient resource utilization, sustainable environmental stewardship, and enhancing confidence among stakeholders in alignment with the organization's mission."



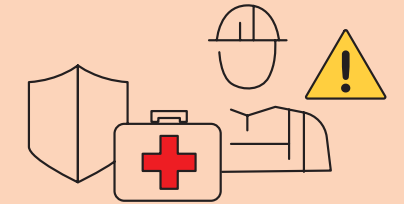
Mr. Worapong Nakchatree
Executive Vice President
Sustainability Management

"From participating in this academic conference, I gained knowledge, exchanged ideas, and contributed to building a strong network in the security and safety field. It was a valuable experience for collaboration."



Police Captain Jaroenchai Saranpol
Director of Rescue and Right
of Way Maintenance Division 2,
Mass Rapid Transit Authority of
Thailand

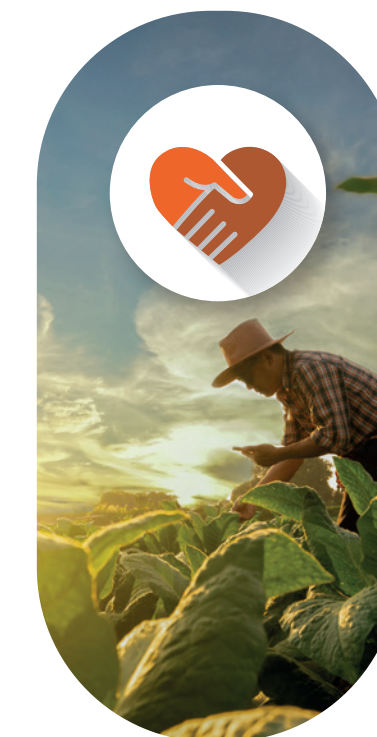
Future Plans



PTT aims to manage safety, occupational health, and environmental aspects to become an organization with zero accidents. This initiative seeks to instill confidence in all stakeholders by promoting participation in safety among employees and contractors. In 2024, several key operational plans include expanding the safety culture in the natural gas vehicle sector, fully implementing Bow Tie Analysis techniques in all operational areas, implementing process safety management in PTT's operational areas, developing Health Risk Assessment on Web application, and developing Defensive Driving Auto-assessment System.

More details can be found on PTT Website.

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Corporate Citizenship

Positive and Negative Impacts

PTT has a mission to uphold energy security as the national energy company, coupled with its commitment to being a good corporate citizenship. Its operations focus on social responsibility in 3 dimensions: environmental, society, governance as well as human rights along with a collaboration with companies within PTT Group, government and private partner networks, and social networks nationwide. To effectively carry out these social initiatives, PTT has established dedicated structures responsible for social activities, including various supporting forms such as donations, social responsibility projects, and social enterprise operations. The ultimate goal is to maximize positive social impacts, such as developing workforce skills to create job opportunities, supporting community marketing, conserving and restoring natural resources, disseminating knowledge, and generating income for communities. These efforts contribute to stimulating the country's economy, promoting youth education by enhancing teaching skills and upgrading the education system, uplifting marginalized groups to improve their quality of life, and avoiding negative impacts on communities, such as lack of sustainable care for projects after PTT has completed the implementation or operations that may affect the surrounding communities, resulting in the relationship between communities and PTT's business operations. PTT ensures that these initiatives are inclusive and aligned with all stakeholders' needs, expectations, and concerns through participatory processes aimed at fostering relationships, mutual understanding, and balanced value creation between the organization and society, leading to sustainable collaboration in the future.



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Business Operations and Performance
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Material Topic Management

Indicators	Performance Targets		Performance against 2023 Targets
	Short-term Targets 2023	Long-term Targets	
<p>SE-AM KPI and Corporate KPI</p> <ul style="list-style-type: none"> Number of graduates from KVIS and VISTEC Number of research from VISTEC 	<ul style="list-style-type: none"> KVIS: 422 persons VISTEC: 123 persons There is an increase in research output each academic year 	<ul style="list-style-type: none"> KVIS: 422 persons VISTEC: 123 persons 1,458 pieces of research 	
<p>Functional KPI</p> <ul style="list-style-type: none"> Number of areas that have undergone development as a result of PTT Group Innovation for Community Project Net income of every household/ group participating in PTT Group Innovation for Community Project (those able to generate income) Net income (excluding purchases from PTT) from supporting community product distribution channels through the Smile Community Project Number of disadvantaged individuals who have benefited from the improvement of quality of life through Sarn Palung Social Enterprise Company Ltd. (SPSE) 	<ul style="list-style-type: none"> 45 areas nationwide Community income has increased by at least 10% compared to the community's previous income More than THB 2,000,000 494 persons 	<ul style="list-style-type: none"> 45 areas nationwide (from 485 farmers nationwide) Average income has increased by more than 10% compared to the community's previous income THB 2,084,548 494 persons 750 - 800 persons by 2030 	
<p>KPIs aligned with PTT's Sustainability Management Master Plan for Social Responsibility, and Environment 2021 - 2025</p> <ul style="list-style-type: none"> Social Investment Budget Proportion of the public donation budget compared to the total social operation budget. Social Impact Assessment (SIA) or Social Return on Investment (SROI) 	<ul style="list-style-type: none"> At least 1 - 3% of PTT only operating profit Not exceeding 30% of the total budget Social Return on Investment (SROI) is greater than or equal to 1.3 times the Weighted Average Cost of Capital (WACC) for all projects (excluding projects conducted under the PTT SE Sandbox) 	<ul style="list-style-type: none"> 1.08% of PTT only operating profit 26.83% of the total budget Every project has an SROI value greater than 1.3 times the financial cost 	

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Contribution to the United Nations Sustainable Development Goals (UN SDGs)



Key Action Plans for 2023

- Participation in supporting the long-term development of science and technology education by establishing Kamnoetvidya Science Academy (KVIS) and Vidyasirimedhi Institute of Science and Technology (VISTEC).
- PTT Group Innovation for Community Project.
- Collaboration to support the improvement of livelihoods for disadvantaged individuals and create economic opportunities for farmers through Sarn Palung Social Enterprise Company Ltd. (SPSE) initiatives.
- Conservation and restoration of natural resources alongside knowledge dissemination efforts.

Overall Management Approach

PTT aims to create shared value for society, communities, and the nation through its Corporate Social Responsibility (CSR) strategies to elevate the quality of life and foster inclusive development for sustainable living environments.

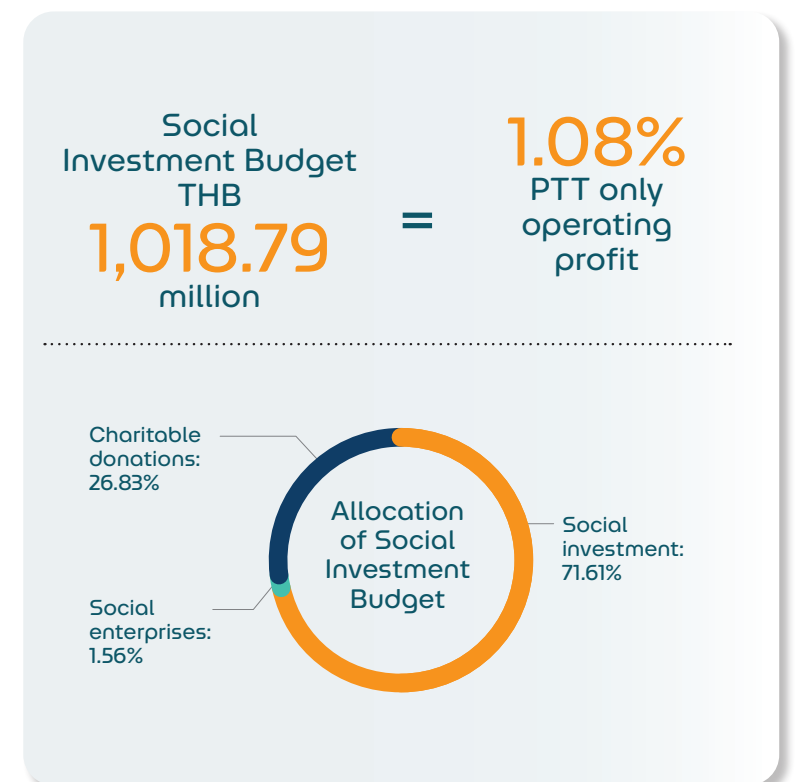
- These strategies include leveraging expertise and management capabilities within the PTT Group to contribute to community development in energy, technology, and innovation.
- Emphasis is placed on collaborative processes and knowledge sharing to foster sustainable development.
- Furthermore, efforts are made to strengthen social and community enterprises, enabling them to operate independently and sustainably.

The social operations strategy encompasses two dimensions: **human, community, and societal development, and the dimension of promoting conservation and restoration of natural resources and the environment**, coupled with fostering inclusivity and managing the business's impact on the community surrounding the enterprise. This aims to generate holistic social outcomes, with management details as follows:

- The establishment of specialized units, such as the Corporate Reputation and Social Responsibility Executive Vice President is initiated to oversee and guide the operations of Sarn Palung Social Enterprise Company (SPSE) and the Sustainable Power Foundation for Social Enterprises to conduct social enterprise activities across multiple dimensions. This is coupled with efforts to build a positive reputation and image for the organization.
- Social initiatives are pursued through various processes, including supporting donations, assuming societal responsibility through project-based approaches, and conducting operations in social enterprises. The aim is to maximize positive impacts on society.

Progress of Key Plans/ Projects

In 2023, PTT allocated a budget for social investment totaling THB 1,018.79 million, equivalent to 1.08% of PTT only operating profit (as per the social investment budget allocation policy, at least 1-3% of PTT only operating profit). This allocation is divided as follows: 26.83% for charitable donations, 71.61% for social investment, and 1.56% for social enterprises. The outcomes of these social investment efforts in 2023 covered operations in all dimensions as outlined and met the set objectives. Despite the challenges posed by the COVID-19 pandemic and its localized impacts, most planned operations proceeded as scheduled. Nevertheless, PTT remains committed to continuous efforts to contribute to society, including skill development initiatives for farmers and communities through the PTT Group Innovation for Community Project. These efforts have contributed to PTT's reputation score, which increased to 87 points in 2023 (higher than 86 points in 2022), according to a survey of stakeholders' perceptions of PTT's business operations.



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Performance Progress of Human Resource, Community, and Social Development

Long-term Potential Development of Science and Technology Education through Kamnoetvidya Science Academy (KVIS) and the Vidyasirimedhi Institute of Science and Technology (VISTEC)

Operational Activities

PTT Group has been supporting budget allocations for the long-term development of science and technology education through Kamnoetvidya Science Academy (KVIS) and the Vidyasirimedhi Institute of Science and Technology (VISTEC) since the start of their academic operations in 2015, as documented in the mutual agreement records until 2031. This initiative aims to establish a foundation for driving the country forward in the future through research development and the cultivation of world-class scientific and technological personnel.



Benefits to Stakeholders

- In 2023, 69 students graduated from the Kamnoetvidya Science Academy (KVIS) at the high school level (including all 6 batches totaling 422 students). Among the students from the 6th batch who graduated in 2023, 30% pursued further studies abroad, while 70% continued their education domestically. Among those who continued their studies domestically, 71% sought Science, Technology, Engineering, and Mathematics (STEM) fields.
- In 2023, there were 2 graduates with master's degrees and 21 graduates with doctoral degrees from the Vidyasirimedhi Institute of Science and Technology (VISTEC). This totals 123 graduates overall.

ptt Benefits to PTT

- The total number of research works from the Vidyasirimedhi Institute of Science and Technology (VISTEC) are 1,458.
- The total number of graduates from VISTEC who have entered employment at companies within the PTT Group, accumulated since 2017, are 38 individuals (including 25 individuals from VISTEC and Visut Up Company Limited (VISUP)).

PTT Group's Innovation for Community Project

Operational activities have been carried out from 2021 to 2023, focusing on developing 3 main areas: Smart Farming, Smart Marketing, and Community Knowledge Management. These initiatives aim to address economic challenges within the community by promoting grassroots economic development through available networks, knowledge, innovation, technology, communication channels, and expertise. The overarching goal is to increase income and reduce expenses for the community.

Smart Farming

- Agricultural drone
- High-quality plastic for greenhouses
- Nano zinc oxide
- Solar cells
- Floating solar cells
- Smart greenhouses and IoT systems
- Air quality measuring devices
- Water systems
- Biofertilizers
- Parabola dome
- Underground water banks

Smart Marketing

- Community product
- Product development: developing community products from upstream - downstream
- Branding & packaging: market development for community products
- Sales channels: linking sales channels for communities
- Community-based Tourism
- Mae Tha Subdistrict, Mae On District, Chiang Mai Province
- Phiman Subdistrict, Naga District, Nakhon Phanom Province
- Ban Luang Subdistrict, Chom Thong District, Chiang Mai Province
- Na Haeo Subdistrict, Na Haeo district, Loei Province
- Lam Sin Subdistrict, Sri Nakhon Khuean Khan District, Phatthalung Province
- Ko Mak Subdistrict, Pak Phayun District, Phatthalung Province

Community Knowledge Management

- 8 pilot areas: innovation learning centers in 4 regions
- Guidebooks: knowledge sets for learning centers, innovation kits



Smart Farming



Operational Activities

Developing integrated areas with technology from PTT Group, such as agricultural drones, high-quality plastic for greenhouses, smart greenhouses and IoT systems, nano zinc oxide, air quality monitoring devices, water systems, underground water banks, biofertilizers, and floating solar cells, among others, is scheduled for delivery in 2023. The plan is to deliver 45 areas, ensuring each area increases its revenue by 10%. Currently, revenue has increased according to the target in 45 areas, 29 provinces.

Benefits to Stakeholders

- 485 farmers, covering 29 provinces, have been supported to become Smart Farmers.
- Enhanced the learning centers in 4 regions to "Sustainable Innovation Learning Centers", stored and connected knowledge and innovations from PTT Group Innovation for Community Project. Also developed 8 pilot areas, totaling 12 learning spots, to serve as learning hubs and continue to expand on larger scale.

ptt Benefits to PTT

- Creating a positive image for the organization by contributing to the recovery of the community economy, assisting them through crises effectively.
- Enhancing relationships with communities across more than 45 areas nationwide.
- Supported the License to Operate in the operational areas of PTT.



Innovation for Society case study: Huai Kayeng, Thong Pha Phum, Kanchanaburi Province

Smart Marketing



Operational Activities

Smart Marketing comprises the following components: Community Product Development: The aim is to develop 45 products, divided into deep process development (Group A) with 17 products and brand image and packaging-focused development (Group B) with 23 products. Additionally, there are 5 products aimed at adding value to agricultural residues. Community Tourism Development: 6 areas are targeted for community tourism development. Tourism routes have been established and tested through 4 complete test trips in all areas. Community guides are being trained, and tourism management is provided for locals in these areas.

Benefits to Stakeholders

Community Product

- Chum Chon Yim Dai project has developed and increased opportunities to access community market channels, both online and offline. The project aims to offer over 1,200 stock-keeping units (SKUs) on the platform, benefiting over 400 communities. Currently, 1,400 SKUs from all channels are participating in the project in 2023, representing 450 communities nationwide.
- Community products totaling 1,400 SKUs from 450 communities have been developed and upgraded, focusing on packaging and quality and promoting marketing and distribution channels.
- Increased revenue and decrease expenses more than 10% in 45 areas in 2022. Efforts were made to ensure that these operations were completed in all 45 areas by the end of the year.
- Sales channels connected more than 1,400 SKUs from 450 communities achieved sales of THB 2,084,548 in 2023.

Community-based Tourism (CBT)

- The target revenue for each area must increase by at least 10% before the development.
- 6 Community-based Tourism (CBT) destinations in 6 areas have been prepared for elevation to international standards and recognition, including:
 - Mae Tha Subdistrict, Mae On District, Chiang Mai Province
 - Phiman Subdistrict, Naga District, Nakhon Phanom Province
 - Ban Luang Subdistrict, Chom Thong District, Chiang Mai Province
 - Na Haeo Subdistrict, Na Haeo District, Loei Province
 - Lam Sin Subdistrict, Sri Nakhon Khuean Khan District, Phatthalung Province
 - Ko Mak Subdistrict, Pak Phayun District, Phatthalung Province

ptt Benefits to PTT

- Enhanced the organization's image by actively participating in the economic recovery of community society to navigate through the crisis successfully.
- Strengthened positive relationships with community networks spanning over 45 areas nationwide.
- Supported the License to Operate initiative in the business units areas of operation within PTT Group.



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Community Knowledge Management



Operational Activities

Community knowledge management, aimed at expanding future operations, is conducted by developing knowledge sets for each area. These include contextual and innovative knowledge sets specific to the area, utilized for dissemination and extension purposes. At present, there are 12 locations categorized into 8 pilot areas and 4 Sufficiency Economy Innovation Learning Centers. The objective is to develop high-potential areas into innovation learning hubs.

Benefits to Stakeholders

- Community knowledge for expansion, dissemination, and advancement.
- Pilot areas with potential for communities to serve as learning points for innovation that can be applied in various local contexts.

ptt Benefits to PTT

- Enhanced the organization's image by actively aiding the community's socio-economic recovery during crisis situations.
- Supported the License to Operate for the business units within the PTT area.

Supporting the Development of Sports Potential

Operational Activities

PTT collaborates with associations and sports clubs nationwide to support sports programs to promote opportunities for youth and underprivileged individuals across various regions of Thailand to train and develop their athletic skills. This initiative includes participation in standardized competitions, which serve as crucial platforms for developing the potential of Thai athletes to compete nationally and internationally. In 2023, significant achievements were realized in this endeavor:

- Implement sports skill development programs for Thai youth, such as the "Swimming for Life" project (2019 - present), which focuses on teaching basic swimming skills systematically to enhance survival skills and reduce drowning incidents. Approximately 10,000 individuals have participated in this project.
- Hosting the PTT Junior Tennis Championships (2005 - present) for over 19 years, with participation from more than 10,000 tennis players ranging from ages under 8 to under 18.

Providing Assistance to Victims of Natural Disasters

Operational Activities

PTT Group assists affected individuals during various disasters, both within the vicinity of its facilities and nationwide. This aid includes budgetary support, survival kits, fuel vouchers, and different essential supplies to alleviate the impact of these situations. Furthermore, support is extended to rescue teams, particularly PTT Group SEALS, comprised of trained personnel with experience in continuous relief efforts. Their expertise ensures that disaster victims swiftly recover and resume normalcy.

Benefits to Stakeholders

- In 2023, more than 10,000 individuals affected by natural disasters received assistance and support from PTT.

ptt Benefits to PTT

- Built a positive image for the organization through community assistance initiatives focused on improving living conditions.
- Fostered involvement of executives and employees in packing livelihood bags through the operations of the Thai Heart Volunteer Club, PTT Group, and field operations conducted by the trained team of PTT Group SEALS.
- Demonstrated the sincere dedication of PTT and its group companies to caring for and assisting the community.



Benefits to Stakeholders

The development of sports potential and skills for youth has impacted more than 20,000 individuals, furthering the establishment of a national and international reputation through continuous project implementation.

ptt Benefits to PTT

Created a positive image for the organization by promoting youths' potential.

Engaging in Supporting the Development of the Quality of Life for the Underprivileged and Creating Economic Opportunities for Farmers through the Initiatives of the Company, Sarn Palung Social Enterprise Company Ltd. (SPSE)

PTT Group, consisting of PTT, PTTEP, GC, TOP, IRPC, GPSC, and OR, jointly established Sarn Palung Social Enterprise Co., Ltd. (SPSE) in 2017 to collectively manage and operate social enterprise businesses. SPSE aims to enhance the efficiency of social product/ service sales operations within PTT Group's integrated centers. This initiative aims to continuously and sustainably support society, communities, and the environment. The achievements of SPSE in 2023 include:

1. Café Amazon for Chance

To create employment opportunities for special assistance groups, such as the hearing-impaired and those with learning disabilities, ensuring them stable income jobs. Additionally, it aims to empower these groups in the coffee business sector. Presently, there are 8 branches of Café Amazon for Chance.



Benefits to Stakeholders

- Created 21 permanent positions for disadvantaged groups, resulting in 50% increase in income compared to previous earnings. Social initiatives yielded approximately THB 1,764,000.
- Enhanced the capabilities of disadvantaged groups through training courses at the Amazon Inspiring Campus (AICA) of Café Amazon (OR) business and provided internship opportunities at Café Amazon for Chance coffee shops.
- Fostered societal understanding and learning to coexist with disadvantaged groups through communication within Café Amazon for Chance establishments.
- Achieved a Social Return on Investment (SROI) of 0.64.

ptt Benefits to PTT

- Enhanced the organization's reputation by promoting community social well-being for disadvantaged individuals.
- Received recognition as an outstanding enterprise for hiring elderly individuals from the Ministry of Social Development and Human Security (MSDHS).

2. Community Coffee Bean Sourcing Project



Establish a reliable channel for distributing coffee beans to farmers at fair prices, promote sustainable coffee cultivation and production practices. Develop and enhance professional skills in coffee farming as well as produce a standard coffee. This includes fostering strong community cohesion. Currently, there are farmer groups from 14 communities in Huay Chompoo Sub-district, Mueang District, Chiang Rai Province, and in Mae Salong Sub-district, Mae Fa Luang district, Chiang Rai Province, as well as in the Small House in the Big Forest project under the Royal Initiative, Phayao Province. 255 farmers are involved, cultivating approximately 4,585 rai of coffee. In 2023, the company purchased 800 tons of coffee beans from these farmers.

Benefits to Stakeholders

- 297 farmers' households participated in the project, resulting in an increased annual household income of THB 7,000-12,000, totaling approximately THB 1.63 million.
- Provided training on coffee bean evaluation and quality selection for 14 farmer groups within the project area.
- 2,000 shade trees have been added to the project area from the project's inception in 2018 until 2023.
- Social Return on Investment (SROI) resulted in a ratio of 3.47.

ptt Benefits to PTT

- Built a positive organizational image through community economic assistance initiatives.
- Provided efficient raw materials to Café Amazon, totaling more than 800 tons, enhancing the company's operational efficiency in coffee bean procurement.



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3. PTT Day Care

To establish sustainable livelihoods and income for the group of Thai Railway Housewives and serve as a model center for both the public and private sectors in responding to the state policy aimed at addressing the challenges of Thailand's aging society. The project has been operational since September 1st, 2019, until the end of December 2023. During this period, 37 children have been enrolled, comprising 32 in the nursery and 5 in the after-school programs.

Benefits to Stakeholders

- Created permanent jobs for three economically disadvantaged women with limited education, resulting in an average monthly income increase of THB 11,000 per person. One elderly nurse received a monthly income of THB 30,000, totaling THB 279,000.
- Selected by the National Council for Child and Youth Development under the Royal Patronage of HRH Princess Maha Chakri Sirindhorn (NCYD) as a prototype early childhood center in the "Thousand Days Miracle" project.
- Social Return on Investment (SROI) yielded a ratio of 0.2.

Benefits to PTT

- Enhanced the organization's image, we promote community well-being by fostering a better quality of life for the underprivileged.

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Progress in Advancing Initiatives to Promote Conservation and Restoration of Natural Resources and the Environment

Engagement in efforts to enhance and preserve the restoration of green spaces in the OUR Khung BangKachao

Operational Activities

PTT collaborates with the Chai Pattana Foundation, a network of private sector, government, civil society, and educational institutions, to continuously restore green areas in the Khung BangKachao. This collaboration is formalized through a memorandum of understanding for joint development and restoration of green spaces under the supervision of the Department of Forestry, OUR Khung BangKachao project. The Chai Pattana Foundation and the Department of Forestry oversee the project's green area restoration and learning management at the Chalerm Phrakiat Park in Song Khanong subdistrict, Phra Pradaeng district, Samut Prakan Province. In 2023, PTT fulfilled its commitments by supporting the continuous development and management of learning areas at Chalerm Phrakiat Park. PTT's support contributed to the restoration of 1,276 rai of green areas and develop 51 rai of private area to model agricultural model.



Benefits to Stakeholders

- The green areas restored since the inception of the project until 2023 cover an extensive area of over 6,000 rai*, benefiting numerous households in the surrounding communities, approximately 305 households. Income distribution amounted to THB 2,823,955.

Benefits to PTT

- In 2023, the amount of greenhouse gas sequestered reached 14,523 tons of carbon dioxide equivalent per year.**
- Fostered positive relationships to promote conservation and environmental restoration efforts in collaboration with all 113 organizations from the government, private sector, and the public for the sustainable development of the OUR Khung BangKachao project.

Remarks:

* The working group collaborated with AI and Robotics Venture (ARV) to analyze Sentinel-2 satellite image data, comparing green areas to scientific principles. Upon examination, it was found that in 2018, there were 4,705 rai of green areas, while in 2023, there were 6,045 rai.

** The assessment report of carbon sequestration in the Bang Kachao royal land area amounted to 1,276 rai (according to the LESS letter of recognition as of September 2023, under the OUR Khung BangKachao project by TGO).

Three Nature Learning Centers

Operational Activities

Operated through the Reforestation Institute and Environmental System established by PTT, aiming to extend the mission of reforestation projects on 1 million rai since 1994. The initiative focuses on forest conservation, restoration, and knowledge dissemination, sharing experiences from reforestation efforts with the public to foster awareness of natural resource conservation and environmental protection through 3 nature learning centers:

1. Metro Forest Learning Center, Bangkok
2. Sirinath Rajini Ecosystem Learning Center, Prachuap Khiri Khan Province
3. Wang Chan Forest Learning Center, Rayong Province

In 2023, all 3 nature learning centers received prestigious recognition in the Thailand Tourism Awards (Kinnaree Awards) across categories such as Outstanding Tourism Learning Experience and Low Carbon Sustainable Tourism.



Benefits to Stakeholders

- In 2023, the total number of visitors to all 3 centers was 63,176, generating a community income of THB 688,526 annually.

Benefits to PTT

- In 2023, the amount of greenhouse gases sequestered was 6,554.87 tons of carbon dioxide equivalent per year.
- Fostered positive relationships in promoting environmental conservation and restoration.

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Participation in the Administration of the Institute and the Green Globe Awards

Operational Activities

The "Green Globe" project was established in 1999 after participating in the reforestation project on 1 million rai. From this experience, it was found that sustainable reforestation also requires planting trees in people's hearts. Therefore, the Green Globe Award was established to recognize individuals, communities, and youth who have contributed to forest conservation and environmental protection, aiming to honor and inspire these groups.

Subsequently, the project evolved into the "Green Globe Institute" to continue the recognition of environmentalists and to further the important mission of developing a research and knowledge management network based on the achievements of the Green Globe Award. This serves as a model for successful conservation and environmental resource management, benefiting communities and facilitating adaptation to change more effectively. The 21st Green Globe Awards ceremony was held in 2023.

Benefits to Stakeholders

- Inspired and motivate environmental and natural resource stewards within the network.
- Advanced knowledge in conservation, restoration, and management of natural resources from community to community and connect operational networks nationwide.

Benefits to PTT

- Enhanced the organization's reputation by promoting nationwide environmental conservation networks.
- Supported the low-carbon society goals of PTT Group.



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Network and Collaboration

Vetiver Network

In 2023, PTT participated in The 7th International Conference on Vetiver (ICV-7) held from May 29 to June 1. The event, themed "Vetiver for Soil and Water Conservation in Commemorations of His Majesty the late King Bhumibol Adulyadej the Great", was organized by the Royal Initiative and Special Project Sub-Bureau in collaboration with the Chai Pattana Foundation. There were 1,098 participants from 32 organizations across 19 countries.



Green Globe Awards

The Green Globe Institute announced the 21st Green Globe Awards winners under the theme "Sufficiency Economy, Sharing, Binding, Land, Water, Forest", comprising 44 environmental conservation projects from across Thailand in 7 award categories. These categories include 8 community projects, 3 individual projects, 8 youth projects, 13 Sippanondha Ketudat projects, 2 essay projects for aged under 15 years old, 6 essay projects for aged 16 - 25 years old, 3 essay projects, and 1 media project.



In 2023, PTT expanded knowledge from prototype areas to other communities by publicizing knowledge and organizing knowledge-sharing platforms in 4 regions. This initiative also utilized the knowledge from award-winning projects to benefit various environmental conservation projects. The Green Globe Institute's committee members served as speakers to support the implementation of new reforestation projects.

Feedbacks from Stakeholders

"The various projects aim to promote livelihoods, knowledge and skills as well as expand community market access. They also facilitate modern education and promote organic agriculture, emphasizing environmentally friendly, and community-safe consumption practices, contributing to the continuous improvement of community well-being"



Miss Noi Chantarakarunsakul
Farmer Leader
PTT Group's Innovation for Community Project, Highland Development Project Using Royal Project system, Huay Kayeng, Thong Pha Phum District, Kanchanaburi Province

Future Plans

Maintaining environmental conservation networks through the Green Globe Institute to foster sustainable development by collecting and disseminating knowledge, elevating environmental award standards, and expanding community and urban network award criteria. Knowledge dissemination to the public has been extended to 4 regions and will be implemented further in other 2 regions, including integrating award-winning knowledge into PTT's internal operations.

Further details can be found on PTT Website.

Innovation and Technology

Positive and Negative Impacts

Innovation and technology are crucial in enhancing efficiency and competitiveness in current business landscape. To address this, PTT established the PTT Innovation Institute. This institute is dedicated to initiating, researching, and developing innovations. Technology evaluation and testing aims to improve and enhance production processes, reduce pollution and environmental impact, elevate product and service quality, and promote environmental sustainability. These result in direct positive impacts on business, customers, society and environment. However, it is essential to note that not all innovations and technologies may meet business needs and customer and stakeholder expectations. Some may even have negative impacts, such as ineffective use of budgets and non value added investments or uncompetitiveness or even environmental and social repercussions. To mitigate these risks, PTT systematically manages various issues, designing processes, reviewing strategies, and developing master plans to align with the organization's new strategies and vision. The goal is to transition towards a Future Energy business and new ventures, aiming for more far-reaching energy business and innovations. This involves directing research and innovation efforts toward commercial products and creating alternative innovations to reduce import dependency. PTT seeks to identify and select business partners, both internally and externally, to enhance long-term competitiveness effectively.



Material Topic Management

Indicators	Performance Targets		Performance against 2023 Targets
	Short-term Targets 2023	Long-term Targets	
<ul style="list-style-type: none"> ● SE-AM KPI and Corporate KPI <ul style="list-style-type: none"> • The revenue from the new business 	<ul style="list-style-type: none"> • Income from the new business ventures aligns with the business plan 	<ul style="list-style-type: none"> • The profit from internally generated innovations accounts for at least 7% of the net profit 2030 	<ul style="list-style-type: none"> • The revenue from the new business ventures exceeds the business plan by more than 10%
<ul style="list-style-type: none"> ● Functional KPI <ul style="list-style-type: none"> • Results from research and development on operational expenses • Innovation expenses per net profit 	<ul style="list-style-type: none"> • The outcomes from research and development compared to operational expenses ≥ 1.2 • Expenditure on innovation development is at least 10% of the net profit for 2022 	<ul style="list-style-type: none"> • The number of patents registered is at least 25 	<ul style="list-style-type: none"> • Results from research and development on operating expenses = 1.2 • Expenses for innovation development 11% of 2022 net profit • 40 patents registered
<ul style="list-style-type: none"> • Number of patent applications and patents granted 			

Contribution to the United Nations Sustainable Development Goals (UN SDGs)



Key Action Plans for 2023

- Activities to promote creativity
- Internal-developed innovation
- Outside-in innovation
- Network creation and cooperation to expand innovation internally and externally, leading to opportunities to develop and expand new businesses



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Overall Management Approach

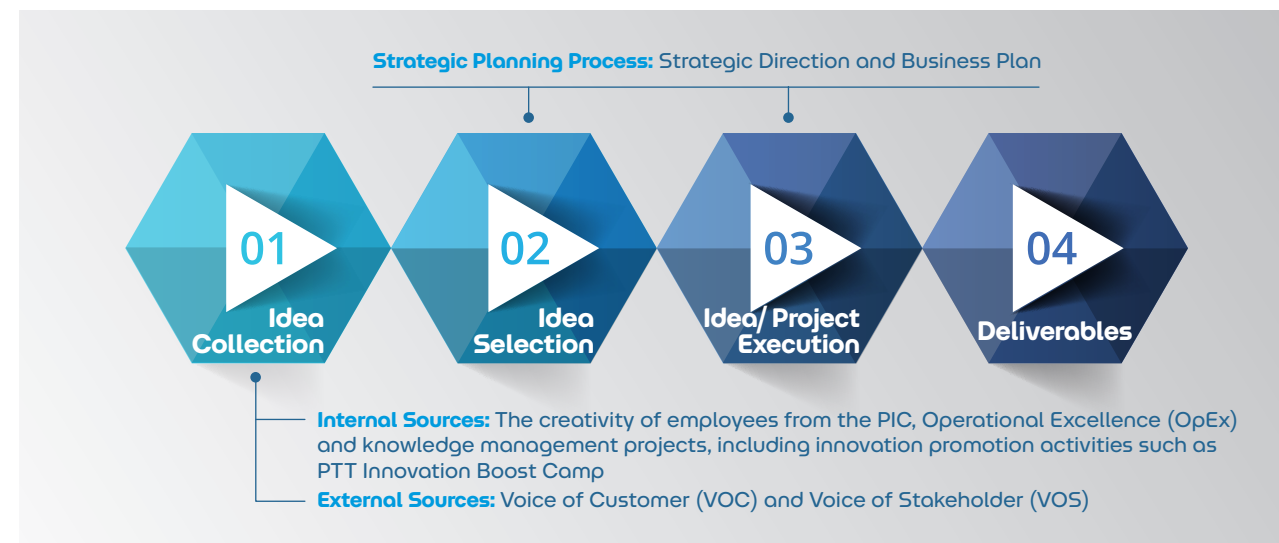
In systematically developing, managing, and promoting innovation, PTT demonstrates its commitment through **Innovation Management Policy**. The policy prioritizes innovation development in 2 primary forms:

- **Internal innovation and technology:** Generated from within the organization through PTT Innovation Institute, as well as through competitions, idea submissions, and creative thinking initiatives.
- **Outside-in innovation:** Obtained through collaborations and investments with various partners, especially in technologies which PTT lacks expertise, particularly for venturing into new businesses.

All executives and employees are tasked with supporting, advocating, and aligning with this policy, serving as exemplary

models in promoting continuous innovation management. To facilitate the implementation of the policy, PTT has established the PTT Innovation Management System and developed the **PTT Innovation Management Master Plan 2023 - 2027**. This plan includes explicit objectives, innovation concepts, internal/external factor analysis, and measurable strategies and plans integrated with other organizational master plans. The **PTT Innovation Management Process**, consisting of 4 main steps: Idea Collection, Idea Selection, Idea/Project Execution, and Deliverables, has been outlined to streamline the ideation, innovation process, research and development of various technologies, including consolidating and analyzing needs, expectations and stakeholders' concerns in order to allow PTT Innovation Institute to further research and development.

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Various initiatives are undertaken, such as employee idea competitions, the Productivity Improvement Circle (PIC) project, and the search for suitable external innovations/ technologies for prompt application. All ideas and innovations are systematically collected, evaluated, and stored in a centralized innovation database. The PTT Idea to Commercialization Gate (PTT I2C Gate) process is established to systematically review and approve projects based on criteria such as strategic fit, technology barrier, financial return, business potential, and execution capability. A comprehensive innovation portfolio is compiled and presented to the governing structure for review, refinement, and planning in innovation management. This ensures that PTT has a well-balanced portfolio of innovations that create value over time, fostering investment flexibility and continuous business value creation.

PTT has established a governance structure to oversee innovation management, ranging from board-level oversight to operational-level execution, which includes:

- **Enterprise Risk Management Committee (ERMC):** Responsible for setting and reviewing Innovation Management Policy, providing recommendations, and supporting implementation according to the plan. They report quarterly to PTT's Board of Directors.

- **PTT Innovation Management Committee (PTT IMC):** Responsible for reviewing the Innovation Management Master Plan, driving innovation at all levels, and reporting progress to the ERMC quarterly.

- **PTT Innovation Management Working Team:** Responsible for implementing strategies and reporting progress to the PTT IMC quarterly.

In addition, some units play a supportive role in fostering innovation efforts, as outlined in the plan. One such unit is the Executive Vice President for Planning and New Venture Development, whose responsibilities encompass managing investments, establishing companies, and developing new business ventures. The **ExpresSo** project is designed to acquire cutting-edge technologies through venture capital investments and direct investment in the startup, Alpha Com Company Limited. This investment aims to facilitate prototype testing before scaling these technologies into full-fledged business operations. Furthermore, the organization has established leading development and expansion companies, such as Arun Plus Co., Ltd. (ARUN PLUS), which focuses on comprehensive electric vehicle systems, and Innobic (Asia) Company Limited, which concentrates on the life science business sector.

More details about PTT Innovation Management Policy and the master plan can be found on PTT Website.

Progress of Key Plans/ Projects

Organizing activities to promote creativity and innovation

One of the key innovation management strategies is "Nurturing People", which focuses on elevating employees' knowledge and capabilities in innovation. This involves preparing personnel with the knowledge, skills, and awareness to innovate and instill a culture of innovation within the organization. PTT has outlined continuous guidelines for instilling these values and conducts various activities to promote ideas, creativities, and innovations; including,

- **Innovation is designated as one of the SPIRIT values, which are the organization's core values.** It is cultivated, transmitted, and integrated into the organization's core competency. This involves developing plans and activities to enhance competencies and expertise related to innovation, along with monitoring outcomes. Examples include expertise in Digital Acumen, Digital Insight, Driving Innovation, Technology Savvy, and programs like the PTT Innovation Boost Camp.
- **Since 2014, there has been a continuous competition for creativity and innovation known as the PTT Innovation Boost Camp 2023.** In 2023, 135 employees participated, presenting 27 innovative ideas. Furthermore, efforts were made to advance award-winning innovation projects from 2022 into commercially viable ventures, resulting in developing 2 projects: Nerameat, a plant-based alternative meat product, and an application for electric vehicles.
- **The Productivity Improvement Circle Project (PIC Project)** initiated by PTT, sets forth policies and drives employees to utilize productivity improvement tools in their work processes to enhance efficiency. This initiative has been in place since 1984 as part of the annual QSHE targets, requiring department and division units analyzing work processes, identifying issues, and prioritizing issues to select PIC Projects focused on enhancing work efficiency, reducing costs, generating additional revenue, reducing idle time, and creating other organizational benefits. In 2023, there were 1,561 PIC Projects, resulting in increased revenue of up to THB 6.16 billion, cost reduction of THB 8.186 billion, and saving of 179,216 idle hours. Among these, 5 PIC Projects met innovation development criteria, which will be presented to PTT IMC for evaluation and resource allocation to achieve future objectives.

Internal-developed Innovation by PTT Innovation Institute

In 2023, PTT Innovation Institute initiated, researched, and developed innovations that brought direct revenue of THB 81,812,047 and indirect revenue of THB 608,600,000. The expenditure on innovation and technology development amounted to over THB 502 million.

New Growth

PTT EV Charger and Charging Platform

The EV Charger and Charging Platform product developed by PTT Innovation Institute has been continuously researched and developed. It can be developed for commercial markets, serving as one of the innovations driving PTT towards a comprehensive electric vehicle (EV) business. It includes systems for charging authorization and data collection to support charging services at various locations. The results are displayed through an Administration Application on computers and a Mobile Application, allowing for energy management and convenience for businesses providing charging services and EV users. Furthermore, Electric Vehicle (EV) Chargers are also designed as Smart devices that operate in conjunction with a cloud server system. This system controls, transmits, and manages the energy usage data of EV Chargers within the network. It can seamlessly connect with platforms for those interested in conducting electric charging businesses, promoting the proliferation of charging stations for swift and widespread electric charging services and strengthening the usage of electric vehicles within the country. The EV Charger has also been patented and tested for safety compliance according to the EV Charger IEC 61851 standard. The Normal version was registered as a Thai innovation in 2019, while the Smart version was registered in 2022. These achievements have earned PTT the SET Awards 2022 for Best Innovative Company for the second consecutive year.

PTT has developed EV Chargers ranging from 22 kW to 44 kW, compatible with 3-phase alternating current electricity with higher capacity in foreign electric vehicle technology to meet the increasing demand for electric vehicles. The case material has been changed from metal to polymer (ABS or PP), from PTT group to improve fire resistance and competitiveness. Furthermore, digital technology has been used to develop a Cloud Platform for customer communication and a Mobile Application for commercial convenience. In 2023, 66 EV Charger service points were expanded.



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EVme Digital Platform

PTT is the first to provide a comprehensive electric vehicle (EV) subscription service through the innovative digital platform. This initiative aims to promote and establish a business ecosystem encouraging widespread electric vehicle adoption. Services include electric vehicle leasing, access to charging station information, and electric vehicle maintenance facilities. In 2023, over 1,000 electric vehicles were available for service, with more than 1,000 registered users.

Innaqua Wound Dressing Material

The PTT Innovation Institute has researched and developed a bio-cellulose wound dressing material, following safety testing according to the Food and Drug Administration (FDA) standards. This material has been commercialized under the trade name "Innaqua." Jack Chia Industries (Thailand) Public Company Limited has been appointed as the official distributor of Innaqua products. Innaqua wound dressings can be used for various types of wounds, including sterilized and infected. Innaqua is a global innovation in term of material development and medical application. This innovative wound dressing material is protected by intellectual property rights (Patent No. 1601001745). It contributes to the New S-Curve initiative, particularly in the comprehensive medical industry (Medical Hub), as part of the government's strategic plan. Additionally, it helps enhance access to quality medical treatment by offering locally produced equipment that matches international standards at affordable prices, thereby improving the quality of life for the people in the country.

Business Growth

PTT MicroHX

The PTT Microchannel Heat Exchanger (PTT MicroHX) technology is an innovation that enhances industrial processes to utilize energy more efficiently by recovering waste heat or cold and circulating it back into the process (Energy Recovery). This helps reduce energy costs and significantly decreases carbon emissions.

PTT MicroHX is an innovation conceived by PTT domestically to reduce imports and trade imbalances and enhance national competitiveness. It has been applied across various industries, both within and outside PTT group. For instance, PTT LNG has reduced carbon dioxide emissions from PTT LNG Terminal 1 by more than 210,000 tons annually. PTT plans to increase sales to generate over THB 1.92 billion in revenue by 2033.

Clean Growth

ReAcc Platform

The innovation digital platform serves as an intermediary for providing clean energy trade and Carbon Neutrality services to companies aiming to source renewable energy. This includes facilitating the trading of Renewable Energy Certificates (RECs) and implementing systems for electricity procurement through Corporate Power Purchase Agreements (CPPAs). It involves the utilization of renewable energy for electric vehicles. As of November 2023, the cumulative REC sales reached 385,494 RECs, resulting in revenue of THB 16 million. There are plans to introduce additional functionalities for trading carbon credits.

Outside-in Innovation

New Growth

Anti-aging Innovation

PTT and Innobic (Asia) have signed a memorandum of understanding and technology transfer agreement with Chulalongkorn University to develop the RED-GEMs molecule. Pre-clinical trials conducted on animals have been completed, demonstrating safety and the absence of side effects. The project is now preparing for human trials (Clinical Trial Phase I) in collaboration with a Contract Research Organization (CRO) in Australia in 2024.

Dietary Supplements and Medical Foods

There has been the development and distribution of dietary supplements and medical foods through the channels of Innobic Nutrition (INNT), including partnerships with entities such as Lab Pharmacy. These efforts involve public relations and finding product champions to establish brand recognition. Essential new products in 2023 include Innourish Gummy in Triphala and Cola flavors, immune-boosting chewable supplements developed in collaboration with Siriraj Hospital, as well as Daily Nutrigen U20+, M30+, and S50+, age-specific nutritional supplements developed in partnership with Interpharma.

Business Growth and Clean Growth

Renewable Energy Investment

PTT Group, by GPSC and GRP, has invested in renewable energy projects overseas, including in India and Taiwan. Currently, the total production capacity is 2.7 GW, with a target of reaching 15 GW by 2030.

Innovation Network and Collaboration

Hydrogen Thailand Network

Hydrogen Thailand is a collaborative network comprising public sector agencies, private entities, and relevant partners, initiated by PTT in 2020. Its primary objective is to prepare and drive hydrogen energy as a new alternative energy for the future through knowledge exchange and policy support from relevant government sectors. The vision is to propel hydrogen into a new energy platform to promote a low-carbon economy in the future. Its primary mission includes disseminating accurate and beneficial information to the government and public, fostering cooperation in hydrogen-related initiatives, charting a roadmap for hydrogen development, proposing hydrogen demonstration projects, and supporting the production and utilization of green hydrogen domestically. This is to encourage the concrete adoption of hydrogen technology sustainably, promoting national development and sustainable energy practices.

The Federation of Thai Industries

As a member of the Electrical and Electronics Industry Group and the New S-Curve Working Group of the Federation of Thai Industries, PTT drives and elevates Thailand's electronics industry. As a leading member in collaboration with fellow members, PTT is preparing a White Paper and proposes to the Federation of Thai Industries Committee present to the government for supporting the development of intelligent electronics businesses in Thailand. This endeavor will bring economic and social benefits, generate employment, and foster the growth of skilled personnel in innovative electronics for the country's future.

Feedback from Stakeholders

"The development of innovations in anti-aging, a well-known branch of science aimed at controlling and improving overall quality of life for comprehensive well-being and health impact, is a source of great pride for Team SHALORA. We have successfully developed biotechnology to produce highly effective bioactive extracts with antioxidant properties. This achievement stems greatly from our participation in the PTT Innovation Boost Camp 2023, enabling us to leverage innovations for new business creation and sustainable growth, aligning with PTT's vision."

Shalora Team (Winner of PTT Innovation Boost Camp 2023):
Anuruk Winitorn Piyachat Saengwijit
Suttipong Tanyapisedsak Siwapon Krasaepon
Nasapatm Boonwittaya



Future Plans

PTT is steadfastly implementing the strategies outlined in the innovation management master plan. In 2024, key initiatives include **readiness preparations for ISO 56001 certification in innovation management**, which is expected to be announced by mid-2024. The nominations for **innovation awards** to enhance the organization's innovation capabilities and reputation have been made, such as the National Innovation Awards from the National Innovation Agency (Public Organization). Furthermore, **external evaluations of the organization's innovation capabilities** will be conducted to benchmark against external counterparts.

Further details can be found on PTT Website.



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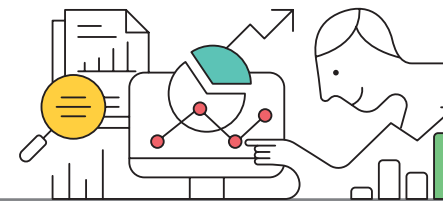
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4. Management's Discussion and Analysis (MD&A)



In reading Management's Discussion and Analysis (MD&A), investors are advised to study the supporting documents, including the consolidated financial statements, revised financial information, and overall past or revised performance, together with notes to financial statements and this document.

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4.1 Management's Discussion and Analysis (MD&A) and Operating Results for the Year 2023

Overall Performance of PTT and Its Subsidiaries

	2022	2023	% Inc. (Dec.)
Sales Revenue	3,367,203	3,144,551	(6.6)
EBITDA	491,288	426,895	(13.1)
Net Income	91,175	112,024	22.9
Earnings per share (THB/share)	3.20	3.92	22.5

In 2023, sales revenue of PTT and its subsidiaries were reported at THB 3,144,551 million, decreased from 2022 by THB 222,652 million or 6.6%. This was driven mainly by a decrease in sales revenue of International Trading business and Petrochemical and Refining business from lower average selling price in line with global petroleum and petrochemical prices despite higher sales volume. Gas business's sales revenue also decreased mainly from S&M business which had lower average selling price following pool gas price, as well as lower selling price to industrial customers following referenced prices despite higher sales volume. Sales revenue of TM business decreased mainly from the adjustment of the pipeline tariff rates, as approved by the ERC since August 2022. Moreover, sales revenue of GSP business also decreased from lower average selling price for all products in line with petrochemical referenced prices and lower sales volume. Others business's sales revenue decreased from disposal of coal business in 1Q2023. Moreover, Exploration and Production business's sales revenue decreased due to both lower average selling price and average sales volume.

In 2023, EBITDA was THB 426,895 million, decreased by THB 64,393 million or 13.1%. This was mainly from Petrochemical and Refining business's performance. Refining business had lower performance as Market GRM decreased from USD 10.7 per barrel in 2022 to USD 7.5 per barrel in 2023 due to lower spread of diesel, jet, and gasoline over crude oil in spite of a decrease in crude premium and an increase in sales volume. Moreover, PTT Group's stock loss increased as there was stock loss approximately THB 2,000 million in 2023 compared with stock gain approximately THB 4,000 million in 2022.

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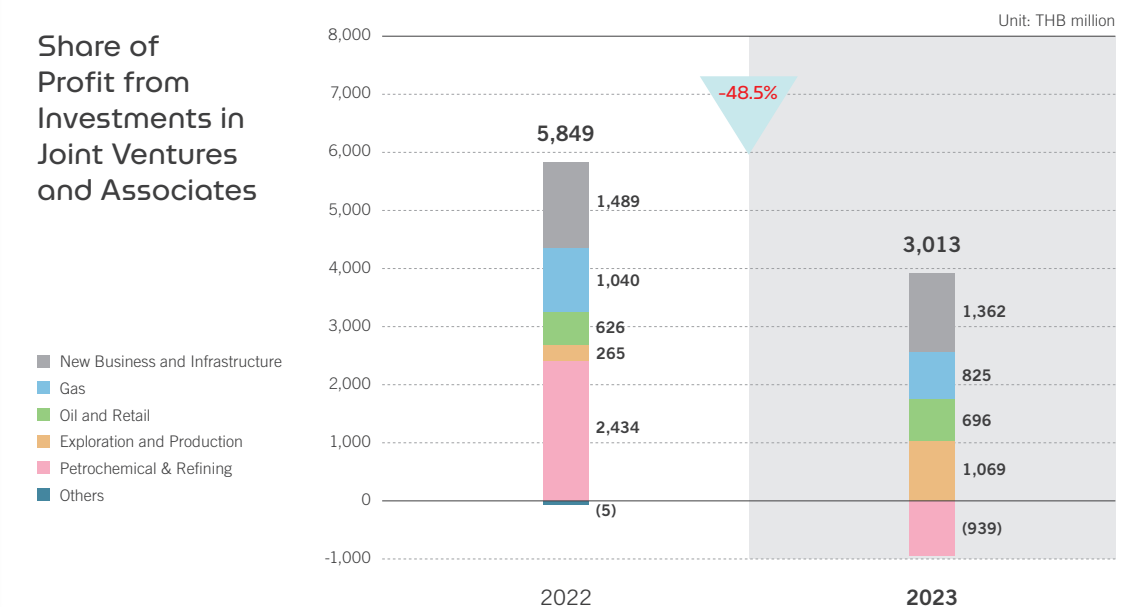
Moreover, Petrochemical business's performance decreased from Phenol and Olefins' lower product to feed. Performance Chemicals business decreased following the economic slowdown. In addition, Exploration and Production business's performance decreased due to lower average selling price and sales volume. Others business's performance also decreased from disposal of coal business in 1Q2023. Nevertheless, New Business and Infrastructure business's performance increased from GPSC with an increase in Ft, lower energy cost, and higher sales volume of power. Also, PTTGM's pharmaceutical business's performance increased following consistently delivering "Lenalidomide" in 2023 after market expansion into U.S. since September 2022 and an increase in sales volume from market expansion in U.S. and South Korea.

In 2023, the depreciation and amortization expenses were THB 173,065 million, increased by THB 5,735 million or 3.4% mainly from PTTEP's G1/61 and G2/61 Projects, LNG Terminal 2 Project of PTTLNG, and Refining plants and Aromatics plants of GC.

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Figure 1

Share of Profit from Investments in Joint Ventures and Associates



In 2023, the share of profit from investments in joint ventures and associates was THB 3,013 million, decreased by THB 2,836 million or 48.5%. This was primarily from lower performance of joint ventures and associates in Petrochemical and Refining business mainly from NatureWorks LLC, HMC, and AGC Vinythai Public Co., Ltd. (AVT) due to lower product to feed.

In 2023, there was loss on derivatives amounting to THB 13,194 million, decreased by THB 61,720 million or 82.4% mainly from commodity derivatives of GC, TOP, and IRPC.

In 2023, the gain on foreign exchange was THB 22,285 million, increasing by THB 16,733 million or more than 100.0% from 2022 mainly from higher unrealized gain on U.S. currency loans as a result of THB appreciation this year. (THB appreciation in 2023 was THB 0.34 per USD, and THB depreciation in 2022 was THB 1.14 per USD.)

In 2023, finance costs were THB 45,383 million, increased by THB 8,292 million or 22.4% from 2022, mostly from GC, PTTEP, PTT, and GPSC as a result of an increase in loans and bonds issuance as well as higher market interest rates.

In 2023, there were loss recognition of non-recurring items (PTT's portion after tax) approximately THB 500 million, while in 2022, there were loss recognition approximately THB 10,300 million (Details as per below table).

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The Majority of Non-recurring Items after Tax (PTT's Portion)

Unit: THB million

Business	Item	2022	2023
Exploration and Production business	Impairment loss on Mozambique Area One Project	~ (4,300)	~ (2,800)
	Impairment loss on assets held for sales from PTTEP BL	~ (2,300)	
	The provision for the Class Action settlement from Montara incident	~ (3,000)	
	Write-off Project AC/RL12 Australia (Oliver)		~ (1,200)
	Disposal of asset		~ (500)
	Loss after reclassifying net assets of Block 17/06 Project (Angola)	~ (350)	
	Income from adjustment of contingent liabilities of Oman Block 61 project	~ 1,600	
	Gain on divestment of AC/RL7 (Cash-Maple)		~ 1,700
Gas business	Gas production shortfall penalty	~ 2,700	~ 300
	Contribution to oil fund during energy crisis	(3,000)	
Petrochemical and Refining business	TOP's tax on divestment of GPSC	~ (2,100)	
	Gain on change in status of investment of GC		~ 1,400
	Gain on disposal of subsidiary of GC		~ 600
New Business and Infrastructure	Impairment of assets under PTTGM		~ (180)
	Gain on Ichinoseki Solar Power 1 GK divestment of GPSC	~ 350	
Coal business	PTTGM's loss on impairment of coal mine project in Madagascar	~ (400)	

In 2023, the corporate income taxes in 2023 was THB 81,313 million, decreased by THB 9,149 million or 10.1% mainly from PTTEP's Projects in Thailand and Oman in accordance with lower profit.

This was resulted in PTT Group's net income in 2023 amounting to THB 112,024 million, increased by THB 20,849 million or 22.9% from net profit amounting to THB 91,175 million in 2022.

Financial Performance of PTT Group by Business

Unit: THB million	2022	2023	% Inc. (Dec.)
Sales revenue	3,367,203	3,144,551	(6.6)
Exploration & Production	331,350	300,694	(9.3)
Gas	708,852	655,759	(7.5)
Oil & Retail	791,745	770,897	(2.6)
International Trading	2,172,566	2,032,063	(6.5)
Petrochemical & Refining	1,473,678	1,343,550	(8.8)
New Business & Infrastructure	148,424	124,131	(16.4)
Others	37,662	6,107	(83.8)
EBITDA	491,288	426,895	(13.1)
Exploration & Production	253,973	231,301	(8.9)
Gas	61,207	66,024	7.9
Oil & Retail	20,962	21,403	2.1
International Trading			
- Excluding effect of FX and derivatives	13,897	4,325	(68.9)
- Including effect of FX and derivatives	8,735	9,544	9.3
Petrochemical & Refining	109,719	80,640	(26.5)
New Business & Infrastructure	16,392	26,251	60.1
Others	15,084	(3,242)	< (100.0)
Depreciation and amortization expenses	167,330	173,065	3.4



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Unit: THB million	2022	2023	% Inc. (Dec.)
Operating income (loss)	323,958	253,830	(21.6)
Exploration & Production	171,031	146,572	(14.3)
Gas	42,905	45,880	6.9
Oil & Retail	14,614	14,882	1.8
International Trading			
- Excluding effect of FX and derivatives	12,943	3,043	(76.5)
- Including effect of FX and derivatives	7,781	8,262	6.2
Petrochemical & Refining	66,181	35,463	(46.4)
New Business & Infrastructure	3,440	11,515	> 100.0
Others	12,790	(3,718)	< (100.0)
Share of net income from investments in joint ventures and associates	5,849	3,013	(48.5)
Loss on impairment of assets	12,609	4,942	(60.8)
Gain (loss) on derivatives	(74,914)	(13,194)	82.4
Gain (loss) on foreign exchange	5,552	22,285	> 100.0
EBIT	249,653	281,976	12.9
Finance costs	37,091	45,383	22.4
Income taxes	90,462	81,313	(10.1)
Net Income	91,175	112,024	22.9
Earnings per share (THB/share)	3.20	3.92	22.5

Remark:

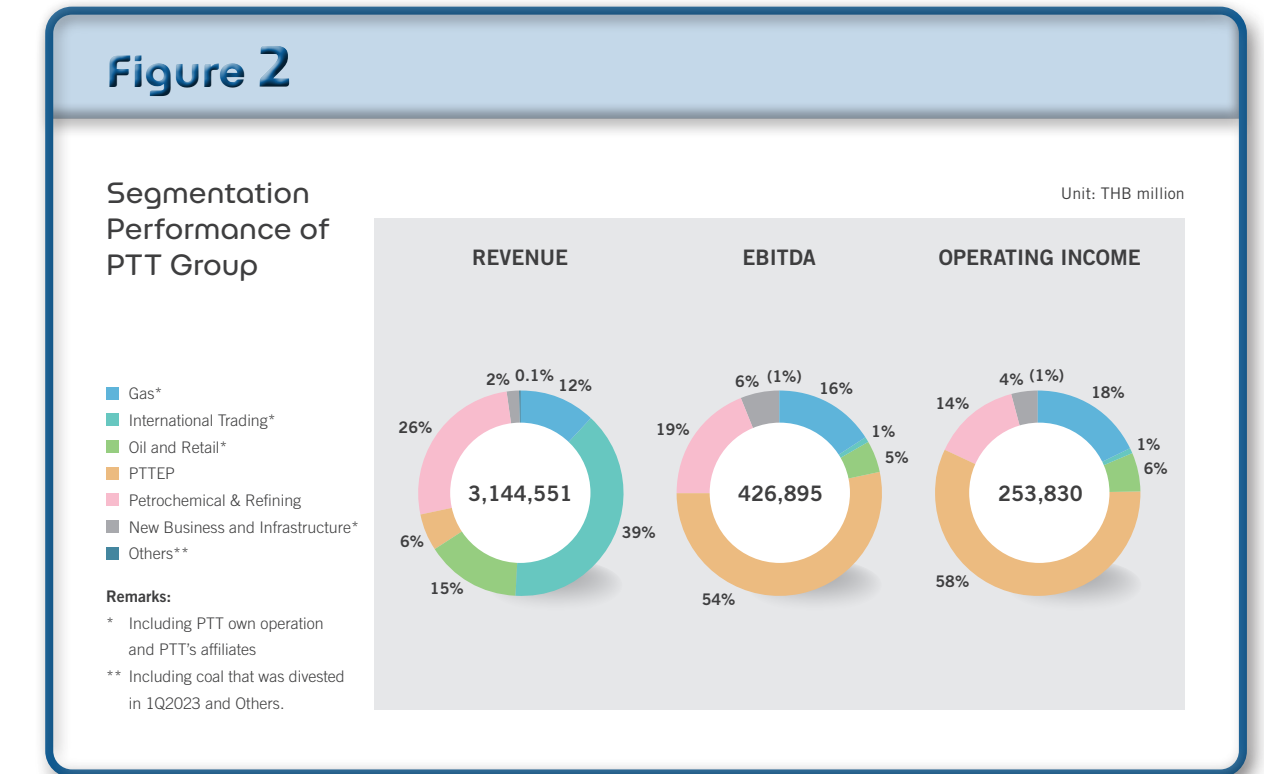
Other Businesses include coal business that was divested in 1Q2023. There are adjustments in EBITDA and Depreciation and Amortization of 3Q2023 from the previous period.

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Segmentation Performance of PTT Group

The details of revenue, Earnings before Interest, Tax, Depreciation and Amortization (EBITDA), and operating income by segmentation of 2023 are as follows:



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Upstream Petroleum and Gas Business Group

Petroleum Exploration and Production Business: PTT Exploration and Production Plc. (PTTEP)

	2022	2023	% Inc. (Dec.)
Average selling price (USD/BOE ^{1/})	53.4	48.2	(9.7)
Average sales volume (BOED ^{2/})	468,130	462,007	(1.3)

Remarks:

1/ BOE: Barrels of Oil Equivalent

2/ BOED: Barrels of Oil Equivalent per Day

In 2023, sales revenue of PTTEP was THB 300,694 million, decreased by THB 30,656 million or 9.3% from 2022 as the overall average selling price decreased by 9.7% from USD 53.4 per BOE in 2022 to USD 48.2 per BOE in 2023. In addition, the overall average sales volume decreased by 1.3% from 468,130 BOED in 2022 to 462,007 BOED in 2023, primarily from Oman Block 61 Project due to lower contractor entitlement and maintenance shutdown in 2023, along with the end of concession of Bongkot Project in March 2023. However, it was offset with G1/61 and G2/61 Projects due to full year recognition of sales volume, also G1/61 Project has successfully ramped up the natural gas production as plan since the end of June 2023.



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EBITDA in 2023 was THB 231,301 million, decreased by THB 22,672 million or 8.9% from 2022 and the operating income in 2023 was THB 146,572 million, decreased by THB 24,459 million or 14.3% from 2022 mainly due to a decrease in sales revenue as aforementioned. In addition, operating expenses increased primarily from higher sales volume from G1/61 and G2/61 Projects. However, royalty expense decreased primarily from higher portion of sales revenue from projects under production sharing contracts in Thailand and lower sales revenue from projects in Malaysia.

Despite the decrease in operating income, the overall performance of Exploration and Production business increased primarily as there was loss recognition of non-recurring items after tax approximately THB 4,300 million in 2023. Meanwhile, there were loss recognition approximately THB 13,000 million in 2022 (Details as per the majority of non-recurring items after tax (PTT's portion) table as aforementioned). Moreover, income taxes decreased mainly from projects in Thailand and Oman due to lower profits. Also, there was lower loss from oil price hedging instruments due to less upward trend of oil price compared with 2022, along with lower loss on foreign exchange rate.

202 Gas Business Group

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

Unit: Ton	2022	2023	% Inc. (Dec.)
LPG	3,301,907	3,288,262	(0.4)
Ethane	1,752,287	1,786,823	2.0
Propane	1,139,217	1,028,237	(9.7)
NGL	504,133	500,264	(0.8)
Pentane	48,803	50,965	4.4
Total	6,746,347	6,654,551	(1.4)
Utilization rate (%)	75.6%	75.8%	0.2%

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

Unit: USD per ton	2022	2023	% Inc. (Dec.)
LPG ^{1/}	736	572	(22.3)
LDPE ^{2/}	1,427	1,041	(27.0)
LLDPE ^{2/}	1,207	1,014	(16.0)
HDPE ^{2/}	1,202	1,044	(13.1)
Propane ^{1/}	737	575	(22.0)

Remarks:

1/ Global Gas Price (Contract Price Saudi Aramco) as a reference for the selling price of petrochemical customers, LPG calculated from the proportion of Propane and Butane by 50:50

2/ Southeast Asia - Spot Price

In 2023, Gas business reported sales revenue of THB 655,759 million, decreased by THB 53,093 million or 7.5%. This resulted mainly from a decrease in sales revenue of S&M business due to lower average selling price following pool gas price, together with lower selling price of industrial customers following the referenced prices despite the higher average sales volume (calculated at heating value of 1,000 BTU per cubic feet) which increased by 258 MMSCFD from 4,190 MMSCFD in 2022 to 4,448 MMSCFD in 2023 or 6.2% mainly due to IPP power plant customers and EGAT adjusted their fuel usage plans to increase the use of natural gas following the trend of significant decrease in LNG prices. This includes an increased demand for electricity due to the warmer weather in 2023 and the recovery of economic activities.

Sales revenue of TM business decreased mainly from the adjustment of the gas pipeline tariff which ERC has approved the rate of Demand Charge (Td) in the 5-year period (2022 - 2026) of PTT's natural gas price structure. The revised gas pipeline tariff was effective from August 2022 onwards.

In addition, sales revenue of GSP business decreased due to lower average selling price in overall products following the petrochemical referenced prices. Furthermore, sales volume (including NGL derived from Dew Point Control units) decreased from 6,746,347 tons in 2022 to 6,654,551 tons in 2023 or 1.4% mainly from Propane due to lower demand of petrochemical customers driven by higher maintenance shutdown period than previous year and the declining trend in plastic pellet prices.

In 2023, EBITDA of Gas business was reported at THB 66,024 million, increased by THB 4,817 million or 7.9%. The operating income was reported at THB 45,880 million, increased by THB 2,975 million or 6.9%. This was mainly from S&M business, due to improved operational performance from industrial customers, where the natural gas cost was adjusted downward following the pool gas price in the greater extent than the average selling price, despite higher sales volume. However, gas production shortfall penalty (after tax) in 2023 decreased by approximately THB 2,400 million compared with 2022 resulted mainly from Erawan gas field producer that fail to meet its contracted gas quantity. Additionally, NGV business had lower loss due to the decreased natural gas cost according to the pool gas price, coupled with an increase in selling price and lower sales volume. Moreover, PTT LNG had higher reserve volume of its LNG receiving terminal after LNG Terminal 2 started commercial operation.

While the GSP business experienced a decrease in gross profit due to lower selling price for all products in line with the petrochemical referenced prices, along with a decrease in sales volume in response to petrochemical customers demand from higher maintenance period. Additionally, the TM business's operational performance decreased due to the adjustment of the gas pipeline tariff as mentioned above.

Downstream Petroleum Business Group

Oil and Retail Business Group

	2022	2023	% Inc. (Dec.)
Average Sales Volume* (Unit: Million Liters)	26,846	27,642	3.0
Average selling prices (Unit: USD per barrel)			
Gasoline	115.2	98.8	(14.2)
Jet	126.6	104.6	(17.4)
Diesel	130.6	104.0	(20.4)

Remark:

* The average sales volume of the domestic oil segment only



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In 2023, sales revenue of Oil and Retail business group was THB 770,897 million, decreased by THB 20,848 million or 2.6% from 2022 due to lower selling price following global oil price. While overall sales volume increased by 796 million liters or 3.0% from 26,846 million liters or equivalent to 462,629 barrels per day in 2022 to 27,642 million liters or equivalent to 476,347 barrels per day in 2023 mainly due to an increase in sales volume of jet fuel as a result of economic recovery and market expansion. However, Non-Oil business group's revenue increased from the recovery of economic activities and store expansion of food and beverage business.

EBITDA in 2023 was THB 21,403 million, increased by THB 441 million or 2.1% from 2022. The operating profit in 2023 was THB 14,882 million, increased by THB 268 million or 1.8% from 2022 mainly from Oil business due to an increase in gross margin from gasoline and jet while lower gross margin from diesel. Non-Oil business group's EBITDA increased in line with the rise in gross margin from an increase in sales revenue of food and beverage business. However, there was higher net operating expenses mainly from outsourced and utility expenses.

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As a result, the overall performance of Oil and Retail business group increased as compared with 2022 following the higher EBITDA.

International Trading Business Group

Unit: Million Liters	2022	2023	% Inc. (Dec.)
Average sales volume	127,082	188,416	48.3

Sales revenue of International Trading business in 2023 was THB 2,032,063 million, decreased by THB 140,503 million or 6.5% compared with 2022. This decline is attributed to a lower product selling price following the fall in global petroleum and petrochemical prices. Although, sales volume increased by 61,334 million liters or 48.3% from 127,082 million liters or equivalent to 2,189,968 barrels per day in 2022 to 188,416 million liters or equivalent to 3,246,919 barrels per day in 2023. This was mainly from higher import volume of crude oil and LNG, in line with the increase in domestic demand and the significant decrease in LNG price. Moreover, the international trade of crude and refined products from out-out trading activities has increased along with the economic recovery in various regions worldwide. This trend is also driven by the pursuit of opportunities for continuous expansion of trade activities.

EBITDA, adjusted by the impact from foreign exchange rate and derivatives, in 2023 was THB 9,544 million, increased by THB 809 million or 9.3%. The operating income, adjusted by the impact from foreign exchange rate and derivatives in 2023 was THB 8,262 million, increased by THB 481 million or 6.2%. This was mainly from a rise in sales volume, coupled with higher margin per unit from international trade as a result from engaging in cross-regional trade during opportune periods together with the effective management of trading freight costs and effective risk management. Even though the margin per unit of domestic trading of crude and condensate decreased according to the oil-priced linked formula.

Petrochemical and Refining Business Group

Unit: USD per barrel	2022	2023	% Inc. (Dec.)
Market GRM	10.7	7.5	(29.9)
Inventory Gain (Loss) excl. NRV	0.0	(0.6)	< (100.0)
Hedging Gain (Loss)	(5.8)	(0.4)	93.1
Accounting GRM	4.9	6.5	32.7
Refinery Utilization Rate* (%)	94.1	102.4	8.3

Remark:

* From 3 Refineries: TOP, GC, and IRPC

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Unit: USD per ton	2022	2023	% Inc. (Dec.)
Olefins			
Naphtha (MOPJ)	785	649	(17.3)
HDPE	1,202	1,044	(13.1)
LDPE	1,427	1,041	(27.0)
LLDPE	1,207	1,014	(16.0)
PP	1,205	1,007	(16.4)
Aromatics			
Condensate	830	679	(18.2)
PX (TW)	1,103	1,038	(5.9)
PX (TW) – Condensate	273	359	31.5
BZ	1,029	897	(12.8)
BZ – Condensate	199	218	9.5

In 2023, sales revenue of Petrochemical and Refining business was THB 1,343,550 million, decreased by THB 130,128 million or 8.8% primarily due to Petrochemical business, both from Olefins and Aromatics businesses, decreased due to the lower average selling price. In addition, sales volume decreased due to planned turnaround of GC's Aromatics plant 2 in 2023. While there is the increase in sales volume as a start of the commercial operation of Olefins 2 Modification Project in July 2023.

Sales revenue of Refinery business also decrease due to the decrease in average selling price following the decrease in global petroleum product prices. However, sales volume increased primarily from higher refineries' utilization rates of PTT Group from 94.1% in 2022 to 102.4% in 2023 because of planned refinery turnaround of GC, IRPC, and TOP in 2022.



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EBITDA of Petrochemical and Refining business in 2023 was THB 80,640 million, decreased by THB 29,079 million or 26.5% from THB 109,719 million in 2022. There was operating income of THB 35,463 million in 2023 decreased by THB 30,718 million or 46.4% when compared with THB 66,181 million in 2022, details are as follows:

- **Refinery performance** decreased as Market GRM decreased from USD 10.7 per barrel in 2022 to USD 7.5 per barrel in 2023 mainly from a decrease in product spreads of diesel, jet, and gasoline over crude oil, while crude premium decreased. Moreover, stock loss increased (there was stock loss of USD 0.6 per barrel in 2023 versus stock gain of USD 0.01 per barrel in 2022). Conversely, there was an increase in sales volume as aforementioned.
- **Petrochemical performance** also decreased mainly from Phenol business and Olefins business due to a decrease in product spreads while Aromatics business performance increased from PX and BZ spread despite a decrease in sales volume as aforementioned.

However, the overall performance of Petrochemical and Refining business in 2023 increased when compared with 2022 due to the significant decrease in loss from oil price hedging in 2023 compared with 2022 and an increase in gain on foreign exchange rate following THB appreciation in 2023 while depreciated in 2022. Meanwhile, gain on non-recurring items after tax were recognized approximately THB 4,200 million in 2023, while in 2022 there were loss recognition approximately THB 3,200 million (Details as per the majority of non-recurring items after tax (PTT's portion) table as aforementioned).

New Business and Infrastructure Business Group

	2022	2023	% Inc. (Dec.)
Power sales volume (GWh)	21,665	14,950	(31.0)
Steam sales volume (Thousand tons)	14,510	13,161	(9.3)

In 2023, sales revenue of New Business and Infrastructure business was THB 124,131 million, decreased by THB 24,293 million or 16.4% mainly from the decreased in revenue of GPSC due to lower Energy Payment (EP) revenue of IPP power plants following lower dispatch volume to EGAT and from reserve shutdown of GHECO-One power plant. Furthermore, revenue of SPP power plants also decreased due to lower electricity and steam average selling prices as well as steam sales volume to industrial customers also decreased. Meanwhile, revenue of PTTGM's pharmaceutical business increased from consistently delivering "Lenalidomide" in 2023 after market expansion into U.S. since September 2022 and an increase in sales volume from market expansion in U.S. and South Korea.

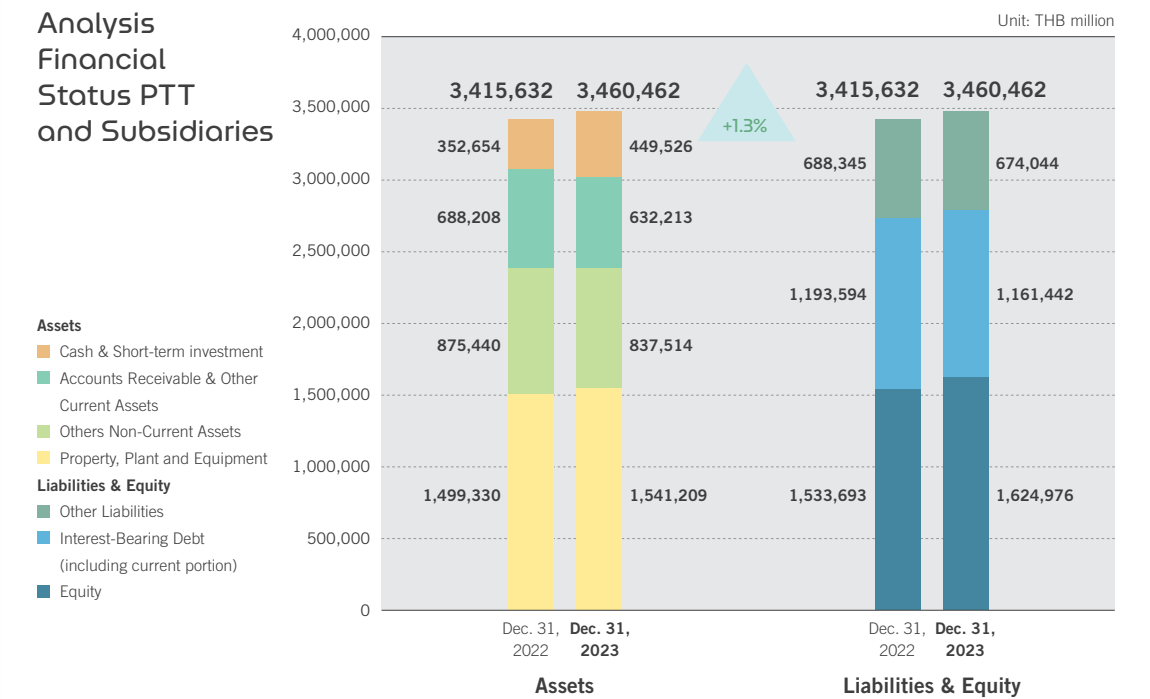
EBITDA in 2023 was THB 26,251 million, increased by THB 9,859 million or 60.1%. The operating profit in 2023, was THB 11,515 million, increased by THB 8,075 million or over 100.0% primarily from higher gross profit of GPSC's SPP power plants as Ft better reflected energy prices together with lower energy cost and higher electricity sales volume. In addition, gross profit of PTTGM's pharmaceutical business also increased from higher revenue as aforementioned.

The overall performance of New Business and Infrastructure business in 2023 increased when compared with 2022 mainly from strengthen performances of GPSC and PTTGM as aforementioned.

The Analysis of PTT Group's Consolidated Financial Position as of December 31, 2023, Compared with December 31, 2022

Figure 3

Analysis Financial Status PTT and Subsidiaries



Assets

As of December 31, 2023, total assets of PTT Group were THB 3,460,462 million, increased by THB 44,830 million or 1.3% compared with December 31, 2022 from the followings;

- Cash and cash equivalents and short-term investments increased by THB 96,872 million primarily from PTT Group's operating activities.
- Trade account receivables and other current assets decreased by THB 55,995 million or 8.1% mainly from the followings;
 - Other accounts receivable decreased by THB 64,841 million mainly due to a decrease in refund receivable from the Oil Fuel Fund.
 - Assets held for sale decreased by THB 15,543 million from the disposal of coal business of PTTGM offset with assets held for sale for the divestment of Alvogen Malta (Out-licensing) Holding Ltd. (AMOLH) and the business transfer agreement of NUOVO PLUS.
 - Inventories decreased by THB 11,349 million due to a decrease in inventory levels and lower selling prices, mainly from GC, IRPC, and TOP.
 - Current derivative assets decreased by THB 5,975 million mainly from commodity derivative assets of PTTT.
 - Trade accounts receivable increased by THB 40,759 million from an increase in sales volume mainly from PTTT, PTTT LDN, PTT, TOP, and GC.
- Other non-current assets decreased by THB 37,926 million or 4.3% mainly from;
 - Exploration and evaluation assets decreased by THB 11,830 million from divestment of Cash-Maple Project and write-off assets of Oliver project of PTTEP.



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- Deferred tax assets decreased by THB 8,282 million primarily due to the end of concession of Bongkot Project of PTTEP.
- Right-of-use assets decreased by THB 7,954 million mainly from depreciation of PTTEP, PTT, and TOP.
- Property, Plant, and Equipment (PPE) increased by THB 41,879 million or 2.8% mainly from PTTEP's exploration and evaluation assets of G1/61 and G2/61 Projects and TOP's construction in progress of Clean Fuel Project (CFP).

Liabilities

As of December 31, 2023, PTT Group had total liabilities of THB 1,835,486 million, decreased by THB 46,453 million or 2.5% from December 31, 2022, mainly from the followings;

- Interest-bearing debt decreased by THB 32,152 million or 2.7% due to a decrease in long-term loans by THB 37,478 million from the loans repayment and debentures redemption mainly from TOP, OR, and GC as well as a decrease in lease liabilities by THB 6,144 million from the lease repayment. However, short-term loans increased by THB 11,470 million mainly from GC, PTT TCC, PTTT, and PTT.
- Other liabilities decreased by THB 14,301 million or 2.1% mainly from a decrease of commodity derivative liabilities of PTTT and a decrease in short-term provision for decommissioning costs due to the end of concession of Bongkot project of PTTEP as well as a decrease in other accounts payable due to a decrease in accrued interest of PTT.

Equity

As of December 31, 2023, PTT Group had total shareholders' equity of THB 1,624,976 million increased by THB 91,283 million or 6.0% from December 31, 2022 as a result of the 2023 net income of THB 112,024 million offset with dividend payment from the operating results of the second half of 2022 amounting to THB 0.70 per share and interim dividend from the operating results of the first half of 2023 amounting to THB 0.80 per share which the total amount of dividend is approximately THB 42,844 million. Non-controlling interests increased by THB 22,676 million from net income of subsidiaries.

Liquidity

For the year-ended December 31, 2023, PTT Group had net increase in cash and cash equivalents amounting to THB 77,080 million. There was cash and cash equivalents at the beginning of the period of THB 340,054 million. As a result, cash, and cash equivalents at the end of the period was THB 417,134 million. Details of cash flow by activities are as follows:

Unit: THB million

Consolidated Financial Statement	
Net cash provided by operating activities	382,045
Net cash used in investing activities	(161,245)
Net cash used in financing activities	(142,159)
Effects of exchange rates on cash and cash equivalents	(3,279)
Exchange differences on translation	2,019
Cash and cash equivalents classified as held for sale	(301)
Net increase in cash and cash equivalents during the period	77,080
Cash and cash equivalents at the beginning of period	340,054
Cash and cash equivalents at the end of period	417,134

Net cash provided by operating activities of THB 382,045 million was derived from THB 236,593 million of profit before income taxes, adjusted to net cash provided by (used in) operating activities. The increase in cash flow from operating activities resulted mainly from THB 173,065 million of depreciation and amortization expenses, THB 45,383 million of finance costs. The decrease in cash flow from operating activities mainly resulted from THB 12,219 million of interest income, THB 7,015 million of unrealized gain on fair value of commodity contracts, THB 5,479 million of gain on derivatives, THB 4,614 million of gain on disposal of assets, and THB 3,013 million of share of profit from investments in joint ventures and associates and the change in net operating assets resulted in the increase in cash flow of THB 46,247 million while there were income taxes paid of THB 83,201 million.

Net cash used in investing activities was THB 161,245 million mainly resulted from the followings;

- The cash outflow of investments in property, plant and equipment, investment property, intangible assets, and exploration and evaluation assets amounting to THB 165,645 million mainly from investment in exploration and production assets in G1/61 Project, G2/61 Project, Zawtika Project, and S1 project of PTTEP, and investment in 7th Gas Separation Plant, Bang Pakong - South Bangkok power plant transmission pipeline project, the 5th transmission pipeline project, Regenerative Thermal Oxidation (RTO) Project, and GSP Logistics Management of PTT, GC's Oleflex improvement and Olefins 2 Modification project, CFP project of TOP, and IRPC's Ultra Clean Fuel Project (UCF).
- The cash outflow from short-term investment in financial assets amounting to THB 14,555 million mainly from investing in fixed deposit of PTTEP, TOP, and GC.
- Interests and dividends received amounting to THB 19,304 million mainly from PTTEP, GC, PTT, and PTT TCC.

Net cash used in financing activities was THB 142,159 million mainly from the followings;

- Dividend payment amounting to THB 62,368 million mainly from PTT and PTTEP.
- Finance costs paid amounting to THB 48,494 million mainly from PTT, GC, TOP, GPSC, and PTTEP.
- The net cash outflow of short-term and long-term loans amounting to THB 36,631 million mainly from TOP, OR, and PTTEP.

4.2 Factors That May Impact Future Operations

4.2.1 Factors on Environmental and Social Trends and Impact

PTT identifies impacts, including risks and opportunities arising from its operational activities, products and services throughout its value chain that may have both positive and negative impacts on stakeholders in three dimensions: Environmental, Social, and Governance. It collects and analyzes from the value chain as well as internal and external factors, including trends, direction and standard adjustments, and relevant practices, and assesses to identify Sustainability Material Topics. In 2023, climate change remains one of the key materiality issues, which is analyzed as the main input factor in the strategic direction process and corporate risk management through various scenario simulations by setting Carbon Neutrality targets, Net Zero Emissions, and corporate long-term goals in 2030 which reflect efforts to reduce and mitigate risks, as well as increase business opportunities from the obvious effects of climate change.

As for other Sustainability Material Topics such as water management, pollution management, occupational health and safety, labor practice, innovation and technology, corporate governance and ethics, etc., PTT has clearly defined the units in charge of management, monitoring, and reporting performance progress to the management-level committee and the Board of Directors according to the governance structure to continuously review efficiency and effectiveness. Further details are available under the heading "Driving Business towards Sustainability" and PTT Website in "Sustainability."



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4.2.2 Financial Support to Affiliated Companies

As of December 31, 2023, PTT provided the following financial support to affiliated companies.

Unit: THB million

Company	Currency	Amount	Outstanding Balance		Available Balance
			Shareholder Loan	Others	
Wholly owned Company					
PTT Treasury Center Co., Ltd. (PTT TCC)	THB	115,679 ^{1/}	56,384	-	57,003

Remark:

1/ According to the Shareholder Loan Agreements between PTT and PTT TCC dated December 18, 2019, January 4, 2021, May 21, 2021, June 22, 2021, November 23, 2021, February 28, 2022, May 27, 2022, August 15, 2022 and October 18, 2022, the total amount is THB 115,679 million to support the investment of PTT Group companies.

PTT will consider providing financial support in the form of loan, capital and/or trade credit as necessary with conditions comparable to the market, and for long-term benefits of PTT and PTT Group. Such a policy and practice are believed to strengthen PTT Group.

Inter-Company Borrowing and Lending (ICBL)

Unit: THB million

Company	Credit lines PTT can lend to affiliated companies	Credit lines PTT can borrow from affiliated companies	Supported	
			Outstanding balance from PTT	Outstanding balance to PTT
PTT Exploration and Production Plc.	5,000	5,000	-	-
PTT Global Chemical Plc.	10,000	3,500	-	-
Thai Oil Plc.	2,100	2,100	-	-
IRPC Plc.	10,000	1,500	-	-
PTT Oil and Retail Business Plc.	2,500	1,500	-	-
Global Power Synergy Plc.	1,500	500	-	-
Total	31,100	14,100	-	-

As for affiliated companies which PTT has less than 100% stakeholding, PTT has managed short-term liquidity in form of Inter-Company Borrowing and Lending (ICBL) either in THB and/or USD currency under Uncommitted & Unsecured Short Term Loan.

PTT and 6 affiliates, namely PTT Exploration and Production Plc., PTT Global Chemical Plc., Thai Oil Plc., IRPC Plc., and PTT Oil and Retail Business Plc., and Global Power Synergy Plc., extended ICBL contracts after the contracts expired on December 19, 2023 for another period of 1 year starting from December 20, 2023 to December 19, 2024.

4.2.3 Policy and Term of Trade Credit (Credit Term)

Credit management policy of PTT is stipulated with credit criteria and procedures of each business unit that are competitive and comparable to competitors with compatible collection and payment periods and no impact on financial liquidity. Cost and financial risks from foreign exchange are also taken into account.

Financial ratios related to trade credit period during the past 3 years are as follows:

Unit: Day

Financial Ratio	2021	2022	2023	3-year Average
AR days	25.30	22.79	28.14	25.41
AP days	31.23	27.90	31.25	30.13

4.2.4 Future Investment Plans

The 5-year (Year 2024 - 2028) investment plan of PTT and its wholly owned subsidiaries in an aggregate amount of THB 89,203 million, are detailed as follows:

Unit: THB million

Business	2024	2025	2026	2027	2028	Total
Gas	9,107	12,743	4,403	4,225	158	30,636
Transmission	6,363	7,474	444	445	208	14,934
International Trading and Downstream	999	1,215	586	213	9	3,022
New Business and Infrastructure and Head Office	1,976	5,529	2,028	1,639	1,617	12,789
Investment in wholly owned Subsidiaries	7,838	7,337	4,846	4,795	3,006	27,822
Total	26,283	34,298	12,307	11,317	4,998	89,203

PTT has invested in the core business to promote sustainable growth and to ensure national energy security which are accounted for 51% of PTT's total five-year investment plan with the key projects include Gas Separation Plant ("GSP") unit 7 to replace GSP unit 1, GSP unit 8, Bang Pakong - South Bangkok power plant transmission pipeline project, 5th onshore pipeline. In order to align investments with PTT's vision of "Powering Life with Future Energy and Beyond", PTT has invested in the New business through its wholly owned subsidiaries such as Electric Vehicle value chain businesses including EVme project (providing a digital platform for the comprehensive use of electric vehicle), construction of the HORIZON PLUS electric car factory, investment in the Cell-To-Pack (CTP) battery assembly plant, as well as Map Ta Phut Industrial Port Development Phase 3, and Laem Chabang Port Phase 3 project, etc.



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Additionally, PTT has prepared provisional capital expenditure for the next 5 years amounting to THB 106,932 million mainly for the investment expansion during energy transition period such as the investment in the Gas business which is the transition fuel with the focus on the expansion of pipeline network, the investment in LNG value chain both in Thailand and overseas, the expanding investment in the Downstream business in storage tanks, etc. Moreover, PTT also focus on clean energy business toward a low-carbon society e.g. investment in Life Science including Pharmaceutical, Nutrition, and Medical device & Diagnostics, the AI & Robotics business with the target to become a leader in AI & Robotics services in the future, as well as Logistic and Infrastructure business by focusing on connecting all transportation networks throughout the country.

4.2.5 PTT's Future Major Projects

EV Manufacturing Project through Horizon Plus Co., Ltd. (HORIZON PLUS)

212 Project Progress as of December 2023, HORIZON PLUS purchased 313 rai of land at Rojana Industrial Park, Nong Yai District, Chon Buri Province, which is in the Eastern Economic Corridor (EEC). The Overall construction progress was about 30%, with the goal of completing the establishment of an EV manufacturing factory and starting to produce 4-wheel EVs (passenger cars) for the market by 2025. The initial production capacity is 50,000 units per year, with target expansion to 150,000 units per year by 2030 to meet the growing demand for EVs both domestically and in the ASEAN region.

The investment project in electric motorcycle distribution and production and electric motorcycle battery swapping station service provision through Aionex Co., Ltd. (Aionex), aiming to be the ASEAN market leader in the electric motorcycle ecosystem

Project Progress as of December 2023, Aionex imported electric motorcycles for performance test according to electric motorcycle standards in collaboration with PTT Innovation Institute and related agencies with plans to start commercial operation in 2024.

Cell-To-Pack Battery Business Investment Project

ARUN PLUS has completed the establishment of A C Energy Solution Company Limited (A C Energy Solution) by early 2024, a collaboration with CATL to construct a Cell-To-Pack Battery factory in Thailand under the investment plan more than THB 3,600 million with targeted commercial operation by 2025. For the project progress as of December 2023, A C Energy Solution purchased 49 rai land at Rojana Industrial Park, Nong Yai District, Chon Buri Province.

Transmission Pipeline

- **The 5th Transmission Pipeline (Rayong - Sai Noi - North/ South Bangkok Power Plants)**
 - Total Project Progress as of December 2023: 98.00% (including 3 phases of construction)
 - COD: Within 2024
- **Natural Gas Pipeline System Project (Bang Pakong - South Bangkok Power Plants)**
 - Total Project Progress as of December 2023: 31.47%
 - COD: Within 2025

Gas Separation Plant Unit 7 (GSP#7)

PTT is constructing the Gas Separation Plant Unit 7 (GSP#7) in Map Ta Phut Industrial Estate, Rayong Province to replace Gas Separation Plant Unit 1 (GSP#1) and to increase the efficiency of the The GSP's production process. The GSP#7 is designed to have a maximum capacity of 460 MMSCFD.

Gas Separation Plant Unit 8 (GSP#8)

Project Progress as of December 2023: PTT is in the process of preparing Front End Engineering Design and negotiating agreement's term and condition with customers.

LNG Receiving Facilities for LNG Procurement/ Impact

Currently, PTT have long term LNG contracts with Qatargas, Shell, BP, and Petronas at 5.2 MTA and has a capability to procure LNG in order to fulfill the country demand growth in the future.

In addition, PTT procures additional 1 MTA of long-term LNG contract from PTTGL to further enhance national energy security. The first gas delivery will be in 2026.

- **Other LNG Receiving Terminal Project (LNG Receiving Terminal 3):**
 - LNG Receiving Terminal Project (LNG Receiving Terminal 3) is a joint venture company between PTT TANK and GULF with shareholding of 30%, and 70%, respectively. The project is to proceed land reclamation with the investment cost of approximately THB 12,900 million which is expected to be completed by 2024, as well as having the right to construct LNG terminal 3 phase 1 with the capacity not less than 5 MTPA. The LNG terminal 3 phase 1 has an investment cost approximately THB 28,000 million which is expected to be completed in 2028.

Summary Planned Shutdown for Gas Separation Plants in 2023

Plant	1Q2023	2Q2023	3Q2023	4Q2023
GSP#1			SD (Jul. 20 - 27: 8 Days)	
GSP#2				TD (Oct. 1 - 4: 4 Days) Major SD (Nov. 1 - 25: 25 Days)
GSP#3		SD (Apr. 11 - May 8: 28 Days)		Major SD (Sep. 1 - 18: 18 Days)
GSP#5				TD 50% (Oct. 19 - 23: 5 Days)
GSP#6				TD 50% (Dec. 29 - 31: 3 Days)
ESP		TD (Apr. 11 - May 8: 28 Days)		TD 50% (Sep. 1 - 30: 30 Days) TD 50% (Oct. 1 - 4: 4 Days) TD 50% (Nov. 1 - Dec. 4: 34 Days)



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Summary Planned Shutdown for Gas Separation Plants in 2024

Plant	1Q2024	2Q2024	3Q2024	4Q2024
GSP#1			SD (Jul. 20 - 31: 12 Days)	
GSP#5	TD 50% (Mar. 1 - 31: 31 Days)	TD 50% (Apr. 1 - 15: 15 Days)		
GSP#6		TD 50% (Jun. 10 - 30: 21 Days)	TD 50% (Jul. 1 - 15: 15 Days)	

Remarks:
* TD: Turndown
** SD: Shutdown

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Container Terminal

The Cabinet meeting on November 9, 2021 approved the private entity selection, result from negotiations, and the draft of the contract between Public Private Partnership (PPP) with the Port Authority of Thailand (PAT) for a period of 35 years for the development project of Laem Chabang Port, Phase 3 in the part of Terminal F as proposed by the Eastern Economic Corridor Office (EEC) by letting GPC International Terminal Co., Ltd. (GPC), a joint venture company between PTT TANK, GULF and CHEC OVERSEA with 30%, 40% and 30% shareholding, respectively, to be the operator. The purpose of this joint venture is to operate a port business, mooring, docking, loading, and unloading services for marine vessels, including a warehouse for container transportation of at least 4,000,000 TEUs per year (TEU is equivalent to a 20-foot container). The joint investment value in the development of the port structure amounts to THB 30,871 million. Construction of the F1 Terminal is expected to commence in 2025 and commercial operation in 2027. Construction of the F2 Terminal is expected to begin in 2029 and commercial operation in 2031.

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4.3 Important Financial Information

Presented financial position and performance consist of financial performance for the year ended December 31, 2023 audited by certified public accountant, EY Office Ltd., compared with financial position and performance from financial statements for the year ended December 31, 2022 and December 31, 2021.

4.3.1 Statement of Financial Position

Unit: THB million

Statement of Financial Position	2021 (Audited)	2022 (Audited)	2023 (Audited)
Assets			
Current assets			
Cash and cash equivalents	312,730	340,054	417,134
Short-term investments in financial assets	48,907	12,600	32,392
Trade accounts receivable	196,243	219,054	259,813
Other accounts receivable	64,752	142,266	77,425
Short-term lending	1,580	2,174	2,216
Inventories	170,823	222,348	210,999
Supplies	41,416	49,507	52,500
Current derivative assets	4,073	14,764	8,789
Other current financial assets	2,034	1,924	878
Other current assets	9,985	13,592	12,556
Assets held for sale	2,711	22,580	7,037
Total current assets	855,254	1,040,863	1,081,739

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Unit: THB million

Statement of Financial Position (Continued)	2021 (Audited)	2022 (Audited)	2023 (Audited)
Non-current assets			
Other long-term investments in financial assets	46,464	54,093	45,731
Investments in joint ventures	52,280	60,357	62,258
Investments in associates	76,499	104,658	110,065
Long-term lending	8,624	8,046	6,943
Investment properties	10,459	10,736	11,234
Property, plant and equipment	1,436,877	1,499,330	1,541,209
Right-of-use assets	80,389	124,053	116,099
Goodwill	182,854	188,964	183,731
Other intangible assets	123,496	137,051	130,312
Exploration and evaluation assets	104,595	106,161	94,331
Deferred tax assets	63,795	50,760	42,478
Non-current derivative assets	2,594	1,633	813
Other non-current financial assets	11,168	11,424	15,632
Other non-current assets	16,036	17,503	17,887
Total non-current assets	2,216,130	2,374,769	2,378,723
Total assets	3,071,384	3,415,632	3,460,462

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Unit: THB million

Statement of Financial Position (Continued)	2021 (Audited)	2022 (Audited)	2023 (Audited)
Liabilities and shareholders' equity			
Current liabilities			
Bank overdrafts and short-term loans from financial institutions	11,632	90,757	96,511
Trade accounts payable	213,944	230,366	243,385
Other accounts payable	103,851	88,322	80,097
Current portion of long-term borrowings	87,649	73,237	97,399
Current portion of lease liabilities	10,742	16,191	16,077
Short-term borrowings	111	784	6,500
Income tax payable	33,423	30,846	26,264
Short-term provision for decommissioning costs	8,898	10,889	2,107
Current derivative liabilities	4,412	23,013	5,732
Other current financial liabilities	5,925	6,070	524
Other current liabilities	10,978	16,714	11,226
Liabilities directly associated with assets held for sale	2,085	5,351	2,888
Total current liabilities	493,650	592,540	588,710
Non-current liabilities			
Long-term borrowings	786,224	924,943	863,303
Lease liabilities	53,468	87,681	81,652
Deferred tax liabilities	89,314	90,972	82,695
Provisions for employee benefits	36,895	32,356	33,815
Long-term provision for decommissioning costs	84,696	99,162	134,278
Deposits on LPG cylinders	12,157	12,684	12,952
Non-current derivative liabilities	3,715	7,643	4,229
Other non-current financial liabilities	12,223	4,662	4,992
Other non-current liabilities	26,102	29,296	28,860
Total non-current liabilities	1,104,794	1,289,399	1,246,776
Total liabilities	1,598,444	1,881,939	1,835,486

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Unit: THB million

Statement of Financial Position (Continued)	2021 (Audited)	2022 (Audited)	2023 (Audited)
Shareholders' equity			
Registered share capital	28,563	28,563	28,563
Issued and fully paid-up share capital	28,563	28,563	28,563
Share premium	29,211	29,211	29,211
Surplus (deficit) from the change in the ownership interests in subsidiaries	3,096	10,068	39,461
Retained earnings			
Appropriated - legal reserve	2,857	2,857	2,857
Appropriated - self-insurance fund reserve	1,273	1,294	1,330
Unappropriated	922,092	957,167	1,003,379
Other components of shareholders' equity	19,605	23,431	16,397
Equity attributable to owners of the Company	1,006,697	1,052,591	1,121,198
Non-controlling interests of the subsidiaries	466,243	481,102	503,778
Total shareholders' equity	1,472,940	1,533,693	1,624,976
Total liabilities and shareholders' equity	3,071,384	3,415,632	3,460,462

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4.3.2 Statement of Income

Unit: THB million

Statement of Income	2021 (Audited)	2022 (Audited)	2023 (Audited)
Sales and service income	2,258,818	3,367,203	3,144,551
Cost of sales and services	1,882,251	2,906,726	2,767,102
Gross profit	376,567	460,477	377,449
Other income	28,940	24,420	40,705
Loss on derivatives	(31,958)	(74,914)	(13,194)
Gain (loss) on foreign exchange rates	(6,469)	5,552	22,285
Profit before expenses	367,080	415,535	427,245
Selling and distribution expenses	27,246	46,212	45,405
Administrative expenses	83,045	98,015	86,890
Petroleum royalties	17,978	27,504	15,987
Operating profit	238,811	243,804	278,963
Share of profit from investments in joint ventures and associates	9,010	5,849	3,013
Profit before finance costs and income taxes	247,821	249,653	281,976
Finance costs	28,163	37,091	45,383
Profit before income taxes	219,658	212,562	236,593
Income tax expenses	67,590	90,462	81,313
Profit for the year	152,068	122,100	155,280
Profit attributable to			
Equity holders of the Company	108,363	91,175	112,024
Non-controlling interests of the subsidiaries	43,705	30,925	43,256
	152,068	122,100	155,280
Basic earnings per share (THB/share)	3.79	3.20	3.92

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4.3.3 Statement of Comprehensive Income

Unit: THB million

Statement of Comprehensive Income	2021 (Audited)	2022 (Audited)	2023 (Audited)
Profit for the year	152,068	122,100	155,280
Other comprehensive income (loss)			
Other comprehensive income to be reclassified to profit or loss in subsequent periods			
Exchange differences on translation of financial statements in foreign currency	45,680	9,952	(6,393)
Loss on debt investments measured at fair value through other comprehensive income	(2)	(27)	(1)
Income taxes related to debt investments measured at fair value through other comprehensive income	-	5	(2)
Gain (loss) on cash flow hedges	951	(38)	137
Income taxes related to cash flow hedges	(222)	62	43
Share of other comprehensive income (loss) from joint ventures and associates	494	(1,512)	(471)
Other comprehensive income not to be reclassified to profit or loss in subsequent periods			
Gain (loss) on remeasurements of defined benefits plans	4,503	5,800	(492)
Income taxes related to remeasurements of defined benefits plans	(1,482)	(1,332)	157
Gain (loss) on equity investments designated at fair value through other comprehensive income	9,254	(4,393)	(2,625)
Income taxes related to equity investments designated at fair value through other comprehensive income	(2,579)	1,038	3,375
Share of other comprehensive income (loss) from joint ventures and associates	76	503	(1,032)
Other comprehensive income (loss) for the years, net of income taxes	56,673	10,058	(7,304)
Total comprehensive income for the year	208,741	132,158	147,976
Total comprehensive income attributable to			
Equity holders of the Company	147,818	97,178	103,986
Non-controlling interests of the subsidiaries	60,923	34,980	43,990
	208,741	132,158	147,976

4.3.4 Statement of Cash Flows

Unit: THB million

Statement of Cash Flows	2021 (Audited)	2022 (Audited)	2023 (Audited)
Cash flows from operating activities			
Profit before income taxes	219,658	212,562	236,593
Adjustment of profit before income taxes to net cash provided by (used in) operating activities:			
Depreciation and amortization expenses	146,790	167,330	173,065
(Gain) loss on disposal of assets	121	(1,085)	(4,614)
(Gain) loss on disposal of investments	1,153	(801)	(1,496)
Gain on change in status of investments	(504)	(848)	(2,443)
Gain on bargain purchase	(10,694)	-	-
Gain from early redemption of debentures	-	-	(2,160)
Loss on impairment of assets	13,287	12,304	4,942
Loss on impairment of investment	-	305	-
Share of profit from investments in joint ventures and associates	(9,010)	(5,849)	(3,013)
Provision for employee benefits	3,398	2,931	3,172
(Gain) loss on exchange rates	18,978	11,649	(1,320)
(Gain) loss on derivatives	(1,703)	10,243	(5,479)
Unrealized (gain) loss on fair value of commodity contracts	269	7,920	(7,015)
Gain on investments measured at fair value through profit and loss	(53)	(277)	(355)
(Reversal of) expected credit loss of accounts receivable and other assets	(1,604)	298	401
Write-off exploration assets	6,764	1,178	2,070
(Reversal of) allowance for changes in value of inventories	(163)	5,886	(2,381)
(Reversal of) allowance for obsolete supplies	1,438	(361)	(2,076)
Dividend income	(457)	(467)	(2,190)
Interest income	(2,522)	(3,920)	(12,219)
Finance costs	28,163	37,091	45,383
Others	31	63	134
Profit from operating activities before changes in operating assets and liabilities	413,340	456,152	418,999
Net operating assets (increase) decrease	(40,267)	(178,970)	46,247
Cash received from operating activities	373,073	277,182	465,246
Income taxes paid	(50,648)	(85,482)	(83,201)
Net cash provided by operating activities	322,425	191,700	382,045

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Unit: THB million

	Statement of Cash Flows (Continued)	2021 (Audited)	2022 (Audited)	2023 (Audited)
	Cash flows from investing activities			
	Cash payment of property, plant and equipment and investment properties	(135,678)	(161,874)	(163,734)
	Cash payment of intangible assets	(2,466)	(7,469)	(7,881)
	Cash payment of exploration and evaluation assets	(4,200)	(3,336)	(5,514)
	Cash payment of right-of-use assets	(281)	(566)	(429)
	Cash payment for other long-term investments in financial assets	(12,243)	(15,013)	(2,534)
222	Net cash payment for business acquisitions	(207,569)	(14,508)	-
—	Cash payment for contingent considerations from business acquisition and participating interest in a joint venture	(1,745)	(33)	(25)
	Decrease in cash from loss of control in a subsidiary	-	(537)	(334)
	Cash payment of investments in joint ventures and associates	(50,379)	(35,299)	(8,864)
	Cash payment of long-term lending	(9,650)	(2,126)	(2,436)
	Cash payment for derivatives	(31)	(190)	(1,076)
	Cash proceeds from disposals of property, plant and equipment, intangible assets, investment properties and right-of-use assets	373	1,433	4,670
	Net cash proceeds from disposals of assets	-	-	7,244
	Cash proceeds from disposals of other long-term investments in financial assets	4,467	3,269	3,916
	Cash proceeds from business restructuring	1,560	-	-
	Net cash proceeds from asset acquisition	382	-	-
	Cash proceeds from disposals of investments in subsidiaries	-	1,407	10,301
	Cash proceeds from disposals of investments in joint ventures and associates	1,774	-	-
	Cash proceeds from long-term lending	1,222	903	932
	Cash proceeds from derivatives	34	-	-
	Increase in short-term lending	(12,384)	(44)	(229)
	Decrease (increase) in short-term investments in financial assets	34,304	37,031	(14,556)
	Interests received	2,008	2,826	10,093
	Dividends received	5,194	7,436	9,211
	Net cash used in investing activities	(385,308)	(186,690)	(161,245)

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Unit: THB million

	Statement of Cash Flows (Continued)	2021 (Audited)	2022 (Audited)	2023 (Audited)
	Cash flows from financing activities			
	Cash proceeds from issuance of ordinary shares of subsidiaries	53,800	9,034	246
	Cash proceeds from resale of treasury shares of subsidiaries	1,354	-	-
	Cash proceeds from long-term borrowings	207,296	289,780	99,624
	Cash proceeds from derivatives	58	85	177
	Cash proceeds from change in ownership in subsidiaries	-	-	8,477
	Cash payment for decrease in ordinary shares of subsidiaries	-	(258)	(39)
	Cash repayment of long-term borrowings	(104,120)	(181,105)	(130,293)
	Cash payment for lease installments	(9,416)	(15,022)	(18,220)
	Cash payment for derivatives	(180)	(1,668)	(96)
	Cash payment for redemption of subordinated capital Debentures	-	(4,988)	-
	Cash payment for change in ownership in subsidiaries	(29)	(554)	(3,431)
	Increase in short-term borrowings	109	718	6,273
	Increase in bank overdrafts and short-term loans from financial institutions	5,539	76,767	5,985
	Finance costs paid	(29,752)	(36,198)	(48,494)
	Dividends paid	(78,469)	(85,923)	(62,368)
	Net cash provided by (used in) financing activities	46,190	50,668	(142,159)
	Effects of exchange rates on cash and cash equivalents	2,737	697	(3,279)
	Exchange differences on translation	(5,015)	(20,287)	2,019
	Cash and cash equivalents classified as held for sale	(331)	(8,764)	(301)
	Net increase (decrease) in cash and cash equivalents	(19,302)	27,324	77,080
	Cash and cash equivalents at the beginning of year	332,032	312,730	340,054
	Cash and cash equivalents at the end of year	312,730	340,054	417,134

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4.3.5 Financial Result by Business Group: EBITDA and Operating Profit by Segment

Unit: THB million

Earnings before Interest Expenses, Tax, Depreciation and Amortization Expenses, and Operating Profit (Loss) by Segment	2021 (Audited)	2022 (Audited)	2023 (Audited)
Gas business group			
Natural gas procurement, gas transmission and distribution, and gas separation businesses			
Sales and service income	464,038	708,852	655,759
Cost of sales and services	367,917	639,484	579,963
Gross profit	96,121	69,368	75,796
Selling and administrative expenses	10,586	10,826	11,736
Other operating income	962	2,665	1,964
Earnings before depreciation and amortization expenses, finance costs and tax expenses (EBITDA)	86,497	61,207	66,024
Depreciation and amortization expenses	18,729	18,302	20,144
Total segment operating profit	67,768	42,905	45,880
Petroleum exploration and production business group			
Sales and service income	219,068	331,350	300,694
Cost of sales and services	28,069	40,464	41,008
Gross profit	190,999	290,886	259,686
Selling and administrative expenses	13,963	17,152	17,771
Petroleum royalties	16,995	24,139	15,632
Other operating income	4,324	4,378	5,018
Earnings before depreciation and amortization expenses, finance costs and tax expenses (EBITDA)	164,365	253,973	231,301
Depreciation and amortization expenses	70,062	82,942	84,729
Total segment operating profit	94,303	171,031	146,572
Total segment operating profit of upstream petroleum and gas business group	162,071	213,936	192,452

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Unit: THB million

Earnings before Interest Expenses, Tax, Depreciation and Amortization Expenses, and Operating Profit (Loss) by Segment (Continued)	2021 (Audited)	2022 (Audited)	2023 (Audited)
Oil business group			
Sales and service income	513,895	791,745	770,897
Cost of sales and services	475,532	750,740	728,321
Gross profit	38,363	41,005	42,576
Selling and administrative expenses	19,863	22,748	24,935
Other operating income	2,307	2,705	3,762
Earnings before depreciation and amortization expenses, finance costs and tax expenses (EBITDA)	20,807	20,962	21,403
Depreciation and amortization expenses	5,908	6,348	6,521
Total segment operating profit	14,899	14,614	14,882
International trading business group			
Sales and service income	1,146,564	2,172,566	2,032,063
Cost of sales and services	1,133,967	2,155,382	2,023,227
Gross profit	12,597	17,184	8,836
Selling and administrative expenses	6,415	10,500	12,108
Other operating income	4,558	7,213	7,597
Earnings before depreciation and amortization expenses, finance costs and tax expenses (EBITDA)	10,740	13,897	4,325
Depreciation and amortization expenses	204	954	1,282
Total segment operating profit	10,536	12,943	3,043
Petrochemicals and refining business group			
Sales and service income	1,037,276	1,473,678	1,343,550
Cost of sales and services	888,953	1,324,979	1,230,801
Gross profit	148,323	148,699	112,749
Selling and administrative expenses	30,002	41,876	37,608
Other operating income	2,412	2,896	5,499
Earnings before depreciation and amortization expenses, finance costs and tax expenses (EBITDA)	120,733	109,719	80,640
Depreciation and amortization expenses	38,945	43,538	45,177
Total segment operating profit	81,788	66,181	35,463
Total segment operating profit of downstream petroleum business group	107,223	93,738	53,388

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Unit: THB million

Earnings before Interest Expenses, Tax, Depreciation and Amortization Expenses, and Operating Profit (Loss) by Segment (Continued)	2021 (Audited)	2022 (Audited)	2023 (Audited)
New business and infrastructure business group			
Sales and service income	81,262	148,424	124,131
Cost of sales and services	59,700	124,080	88,452
Gross profit	21,562	24,344	35,679
Selling and administrative expenses	3,716	9,655	11,321
Other operating income	3,072	1,703	1,893
Earnings before depreciation and amortization expenses, finance costs and tax expenses (EBITDA)	20,918	16,392	26,251
Depreciation and amortization expenses	10,736	12,952	14,736
Total segment operating profit	10,182	3,440	11,515
Other businesses group^{1/}			
Sales and service income	20,541	37,662	6,107
Cost of sales and services	11,664	15,969	5,283
Gross profit	8,877	21,693	824
Selling and administrative expenses	5,510	5,484	5,732
Petroleum royalties	984	3,367	355
Other operating income	1,426	2,242	2,020
Earnings (Loss) before depreciation and amortization expenses, finance costs and tax expenses (EBITDA)	3,809	15,084	(3,243)
Depreciation and amortization expenses	2,206	2,294	475
Total segment operating profit (loss)	1,603	12,790	(3,718)
Total segment operating profit before unallocated income (expenses) and intercompany elimination	281,079	323,904	253,637
Add intercompany elimination	87	54	193
Total operating profit by segment	281,166	323,958	253,830

Remark:

^{1/} Including the coal segment that was sold during 1Q2023

4.3.6 Financial Ratios

Financial Ratios and Earnings per Share	Unit	2021 (Audited)	2022 (Audited)	2023 (Audited)
Liquidity Ratios				
Current ratio	Times	1.73	1.76	1.84
Quick ratio	Times	1.13	0.96	1.20
Accounts receivable turnover	Times	14.43	16.01	12.97
Collection period	Days	25.30	22.79	28.14
Inventory turnover	Times	14.24	14.79	12.77
Average inventory period	Days	25.63	24.69	28.58
Accounts payable turnover	Times	11.69	13.08	11.68
Payment period	Days	31.23	27.90	31.25
Cash cycle	Days	19.70	19.58	25.47
Profitability Ratios				
Gross profit margin	%	16.67	13.68	12.00
Net profit margin	%	6.73	3.63	4.94
Return on equity	%	11.47	8.85	10.31
Activity Ratios				
Return on asset	%	5.42	3.76	4.52
Return on fixed assets	%	11.14	8.32	10.21
Total asset turnover	Times	0.80	1.04	0.91
Solvency Ratios				
Debt to equity ^{1/}	Times	0.64	0.78	0.71
Interest coverage	Times	15.20	13.25	9.41
Earnings per share				
Earnings per share ^{2/}	THB/Share	3.79	3.20	3.92

Remarks:

^{1/} Debt to equity = Interest bearing debt divided by Total shareholder's equity

^{2/} Calculated by the weighted average number of ordinary shares as of December 31, 2021, December 31, 2022 and December 31, 2023 amounting to 28,563.00 million shares



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5.1 Other Important Information

Juristic persons whose shares are held by the Company: Details as specified under 1.3 PTT Group's Shareholding Structure.

5.2 Legal Disputes

As of December 31, 2023, the legal disputes over issues in which PTT is involved (as illigant) are lawsuits that have not been finalised and have significant impacts on PTT's business or do not arise from the ordinary course of business are in detail as follows.

5.2.1 NACAP Asia Pacific (Thailand) Co., Ltd. exercised its rights under the contract by submitting a statement of claim in the arbitration process in relation to the Sai Noi - North/ South Bangkok Power Plant Gas Transmission Pipeline Contract

NACAP Asia Pacific (Thailand) Co., Ltd. filed claims with the Thai Arbitration Center demanding damages from PTT on the grounds of change orders, additional work, and others under the Sai Noi - North/ South Bangkok Power Plant Gas Transmission Pipeline Contract. PTT viewed that such claims were incompliant with the contract but also involved the assignment of the rights that had not been settled. Then NACAP Asia Pacific (Thailand) Co., Ltd. was ordered by the Central Bankruptcy Court to be under absolute receivership and adjudged bankrupt. The official receiver then assumed the proceeding of the arbitral dispute on behalf of NACAP Asia Pacific (Thailand) Co., Ltd. In such a bankruptcy case, PTT as a creditor has applied for debt repayment. Regarding the arbitral dispute, PTT filed a statement of defense to completely deny all claims made by NACAP Asia Pacific (Thailand) Co., Ltd. together with a counterclaim for damages from NACAP Asia Pacific (Thailand) Co., Ltd. Subsequently, the arbitral tribunal rendered an award that PTT to make a partial payment of damages to NACAP Asia Pacific (Thailand) Co., Ltd. However, PTT viewed that such an arbitral award was erroneous both on factual and legal grounds, and accordingly PTT filed a motion to set aside the arbitral award. NACAP Asia Pacific (Thailand) Co., Ltd. then filed a motion to enforce the arbitral award with the Civil Court. On October 17, 2017, the Civil Court issued an order to enforce the arbitral award with a reduction of the amount to be paid. Nevertheless, PTT filed an appeal with the Supreme Court to appeal the order of the Civil Court. On December 18, 2019, the Supreme Court issued an order not to accept the appeal of PTT. As a consequence, the case became final, and PTT, therefore, was required to pay for damages under the order of the Civil Court. On January 8, 2020, PTT deposited THB 4,543.5 million with the Civil Court for debt payment under the court's judgment. However, NACAP Asia Pacific (Thailand) Co., Ltd. had an objection that PTT's deduction of the withholding tax from the payment was incorrect. On September 6, 2023, the Supreme Court ordered to dismiss the Contractor's motion for grant of appeal with the Supreme Court. As a result, the case was final that the Company has made full payment in accordance with the judgment.

5.2.2 Punj Lloyd Ltd. filed a lawsuit against PTT with the Civil Court on the grounds of termination of the Contract of the Fourth Gas Transmission Pipeline Project

On February 25, 2014, Punj Lloyd Ltd., the construction contractor of the Fourth Gas Transmission Pipeline Project, as a plaintiff, filed a lawsuit against PTT as a defendant with the Civil Court, alleging that PTT had wrongfully terminated the contract and was in breach of the contract, and demanding that PTT pay outstanding wages and damages. PTT viewed that all of its actions had been in compliance with the contract and therefore forwarded the case to the Office of The Attorney General for consideration to argue the case for PTT and the public prosecutor filed an answer with the Civil Court. Subsequently, the Civil Court issued an order to transfer the case to the Central Administrative Court for consideration and judgment because the Civil Court and the Central Administrative Court jointly agreed that this case was an administrative case. The Civil Court has already transferred the case to the Central Administrative Court. At present, the case is under the consideration of the Central Administrative Court. Should the Central Administrative Court rule that PTT was not liable as alleged in the complaint of Punj Lloyd Ltd., the Central Administrative Court shall render a judgment to dismiss the case. On the contrary, should PTT be found liable, the court shall render a judgment that PTT makes the payment for outstanding wages and/or wages for additional works and/or damages, the amount of which are within the discretion of the Central Administrative Court.

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5.2.3 PTT filed a lawsuit against Punj Lloyd Ltd. with the Central Administrative Court to claim damages under Contract of the Fourth Gas Transmission Pipeline Project

After PTT had terminated the contract with Punj Lloyd Ltd., PTT continued the construction of the Fourth Gas Transmission Pipeline Project until its completion. On June 20, 2018, PTT, represented by the public prosecutor, filed a lawsuit with the Central Administrative Court to demand that Punj Lloyd Ltd. pay damages for breach of contract and abandonment of work under the Contract of the Fourth Gas Transmission Pipeline Project. Then on October 15, 2020, the Central Administrative Court issued an order of joinder that this case be tried together with the case filed by Punj Lloyd Ltd. (specified in 5.2.2). At present, the case is under the consideration of the Central Administrative Court.

On September 25, 2019, Punj Lloyd Ltd. filed a statement of fact with the Central Administrative Court that on March 8, 2019, the National Company Law Tribunal of India had ordered that Punj Lloyd Ltd. be under the Corporate Insolvency Resolution Process. Subsequently, Punj Lloyd Ltd. has been brought into the liquidation process under the Law of India and the PTT also filed a petition to request the payment of debt in accordance with the Law of India. At present, the matter is under the proceedings. Regarding the Central Administrative Court's case, the Court is in consideration of the proceeding of the case.

On December 27, 2023, the Central Administrative Court rendered a judgment that in the case where Punj Lloyd Ltd. filed a lawsuit, dismissing the plaintiff's claim and in the case where PTT was the plaintiff, Punj Lloyd Ltd. has to pay for damages in the amount of approximately THB 6,400 million with interest in accordance with the law. The Central Administrative Court ordered that the damages must be fully paid within 60 days from the judgment date. This case has reached to the final judgment due to the parties not appeal to the supreme court. PTT will execute the court order to receive the payment accordingly.

5.3 Secondary Market

-None-

5.4 Regularly Contacted Financial Institutions

Bangkok Bank Plc.

333 Silom Road, Silom, Bang Rak, Bangkok 10500

Krungthai Bank Plc.

35 Sukhumvit Road, Klong Toei Nuea, Watthana, Bangkok 10110

Bank of Ayudhya Plc.

1222 Rama III Road, Bang Phongphang, Yan Nawa, Bangkok 10120

Kasikornthai Bank Plc.

400/22 Phahon Yothin Road, Sam Sen Nai, Phaya Thai, Bangkok 10400

Siam Commercial Bank Plc.

9 Ratchadaphisek Road, Chatuchak, Chatuchak, Bangkok 10900

Government Savings Bank

470 Phaholyothin Road, Sam Sen Nai, Phayathai, Bangkok 10400



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6. Corporate Governance



6.1 Overview of CG Policy and Guidelines

As the national energy company with a state-owned enterprise status and a listed company on The Stock Exchange of Thailand (SET), PTT recognizes its vital mission of good and transparent management, establishing equitability among all stakeholders while striving to develop itself into a Corporate Governance (CG) role model. PTT believes that CG under good management will lead to fairness and investors' confidence, create long-term value for shareholders, boost stakeholders' confidence, and give the corporation the most suitable, efficient, and effective management system while enhancing its competitiveness for sustainable growth.

Since its privatization into PTT Plc., and distribution of its share on SET in late 2001, the Board of Directors has always prioritized CG policy and guidelines by formulating the CG policy and handbook, ethical standards, including ethics in business operations distributed to directors, executives and employees for acknowledgement and compliance. The handbook has been regularly revised to improve operational standards in accordance with SEC's and SET's CG Policies for listed companies (CG Code) as well as recommendations in Corporate Governance Report from Thai Institute Directors Association (IOD), including the principles of the Organization for Economic Co-operation and Development (OECD), the ASEAN Corporate Governance Scorecard (ASEAN CG Scorecard), and the Dow Jones Sustainability Indices (DJSI), together with best practices of leading international companies. With the revisions, these turn to be The "Corporate Governance, Ethical Standards and Code of Business Ethics Handbook" or CG Handbook (5th revision).

PTT has defined that corporate governance is part of the organization's vision, mission, and values. The goal is to be a company that drives every life through its business operations for sustainable growth and strengthen the national economy following the vision "Powering Life with Future Energy and Beyond." PTT is well-prepared to embrace the future lifestyle and support the advancement of innovation and technology (Technology for All), along with fostering business relationships (partnerships and platform) based on the principles of Corporate governance (CG), transparency and sustainability.



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Corporate Governance Policy

PTT has duly reviewed its CG Policy and handbook to suit prevailing laws and good practices, economic and changing social circumstances as well as requiring all directors, management, and employees to acknowledge it in writing and observing all policies in the course of their works for the commitment and the policy implementation. The Board's CG policy is as follows:

1. The Board of Directors ("The Board"), management, and all employees shall commit to PTT's six Good Corporate Governance Principles, namely Accountability, Responsibility, Equitable Treatment, Transparency, Vision to Create Long-term Value, and Ethics, with an organizational structure that fairly balances the roles of the Board, management, and shareholders.
2. The Board shall perform their duties with dedication, responsibility, and independence, and there shall be clear segregation between the roles and responsibilities of the Chairman and the President & CEO. The Board shall also define the Board's structure, composition, and qualifications for efficient and effective performance.
3. The Board and management shall play a vital role in formulating PTT's vision, strategies, policies, and key plans while taking into consideration risk factors and impacts, and shall oversee, monitor, define, and establish appropriate risk management with proper resource allocation, as well as ensure the reliability of accounting systems, financial reports, and accounting audits. PTT shall be engaged in ethical businesses with good corporate citizenship while encouraging innovation to adjust itself amid changes and strengthening sustainable long-term competitiveness.

4. The Board and management shall be the role models for ethics and perform duties under PTT's good corporate governance guidelines as well as oversee and resolve conflicts of interest and connected transactions.
5. The Board may appoint specific committees as deemed appropriate, to assist in prudently reviewing critical matters.
6. The Board shall perform an annual self-assessment to be used as a framework for reviewing the Board's performance.
7. The Board shall establish the PTT's Corporate Governance, Ethical Standards and Code of Business Ethics Handbook which the Board, management and all employees must adhere to in parallel with PTT's Article of Association, regulations and rules.
8. The Board, management, and employees shall arrange for disclosure of PTT's information, both financial and non-financial, to be carried out adequately, credibly, and timely so that shareholders and all stakeholders may receive such information in a fair and equitable manner. Corporate Communication and Investor Relations shall be responsible for providing information to investors and the public.
9. PTT's shareholders shall receive equitable treatment and have equal rights to access PTT information and appropriate communication channels with PTT. The Board, management, and employees shall also advocate shareholders' engagement with PTT.
10. The Board shall ensure an appropriate system for the selection and appointment of all key management positions under a fair and transparent nomination process.



11. The Board shall establish an efficient Anti-Fraud and Corruption principle to ensure that the management recognizes and takes Anti-Fraud and Corruption actions, as well as conforming to such measures.

PTT has published the latest version of "Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook" on its intranet and website in both Thai and English so that PTT employees, Thai and foreign investors, interested parties and stakeholders could apply this for their benefits or reference.

Policy and Guidelines for the Board

PTT's Board of Directors comprises of experts who considered beneficial to the company. They shall be dedicated their time to their duties and endeavor to perform them well. The Board is appointed by shareholders to oversee the company's operations. The Board, in turn, appoints a management team responsible for business operations, the specific committees to oversee the delegated specific matters, and the company's auditor, and shall assign the Company Secretary to manage meetings and comply with laws and regulations. The policy and guidelines for the Board are as follows:



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1. Composition, Qualifications and Appointment of the Board

The Board of Directors, led by the Chairman of the Board, must have leadership and be able to continuously control the management to ensure the effectiveness and efficiency of operations, achievement of the company's targets by creating and increasing investment value for shareholders, the government, the public, and other stakeholders.

2. Independence of the Board

The Board shall consider, express opinions on, and vote for activities under their authority. If a decision is made under pressure from work, family, or any conflict of interest, it may be made in bias to benefit the directors, their families, or self-interest. Therefore, the independence of the Board must be emphasized in order to protect the shareholders and the company's interest. Any directors who is not wholly independent shall not make decisions.

3. Role, Responsibilities, and Authority of the Board

The Board shall act professionally on behalf of shareholders with high responsibility and accountability to steer the company in the right direction, make decisions on important matters with care and loyalty and protect the benefits of all stakeholders as well as company. Therefore, the board must perform its duties independently from the management. Responsibilities of the Board also include, but are not limited to, overseeing the management's operations and results, managing risks and determining remuneration.

4. Role and Responsibilities of the Chairman

- The Chairman is independent of the management and has not been involved in routine management with clear segregation of roles between the Chairman and the management.
- The Chairman shall regulate the Board to ensure highly efficient operations. Also, the Chairman shall support and provide assistance to the management's operations under the authority delegated by the Board for achieving the company's objectives and targets.
- The Chairman shall encourage directors to perform their duties within the scope of duties and authority towards shareholders and stakeholders while adhering to PTT's Corporate Governance, Ethical Standards, and Code of Business Ethics. The Chairman shall also advocate directors' efforts for promoting a corporate culture of ethics, and good corporate governance.

- The Chairman shall determine together with the President & CEO, regarding the Board's meeting agenda.
- The Chairman shall serve as an efficient chairman of the Board's meetings and the shareholders' meetings.
- The Chairman shall allocate sufficient time for the management to propose information and for directors to express their opinions on significant matters prudently. The Chairman shall also promote constructive relations among directors as well as the relations between the Board and the management.

5. Establishment of Specific Committees

To ensure a thorough and efficient examination of the key operation, the Board has established the following 5 specific committees, namely Audit Committee, Nominating Committee, Remuneration Committee, Corporate Governance and Sustainability Committee, and Enterprise Risk Management Committee.

6. Board Meetings and Receiving of Relevant Documents and Information

Every board member should regularly attend board meetings. Office of President is responsible for preparing documents, arranging the venue and coordinating the meeting. Each director shall be informed in advance of the date and agenda of each meeting and receive supporting information.

7. Company Secretary

The Board appoints a Company Secretary, responsible for arranging board meetings and shareholders' meetings to ensure that they are transparently organized in compliance with applicable laws and regulations.

8. Assessment of the Board Performance

The Board shall assess its performance annually to be used as a framework for evaluating the Board's performance, and considering, reviewing, and analyzing its performance for further improvement.

9. Remuneration of Directors and the President & CEO

The Board and the President & CEO shall not remunerate themselves due to a conflict of interest. The directors' remuneration must be allocated by the Remuneration Committee and proposed to shareholders for approval based on their performance. (Details on remuneration for directors and management are reported under Section 2:

“7.4.2 Management's Remuneration Policy” and “8.1.2 (2) Remuneration of Directors”.)

10. Succession Plan

The Board must ensure that PTT has an appropriate nomination process for key management positions at all levels. The President & CEO will be selected through a nomination process that will consider both internal and external candidates, which follows the Standard Qualifications of Directors and State Enterprise Officer Act. To be prepared for succession planning, especially executive positions, PTT has defined a policy and guideline to lay down a succession plan for personnel when the time comes for assuming higher positions that become vacant, namely: the President & CEO, Senior Executive Vice President or equivalent, Executive Vice President or equivalent, and Vice President or equivalent.

11. Directors' Development

PTT desires that the directors shall develop their knowledge, competencies, and skills in terms of business operation, good corporate governance, and other curriculum that are beneficial to their roles. With these development, PTT shall support and encourage their training with the Thai Institute of Directors Association (IOD) and other institutions which contain applicable courses throughout the year. PTT, furthermore, supports and organizes in-house briefings by inviting experts and consultants to present helpful data for advancing business and directors' performance. For new directors, PTT arranges an orientation program and provides each with a Director's Handbook, documents, useful information, lecturing on introduction regarding PTT's business and site visits as well as policies and practices of Good Corporate Governance. These preparations will be provided within three months of their appointment.

12. The Criteria for Serving in Various Positions of PTT Group's Executives

Principles for holding a position of director, advisor, qualified person, or any position in a company, agency, or other juristic persons of PTT Group's executives are detailed in line with the policies and guidelines of PTT's Board of Directors, which are in PTT's Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook, in Thai and English, on PTT Intranet and PTT Website.

Governance of Subsidiaries and Associated Companies

Governance Mechanisms

PTT defined a governance policy for PTT Group by preparing the “PTT Group Way of Conduct”, which compiles work procedures in various aspects of PTT Group and affiliates for conformity and unity as a governance tool. All are required to practice and drive towards the same standard across PTT Group through PTT's representatives assigned as directors, management, and officers. This way, directs PTT Group to have unity in action, synergy, enhanced capability and strength in international competition for PTT Group based on a transparent and sustainable way.

Five governance principles according to PTT Group Way of Conduct are as follows:

1. **Definition of Key Strategic Positions for PTT's executives and employees**, based on the joint agreement of PTT Group or other business terms.
2. **Rules and Regulations**, including directives that form part of the governance designed to drive linkages between PTT Group's policy governance and its successful implementation. Such rules, regulations, policies, and directives are to be put into practice and driven towards a uniform standard throughout the PTT's subsidiaries and PTT Group by PTT's representatives assigned to serve in these companies as directors, top executives, management, and officers.



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3. **Reporting Line and Performance Management:** PTT Group must report implementation updates under assorted policies to PTT management and/or the Board.
4. **Multi-level Governance:** This is to proceed through PTT Group Way of Conduct from PTT direct to subsidiaries. PTT authorizes this governance through its executives serving as the top executives there. To this end, such companies must develop their group governance to convey PTT Group Way of Conduct concept to its affiliates so that a single standard may govern the entire PTT Group.
5. **Management Committees** such as the PTT Group Management Committee (PTTGMC) and other policy committees play a key role in driving the efficiency of PTT Group governance since they represent a forum for consultation and joint formulation of business directions. By imposing a regular performance reporting under PTT Group Way of Conduct by PTT Group to PTTGMC for tracking business efficiency and effectiveness. PTT also defines the key roles and duties under PTT Group Way of Conduct as follows:

Policies are pushed to achieve concrete compliance in line with PTT's operations by dividing into 2 following groups:

1. **Strategic Alignment** Important policies for PTT Group companies are applied in the same direction, covering accounting, tax and finance, plan and investment, Governance, Risk Management, and Internal Control and Compliance (GRC). This is to ensure that PTT Group companies have precise, transparent, and auditable operations and disclosure, with appropriate and accurate good corporate governance standards, risk management, internal control, and compliance throughout PTT Group.
2. **Performance Excellence** for enhancing competitiveness and leading PTT Group to achieve business objectives with sustainability. The implementation may vary by risks and business context of each company. PTT supervises,

monitors, and reports the performance of PTT Group companies throughout the Group annually. PTT Group Management Committee (PTTGMC) and Minor PTT Group Management Committee (Minor PTTGMC) are responsible for pushing, driving, and promoting, while good corporate governance, policy owner, and subsidiary management functions jointly supervise and monitor the performance to achieve and align with the goals.

Policy on Serving as Directors in Other Companies of Directors and Management

In 2023, PTT had 38 affiliated companies, six of which are SET-listed flagships. PTT, therefore, adopted the PTT Group management structure for synergy and alignment of policies. To achieve these, the Board of Directors appointed management team members as directors in these companies to supervise policies and business management which aligned with PTT's policies for the benefit and value added of all stakeholders. The objectives of such appointments are:

- 1) To ensure that the management of affiliated companies aligns with the policies of PTT Group and monitor its overall business performance in order to accord with PTT's policy and institute comparable standards.
- 2) To establish synergy for the business of PTT Group and add value to all related parties, including Thailand.
- 3) To apply specific expertise in support of business, such as financial expertise can improve accounting and financial processes so that the company can grow robustly. This includes assistance to companies outside PTT Group. The resulting application of the knowledge and expertise gained from serving in such leading companies will enhance the benefit to PTT and foster cordial relations as well as creating business partner.
- 4) These objectives are part and parcel of the responsibility of the directors and management of PTT.

PTT ensures its consideration of executives or outsiders from the Ministry of Finance's Director's Pool for appointment within PTT Group regarded as a state enterprise is based on the Act on Standard Qualifications of State Enterprise Directors and Employees. Chosen directors from the pool must make up no less than one-third of the other directors of a given state enterprise. As of December 31, 2023, PTT had 20 members who belonged to the Director's Pool. It also ensures that PTT executives and such outsiders who serve as directors of PTT affiliates, serve on no more than 3 PTT affiliates or other state enterprise affiliates. This is designed to lower risks of conflicts of interest and ensure conformance to applicable laws, as well as to the Cabinet resolution of January 24, 2011, on fraud preventive measures at state enterprises, entitled "The appointment of senior government officials or persons as directors on multiple state enterprises", as proposed by the National Anti-Corruption Commission (NACC).

In addition, the Board defined guidelines and criteria for serving in various positions of PTT Group's executives. since 2015, the Board decided to adopt them as part of the CG Handbook.

Policy and Guidelines Related to Shareholders and Stakeholders

1) Shareholders' Rights

As the owners, shareholders are entitled to determine PTT's business direction or decide on matters of significant impact. Shareholders' meetings, therefore, serve as their key forums for the expression of views, questioning, and voting apart from the election of directors to supervise PTT's operations on their behalf. Shareholders are entitled to attend shareholders' meetings, take adequate deliberation time, and acknowledge meeting minutes.

Schedule of Shareholders' Meeting

PTT schedules an Annual General Meeting (AGM) within 4 months of the annual closing date of its accounting books. For urgent matters that affect or involve shareholders' interests or conditions, regulations, or laws that require shareholders' approval, it can call an Extraordinary General Meeting of Shareholders (EGM).

In 2023, the AGM was scheduled on April 12, 2023, in an e-Meeting only. PTT chose the electronic meeting control system of PTT Digital Solution Co., Ltd., a service provider assessed for compliance with the meeting control system by the Electronic Transactions Development Agency (ETDA) and meeting the standards of the Decree on Electronic Meetings B.E. 2563 (2020) and the Announcement of the Ministry of Digital Economy and Society on Security Standards of Electronic Meeting, and other related laws and regulations. PTT arranged for the recording of the 2023 Annual General Meeting of Shareholders in video format for dissemination to attendees for later viewing via PTT Website. PTT complied with the guidelines of the AGM Checklist prepared by the Thai Investors Association (TIA), Thai Listed Companies Association (TLCA), and the Securities and Exchange Commission (SEC). In 2023, PTT received a full score of 100 points for the 11th consecutive year, and no Extraordinary General Meeting of Shareholders (EGM) was called.

Advance Meeting Notice

For the 2023 AGM, the Board meeting No. 2/2566 (2023) on February 16, 2023, resolved to call a meeting via electronic meeting (e-Meeting) on April 12, 2023. Its decision, meeting date, and meeting agenda were disclosed in detail ahead of time by announcing on SET's website to notify shareholders before sending meeting notices. PTT assigned Thailand Securities Depository Co., Ltd. (TSD), its securities register, to mail the notices along with agenda details and accompanying documents, supplementary and supporting information for decision-making, opinions of the Board, complete minutes of the last meeting, 56-1 One Report, meeting documents, and proxy forms with complete instruction for shareholders, more than 14 days before the meeting date. The meeting notices were sent on March 21, 2023. The invitation was also announced through Thai and English newspapers, for 3 consecutive days (April 5 - 7, 2023, which was 3 days before the meeting), to allow shareholders enough time to prepare themselves for the meeting.



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The AGM meeting notice and supporting documents were made available on PTT Website 28 days before the meeting date (starting on March 15, 2023).

Proceeding of the Shareholders' Meeting

Before the beginning of the meeting, PTT presented a video introducing how to participate in the meeting through electronic media as well as instructions on how to vote through the e-Voting system and the inquiry process. At the start of the meeting, the Chairman of the meeting introduced directors, management, external auditor, and legal advisors who served as neutral parties and witnesses. The Chairman then elaborated on the voting and ballot counting for individual agenda items under PTT's Articles of Association as well as voting procedures for each item. Once the information had been provided on each item, the Chairman gave a chance for all attendees to comment, recommend and ask questions, allowing adequate time for debate. Inquiries can be made via electronic media through 2 channels: channel 1 via text message and channel 2 via video and audio or video conference. The Chairman and the management answered all questions clearly and precisely, treating all questions with due respect. For the election of directors, individual votes were required.

The Chairman ensured that the meeting proceeded by the order of the agenda and did not add any items without notifying shareholders in advance. If the meeting decide to change the order of the agenda, it will need, under PTT's Articles of Association, at least two-thirds of the votes of the shareholders in attendance. Alternatively, the shareholders with at least one-third of all subscribed shares may ask the meeting to consider other matters that are not mentioned in the meeting notice. At the 2023 AGM, the order of the agenda was not changed, and there was no request to consider any other matter.

At every meeting, the minutes must be completely and accurately recorded with the tally on each applicable agenda item. As a rule, a shareholders' meeting lasts 3 - 4 hours. The 2023 AGM started at 1:30 p.m. Registration was open at least 7 days in advance, i.e., from March 29, 2023, until the meeting was completed, and shareholders were allowed to enter the meeting room at least 1 hour before the meeting time. When the meeting started a total of 22,671,052,957 shares, or 79.3721% of the

total shares were attended by shareholders, exceeding one-third of all PTT's subscribed shares of 28,562,996,250. Below is a description of meeting attendants and those responsible for issue clarification:

- All 14 PTT directors attended the meeting (M.L. Chayotid Kridakon, an independent director, resigned on March 22, 2023., representing 100% of the Board attending the meeting). The Chairman presided over the meeting with all specific committee chairmen, the President & CEO, Chief Operating Officer, Upstream Petroleum and Gas Business Group, Chief Operating Officer, Downstream Petroleum Business Group, Chief New Business and Infrastructure Officer and Chief Financial Officer, provided supporting information on stage and through electronic channel. The Senior Executive Vice Presidents and Executive Vice Presidents attended at the front rows to provide information for relevant questions. Independent directors served as proxies for minor shareholders.
- Auditors from EY Office Limited are Mr. Kittiphun Kiatsomphob, Miss Waraporn Prapasirikul, and Miss Kessirin Pinpuvadol.
- Legal advisors from TTT & PARTNERS COMPANY LIMITED (witnesses in charge of the examination of voting and election disputes throughout the meeting): Mrs. Veeranuch Thammavaranucupt and Mr. Sappawit Jansuparerg.

Shareholder Count (as the AGM adjourned at 4:05 p.m.)

A total of 2,069 shareholders; 205 in person and 1,864 proxies attended the AGM, representing a total of 22,675,852,447 shares or 79.3889% of the total subscribed shares.

Practical Guidelines for Reporting Conflicts of Interest

As specified in PTT CG Handbook, all directors, management, and employees must prepare reports on conflicts of interest annually and in case of changes. At a meeting, those with vested interests or conflicts of interest with PTT must inform the meeting to excuse themselves and abstain from voting on such matters.

At each shareholders' meeting, any director with vested interests or involvement in any agenda item must inform the meeting to excuse themselves and abstain from voting on each applicable agenda item.

Disclosure of Shareholders' Meeting Results

For the 2023 AGM, PTT submitted a summary of AGM resolutions to SET and SEC on the next business morning (April 17, 2023). PTT also submitted the minutes of the AGM (by separating each agenda, demonstrating the number of directors in both attendance and absence, questions raised by shareholders, and answers from directors, together with the tallies of each agenda item) to SET and SEC within 14 days of the meeting. Furthermore PTT had to publish minutes of the AGM through PTT Website.

2) Equitable Treatment of Shareholders

PTT treats all shareholders fairly despite their different shareholding proportions, corresponding voting power. Shareholders' fundamental rights are conserved regardless of their gender, age, race, nationality, religion, belief, social status, physical impairment, or political inclination. Information on the shareholders' meeting was announced ahead of the meeting in Thai and English. Directors with vested interests in any agenda item must excuse themselves from the meeting on that item. All shareholders have equal rights to take part in PTT's activities.

Proposing Additional Meeting Agenda Items and Nominating Directors

To enable minor shareholders taking part in business oversight, for the 2023 AGM, PTT defined the criteria and consideration process for entitling them to propose meeting agenda items and/or nominate directors in advance, so that the Board will deliberate agenda items that could prove useful to PTT, including the selection of qualified directors to perform their duties efficiently for PTT, shareholders, and stakeholders. In practice, shareholders with a single shareholder or multiple shareholder of at least 5% of the total eligible votes or at least 1 million shares

held uninterrupted for at least one year could propose agenda items or nominate directors before the AGM from September to November 2022, in case the nomination of directors needed the approval of the State Enterprise Policy Committee (SEPC), under the guidelines for the appointment of state enterprise directors and the cabinet resolution on August 6, 2019.

PTT posted such criteria on its website and an announcement on SET's website from September 1 to November 30, 2022. However, this attracted no recommendation of such agenda items or nomination of directors, and the Company Secretary duly informed the Board meeting on the matter. In addition, PTT informed shareholders to submit questions in advance for the 2023 AGM via 3 channels, namely acknowledgment mail sent together with the invitation letter, electronic mail at corporatesecretary@pttplc.com, and facsimile number 0-2537-3887. In the 2023 AGM, some shareholders sent questions in advance through the aforementioned channels and PTT clarified the details to them and disclosed them in the minutes of the meeting.

Facilitating Shareholders at the Meeting

In organizing the 2023 AGM via e-Meeting, PTT facilitated all shareholders by submitting documents showing the registration procedures for e-Meeting and proxy along with the meeting notice. PTT also provided a call center to respond to problems using the system since March 29, 2023, the opening date for pre-registration, until the 2023 AGM, was fully completed on April 12, 2023. On the meeting date, e-Voting and inquiry processes via e-Meeting were available for logging in from 11:30 a.m. Video instruction regarding voting through e-Voting and inquiry procedures was shown for shareholders' acknowledgment.

Since most shareholders at the AGM were Thais, it was conducted in Thai. However, for the benefit of foreign shareholders, PTT commissioned the translation of meeting's handouts, supplementary documents, and relevant documents into English. Its website is also bilingual. During the meeting, PTT provided officers with a good command of English to facilitate foreign shareholders.



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Appointing Proxies

To maintain the rights of those who could not attend the 2023 AGM in person, they could appoint proxies or delegate their votes to any independent director in attendance. To this end, PTT specified these independent directors' names on proxy forms defined by the Ministry of Commerce for voting on behalf of shareholders without conditions. PTT treated proxies as if they were shareholders. As a rule, 28 days before each meeting, PTT discloses the proxy form, attached with details and procedures on its website. Shareholders may make further inquiries about this by phone or through other channels such as PTT Website and e-mail.

3) Roles towards Stakeholders

As the national energy company, PTT prioritizes for all stakeholders' rights and interests by establishing guidelines for addressing the needs of each group in and outside the corporation, as well as its own responsibility for society and the environment. Stakeholders are classified into six groups with a different mission targeted for each group in response to their different needs:

Public Sector

Ensuring long-term energy security by providing sufficient high-quality energy supply at fair prices to support economic growth.

Society and Communities

Maintaining an excellent corporate standing in Thai society by exercising environmental stewardship of internationally accepted standards and improving the quality of life for communities and the wider societies.

Investors

Operating profitable businesses that lead to sustainable growth while generating optimum returns.

Customers

Ensuring customer satisfaction and loyalty by delivering world-class quality products and services at fair prices.

Suppliers and Partners

Conducting fair business practices with all partners while promoting trust, good relationship, and cooperation to expand business capability and increase efficiency in long-term business partnerships.

Directors and Employees

Continuously promoting professional capability building and ensuring employees' well-being on par with other leading companies to strengthen employee engagement.

Treatment of Six Main Stakeholder Groups

1. Public Sector

1) Building energy security: PTT and its wholly owned PTT had a 5-year investment plan (2023 - 2027) (worth THB 100,227 million on core businesses as follows: (1) 36% in Gas Business Unit, i.e. Gas Separation Plant (GSP) Unit 7 to replace GSP Unit 1 and GSP Unit 8 to convert liquefied natural gas (LNG) into ethane and LPG, including ethane product storage tanks and receiving terminal to increase ethane import capacity, (2) 19% in Natural Gas Transmission Pipeline Business Unit, including Bang Pakong - South Bangkok Power Plant and the 5th onshore natural gas pipeline projects, (3) 3% in International Trading Business Unit and Downstream Petroleum Business Group, (4) 9% in New Business and Infrastructure, and Head Office, and (5) 33% in PTT's wholly owned companies, namely EV ecosystem, Map Ta Phut Industrial Port Development Project Phase 3, Laem Chabang Port Development Project Phase 3.

PTT's Board of Directors Meeting No. 6/2023 on June 21, 2023 reviewed and approved the adjustment of the investment plan of PTT and its wholly owned companies for 2023 from THB 33,344 million to

THB 93,598 million. Most of them are changes in investment in its wholly owned companies, such as joint investment of PTT LNG Co., Ltd. in the 2nd LNG Receiving Terminal and the EV ecosystem business i.e. EV manufacturing plant of Horizon Plus Co., Ltd., battery production factory in Thailand of Arun Plus Co., Ltd. while the investment in core businesses remained in line with the original investment plan.

- 2) Focus on new business in line with future world trends both in energy and other areas, with provisional capital expenditure** over the next 5 years in the amount of THB 302,168 million according to the vision framework of "Powering Life with Future Energy and Beyond", PTT focuses on the clean energy business towards low-carbon society. The goal is to produce electricity from renewable energy to 15,000 megawatts within 2030 and invest in the integrated EV ecosystem business, as well as expanding investment in the natural gas business which is a transition fuel with a focus on expanding the natural gas pipeline network and expanding investment in the LNG value chain both domestically and internationally. In addition to investing in existing businesses to maintain energy security, PTT also expands investments in other businesses to cope with technology disruption and support modern behaviors or lifestyles such as Driving life science business in Thailand and the ASEAN, including logistics and infrastructure business, focusing on connecting the entire transportation network of the country.
- 3) Being a "low-carbon and sustainable organization" ready to drive Thailand towards Net Zero:** PTT Group has announced the following short-term and long-term goals: (1) aiming to reduce greenhouse gas emissions by 15% within 2030, (2) achieving Carbon Neutrality by 2040 and Net Zero Emissions by 2050 (sooner than the 2065 country's target.) PTT Group has set up the PTT Group Net Zero Task Force (G-NET) to mutually drive 3P Decarbonization Pathway (Pursuit of Lower Emissions, Portfolio Transformation, and Partnership with Nature and Society), to achieve greenhouse gas emission reduction goals that are consistent with the context of business operations.

- (1) "Pursuit of Lower Emissions": To maximize the reduction of greenhouse gas emissions in the process e.g. adjust the production process in the gas separation plant, making the zero-carbon dioxide power by generating process of reusing or capturing it instead; additional investment in refineries to install a carbon dioxide detector; replace long-used equipment, switch to a new refinery to minimize energy consumption.
- (2) "Portfolio Transformation": To increase the proportion of investment by focusing on clean energy business and growth in new businesses beyond energy. PTT has set up new businesses that are environmentally friendly and reduce greenhouse gas emissions, such as those related to EVs, pharmaceuticals, and health.
- (3) "Partnership with Nature and Society": To increase green space for carbon absorption by 2030, PTT and PTT Group aim to increase the planting of terrestrial and mangrove forests to 2 million rai, as well as taking care of over 1 million rai of existing green areas. PTT has planted since 1994, which helps absorb more than 2 million tons of carbon dioxide per year.

In addition, PTT has been given a mission to chair the Thailand Carbon Neutral Network (TCNN), with a network of more than 500 leading organizations from the public and private sectors, including small, medium and large ones, SMEs, leading universities and local communities to form "Thailand's Leading Network towards Carbon Neutrality and Net Zero Goals". This is for driving the participation of various sectors in reducing greenhouse gas emissions, as well as speeding up the preparation of policy proposals for submission to the public sector, aiming to elevate the country's greenhouse gas reduction standards to be equivalent to international standards. In 2023, PTT is one of the five organizations that developed innovations in greenhouse gas management of the TCNN network and among the 16 leading organizations in greenhouse gas management that have received the assessment and certification rating from the Thailand Greenhouse Gas Management Organization (TGO).



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4) Public policy support for economic growth and the grassroots economy closely with the public sector.

The key projects are as follows:

- **State welfare card - LPG for low-income earners:** Support of partial LPG subsidy, a project under the Ministry of Energy and the Ministry of Finance, was extended to low-income earners, hawkers, and food stalls with state welfare cards by reducing the cooking gas (LPG) price in the amount of THB 100 per person per month from October 2019 to March 31, 2023, for reducing their cost of living and promoting low-income earner business. The assistance amounted to more than THB 22 million.
- **NGV Price Discount:** Support the government policy as follows: (1) Maintain the NGV retail price for general vehicles below the price structure set by the government from November 16, 2021 to December 15, 2023, (2) Establish the NGV for the Giving Breath Project by providing NGV price assistance for taxi drivers in Bangkok and its vicinity with a limit of THB 10,000 per month per vehicle to purchase NGV from November 1, 2021 to August 15, 2023, (3) Extend assistance measures to public bus fleets nationwide through the Benefit Card Scheme by providing NGV discounts on light vehicles (taxi, pick-up truck taxi and van) and large vehicles (minibus and bus) with the NGV purchase limit of THB 10,000 per month per vehicle and THB 40,000 per month per vehicle, respectively, from July 5, 2023 to December 31, 2023. The total aid value was THB 16,533 million.

2. Society and Communities

- **Innovation for Community Project:** Continuously operating from 2021 to the present, in 2023, PTT Group focused on bringing its knowledge, technology, innovation, and experience to support the grassroots economy in 45 areas in 29 provinces. This sets a significant outcome for the community to increase net income by more than or equal to 10% and more than THB 5,000 per household per month through (1) Smart Farming such as greenhouses and plastic covers, IoT systems to control cultivation factors by using drones for agriculture, solar cells and LED for planting, Nano ZnO for soil improvement, (2) Smart Marketing such as developing and upgrading more than 45 community

products to promote distribution channels through the Smile Community Platform with over 1,400 products from 450 communities, as well as helping to develop Community Based Tourism (CBT) in 6 areas:

- Mae Tha Subdistrict, Mae On District, Chiang Mai Province
- Ban Luang Subdistrict, Chom Thong District, Chiang Mai Province
- Piman Subdistrict, Na Kae District, Nakhon Phanom Province
- Saeng Pha Subdistrict, Na Haeo District, Loei Province
- Lamsin Subdistrict, Srinagarindra District, Phatthalung Province
- Koh Mak Subdistrict, Pak Phayun District, Phatthalung Province.

In addition, 12 Smiling Innovation Learning Points were completed, 8 prototype areas, and 4 sufficiency innovation learning centers to be a source of learning and study sample areas for communities to further their careers by collecting knowledge from PTT's collaboration with communities over the past 3 years as a set of knowledge of each community and collecting important information for research and information that is useful to the community.

- **PTT Art Contest:** PTT, in collaboration with Silpakorn University, organized the 38th PTT Art Contest 2023 under the theme "Inspire Hope, Ignite Life Potential" with 2 levels of contestants: general public and youth with this contest, there are 831 pieces of artwork submitted: 696 of youths and 135 of the general public. In addition, 4 regional art contests were held with over 4,200 participants as follows:
 - Northeastern Contest in collaboration with Khon Kaen University
 - Southern Contest in collaboration with Thaksin University
 - Eastern Contest in collaboration with Burapha University
 - Northern Contest with Chiang Mai University.
- **PTT Group Model School:** Mobilizing PTT Group's strengths and knowledge to develop education under the concept of "STEEM 4E" by collaborating with Kamnoetvidya Science Academy and Vidyasirimedhi Institute of Science and Technology to develop academic skills (science, technology, engineering, mathematics (STEM) and English (E) = STEEM) and encourage schools to apply them in teaching and

learning or 4E, namely Ethics and Growth Mindset, Entrepreneurship, Energy Literacy, and Environment Awareness through the STEEM+4E program in 109 schools, 24 model teachers were developed, including 10 STEM model teachers and 14 English teachers, also 11 4E model schools through the implementation of sub-projects such as PTT Group's School English Teacher Development Project, STEEM 4E training course, playing as a teacher to learn to connect with the real world, including the development of learning points, promoting active learning by integrated with lesson plans.

- **Green Globe Institute:** Raise awareness about environmental conservation through judging entries and awarding to communities and individuals who conserve soil, water, and forest resources. It encompasses the dimensions of coexistence with nature and sustainable ecosystem persistence, uses local knowledge appropriately, emphasizes the participation of people in the community in line with the self-sufficiency lifestyle, and extracts the knowledge of the award works to prepare for further utilization. The 21st Green Globe Award Ceremony was held on July 20, 2023.
- **Vetiver Development and Campaign Project based on the royal initiative:** PTT, in collaboration with the Chaipattana Foundation, the Office of the Royal Development Projects Board (ORDPB), and the Department of Land Development, implemented a project to expand the use of vetiver for soil and water conservation. In 2023, Thailand hosted the 7th International Conference on Vetiver "Vetiver for Soil and Water Conservation: In Commemoration of King Bhumibol Adulyadej The Great" Shangri-La Hotel Chiang Mai Province in hybrid meeting attended by 1,098 delegates from 19 countries around the world.

3. Investors

PTT remains committed to being an organization that contributes to economic growth, enhances national competitiveness, develops society and improves the quality of life while creating innovation and implementing technology in all sectors as well as being a driving force in people's way of life, society, communities, environment to move through change under the new vision through the implementation of 4R strategies (Resilience, Reenergize, Reimagination, and Reform). This would ensure investors of PTT's optimum returns and sustainable growth.

Investors' Activities (Common Shareholders)

Since 2006, PTT has arranged ongoing trips for minor investors to visit its operations, update information, and meet the management as well as participating in PTT's CSR activities in Rayong Province.

In 2020 - 2022, due to the continuous outbreak of the COVID-19 pandemic in Thailand, PTT decided to halt the company site visit to prevent the spread of COVID-19 for the safety of participants.

In 2023, PTT scheduled the event on November 21 - 23, 2023 by sending invitation letters and acceptance documents to shareholders listed as of the Record Date to determine their right to attend the 2023 AGM (March 3, 2023) for shareholders to submit their intention to visit PTT's business. In addition, since there were 6,209 people interested in visiting PTT's business via postcard and QR code, PTT required a lucky draw to select eligible visitors, which was witnessed by executives and working groups. The lucky draw was scheduled on October 9, 2023 and the list of eligible visitors to PTT's business was announced on PTT Website. PTT officials notified those who had the right to visit PTT's business by telephone to confirm their acceptances. The visit included the Flora Exhibition Hall of PTT LNG Co., Ltd. (PTTLNG), Princess Maha Chakri Sirindhorn Herb Garden, and Harumiki Farm & Café, Rayong. 300 eligible visitors were divided into 3 groups of 100 people each. After the activities, PTT provided satisfaction survey to attendants and utilized the feedback from shareholders to improve its work in the following year.

Shareholders who are interested in participating in the next business visit (2024) can follow the progress and details of the project on PTT Website. PTT reserves the right for shareholders who have not participated in this activity only, if it is the same visit site.

Activities for Institutional Investors and General Investors

In 2023, as the situation in the country returned to normal after the COVID-19 pandemic, PTT began to organize activities to meet institutional investors and general investors in the physical form along with communication through various online networks using modern technology systems to organize the event. Diversified communication channels are considered another form of investor relations management, which can increase investors' satisfaction and engagement with PTT.



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Investors' Activities (Debenture/ Bondholders)

PTT has issued and offered debentures to shareholders since 2003. In 2023, PTT's Baht-denominated debenture holders numbered 21,929. Since 2010, PTT has staged ongoing debenture holders' activities to serve as a channel for maintaining cordial relations with them and repay them for their confidence in PTT bonds over the long term. Activities for debenture holders in 2023 were a mix of activities to reach debenture holders of all age groups. Advanced technology was used to organize various seminars through online channels by live streaming. Happiness Activity was created in the form of a brochure to reduce the use of paper and support the country's direction towards a low-carbon society. Debenture holders can also access all event details via online channels.

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PTT continues to strive to increase efficiency and enhance the debenture holders' satisfaction along with promoting the learning to use technology by developing the service through the PTT Debenture Line official account and mobile application. At year-end, over 12,470 bondholders joined the membership of various systems.

4. Customers

PTT divides its market into domestic and overseas with two major groups of customers: Business to Business (B2B), which consists of customers in gas, international trading, and infrastructure businesses, and Business to Customer (B2C), with NGV customers, where the core products are natural gas, crude oil, petroleum products, petrochemicals, and chemicals.

PTT listens to customer needs and expectations to analyze them through diversified channels, including customer visits, both onsite and online seminars, opinion surveys, and customer information via online channels, for instance, the official website of the International Trading Business Unit which connects 5 PTT affiliates and representative offices globally; power plants and wholesale's Customer Service Center (CSC) website and industry's PTT NGR website provide information necessary for business operations such as economic situation and trends, energy, government policies, regulation, technology innovation, natural gas properties and consumption, financial and economic data for designing products and services that meet the current and future needs and expectations.

PTT has continuously developed products and services as well as supporting systems to increase speed, accuracy, and correctness for customers' transactions with PTT such as the application of Robotic Process Automation (RPA) in the billing process, the development of One Platform system to be data sharing tools with flagship companies, for using in product import and export planning to create additional trade value from logistics optimization such as Co-load and Co-purchase and the development of Intelligence Trading Signal (ITS) to detect the best time to buy and sell derivatives contracts for an effective price risk management model that responds more to customers' risk management needs in conditions of high product price fluctuations. PTT has developed more contact channels via LINE official to facilitate customers in contacting and awaring of the energy price situation, news and information, useful knowledge, and a link to the CSC website and Application Voice. Comprehensive consulting services for liquefied natural gas and liquefied natural gas distribution systems are provided to increase the channel of use of liquefied natural gas fuel for industrial customers outside the pipeline. In addition, PTT has introduced IoT technology to help with energy management and increase efficiency in product delivery and energy consumption management to customers. As mentioned above, PTT's implementations have created good relationships with customers, fostering confidence in being long-time business customers and resulting in engagement with PTT.

PTT also developed a service standard manual and procedure manual that are comprehensive, including manuals on service station standards, gas customers, pipeline emergency response plans, gas pipelines for industrial plants, and procedures for gas metering. PTT provided its services in compliance with the standard controlled by the Energy Regulatory Commission (ERC) and regularly reported its operations to the commission as required or, in the case of violation of the standard, within the specified period.

PTT has satisfaction, dissatisfaction, and customer engagement assessment versus competitors through the research of the annual satisfaction survey. Customers' satisfaction and dissatisfaction have been regularly collected and analyzed for proposing and improving products and services or problem-solving in a timely manner.

PTT has maintained a high level of customer satisfaction despite the impact of the volatile and competitive gas market by planning for customers after-sales service activities such as seminars to meet with customers and clarify the gas situation, providing technical services, listening to problems and complaints for developing plans, and regularly sending information to customers. PTT also initiates the online classroom platform (GASTALKTH.COM) which collects news about various types of fuels, maintenance techniques for gas pipeline systems and other industrial equipment, energy efficiency laws and techniques for industrial plants transferred by PTT experts. Those interested can enroll in an unlimited number of classes. PTT also creates social activities for the customers such as organizing a Virtual 30-Day Challenge exercise and accumulating calories to convert into the number

of trees, for PTT to plant as well as inviting customers to join tree planting activities in national parks for creating green areas and helping absorb carbon dioxide for the country.

PTT classifies complaints by the impact of severity and by defining Service Level Agreements for each type of complaints. Related units must resolve problems within a given period. All complaints must be initially addressed within 24 hours, and after problem resolution, an inquiry into customer satisfaction with PTT's problem-solving will be made. At the same time, customers will learn of PTT's long-term problem-solving plans for their confidence and satisfaction to ensure customers' continued buying of PTT's products and services.

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Customer Satisfaction Survey (%)

	Natural Gas					International Trading
	Natural Gas	Power Plants and Wholesale	Industry	Petroleum and Petrochemical Products	NGV	
2023	93.2	90.1	94.0	92.9	87.0	94.0
2022	92.2	90.0	92.9	89.9	90.6	90.8
2021	92.2	90.8	92.6	91.3	90.2	99.3

5. Suppliers and Partners

Since suppliers and partners are keys to business success through mutual support, PTT values and treats them with equality through fair competition, mutual respect, and good relationship and cooperation. PTT strictly complies with contracts and procurement procedures since they are vital to the determination of expenses and the quality of PTT products and services. A clear procurement procedure is in place to ensure transparency, auditability, and maximum benefit.

To achieve its resolution, PTT is committed to doing business for sustainable growth in parallel with good governance for communities, society, and the environment. It, therefore, values supply chain management such that it is clearly in place by developing risk management processes and mitigation of impacts arising from business partners' conduct to support the success of supply chain management in sustainable way. The 3 key factors for the drive are as follows:

1. Clear Business policy and directions

PTT's policies and strategies are key factors for forging awareness among employees and society of PTT's commitment and business direction. PTT thus issued **PTT Group policy on sustainable procurement and supplier management**.



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To provide PTT's business partners with guidelines for conducting business in line with the corporate sustainable management concept, PTT issued the PTT Supplier Sustainable Code of Conduct (SSCoC) on April 1, 2012, with the latest revision on November 1, 2022, by setting the content and scope to be under the requirements, regulations and relevant laws. This helps to drive PTT's suppliers to operate ethically, and respect human rights, occupational health care, and employee safety, including the importance of sustainable environmental management, including the issues that PTT pays attention to, consisting of 4 main topics as follows:

1. Business Integrity
2. Corporate Social Responsibility
3. Safety
4. Environmental Management.

2. Sustainable supplier selection and management process development

For supply chain management to be in line with the organization's direction, PTT has established guidelines for supplier management that take into account Environmental, Social, and Governance (ESG) impacts. Assessing risks and impacts from the perspectives of the environment, society and oversight of goods and services groups, PTT divides business partner management into 3 levels which are (1) Critical/ Strategic, (2) Key and (3) Manage/ Routine (in order of potential severity of impacts) levels. For those in the Critical/ Strategic group, management actions are more intensified than in the other groups. Besides formally acknowledging the PTT Supplier Sustainable Code of Conduct, they must respond to the Sustainability Performance Assessment Form. After self-assessment, if they are under the criteria, they will need to formulate the ESG Corrective Action Plan. PTT reserves the right to audit business partners' self-assessment outcomes. In 2023, PTT team in conjunction with a third-party agency conducted sustainability assessments of 11 "Critical" business partners. Overall, their scores passed the criteria set by PTT. A project designed to develop suppliers' sustainable operation which PTT selected major business partners whose operations involved ESG for training on sustainability capability development and practices and taking self-assessment regarding sustainability capability

for development planning in line with PTT's policy. In addition, PTT has a Green Procurement policy conforming to the public sector. A system was developed in support of green procurement through the PTT Vendor Management System, which compiles green product and green spending data. In 2023, there were 23 tasks related to green spending and green products, which valued at some THB 494 million.

PTT and PTT Group seriously take the reduction of risks in product/ service supply, boosting confidence in supplier services, and sustainable procurement of international standards. In 2023, PTT applied the standard criteria of ISO 20400:2017 Sustainable Procurement with the joint procurement of 3 groups in PTT Group. It planned to extend this practice to cover all business groups within 5 years.

In addition, to illustrate PTT's transparency and confidence in business operations, PTT joined public agencies in preventing and suppressing corrupt practices by signing a memorandum of cooperation on driving such actions with the Office of the National Anti-Corruption Commission (NACC), State Enterprise Integrity and Transparency Assessment (ITA), State Enterprise Policy Office (SEPO), and other state enterprises to ensure that the national strategy on prevention and suppression of corrupt practices, relevant measures, relevant government policies, and action plans are successfully driven to implementation in state enterprises under CG. To this end, for the provision and disclosure of information on procurement, PTT has disclosed related data in compliance with the announcement of the Official Information Commission on the requirement that information on the outcomes of procurement deliberation of public agencies must be opened to the public under Section 9 (8) of the Public Information Act of B.E. 2540 (1997). Disclosure is to be done monthly through www.pttplc.com for public examination. Note that PTT's procurement information disclosure is subject to annual assessment through a project on State Enterprise Integrity and Transparency Assessment (ITA), sponsored by NACC. In 2023, the score for PTT was 100% on procurement information disclosure, based on the assessment of visual evidence inspection.

Since August 24, 2017, PTT has complied with the Public Procurement and Supplies Administration Act, B.E. 2560 (2017) by disclosing its annual procurement plan for interested parties to join price bidding with PTT and manage their bidding readiness. PTT has disclosed its annual procurement plan via 3 channels: www.pttplc.com, e-Government Procurement (e-GP) of the Comptroller General's Department, and bulletin boards at PTT offices.

PTT has appointed PTT Procurement Oversight Committee (KorTorJor) to ensure transparency of procurement, both those requiring compliance with Public Procurement and Supplies Administration laws and those direct commercial procurements requiring compliance with PTT regulations already approved by the Public Procurement and Supplies Administration Policy Committee. The committee consists of executives from procurement and legal units and the Office of Corporate Audit, charged with roles and responsibility for governing and auditing procurement processes to ensure compliance with laws, regulations, criteria, and relevant processes. Annually, the committee inspects procurement processes randomly to detect deficiencies, causes, and preventive measures for non-recurrence.

In addition, PTT has developed the PTT Bid Submission system to support the request purchase of procurement documents and submitting proposals and prices through online channels, including the improvement of the Supplier Handbook launched on September 1, 2023. This is to create knowledge and understanding about procurement transactions with PTT, also a guideline for contact and cooperation with related units more conveniently. Criteria of the PTT Approved Vendor List (PTT AVL) have also been improved by adding blacklist criteria and qualification inspection of those wanting transactions with PTT as a part of supplier selection. This complies with Corporate Governance Policy and PTT's commitment to conducting business based on transparency, fairness, and auditability.

3. Capability development of relevant parties

Since the mastery and caliber of relevant parties represent another key factor driving the success of this matter, PTT values capability development on procurement and management of business partners by PTT's executives and employees in a systematic and suitable way. This is achieved through training, communication, and knowledge

management (KM), to achieve the sustainability objectives of business partner management of PTT and PTT affiliates companies. Annual reviews and plans are conducted for the development of employees in the procurement profession to empower employees to effectively accommodate organizational changes. The focus is on providing employees with expertise in laws, rules, and regulations related to procurement. Employees are encouraged to attend procurement courses certified by government agencies. Their knowledge is enhanced by inviting qualified and experienced instructors from government agencies such as the Office of the Ombudsman, and the Office of the Attorney General to give lectures, educate, give advice, and observations on additional operations to ensure that employees have knowledge and understanding, expertise in procurement, able to perform work correctly and professionally. Knowledge is extended and applied using information technology to design and develop Digital Procurement with a focus on preventive and control system development for raising the standard of PTT's procurement process to be efficient, accurate, fast and responsive to the needs of suppliers.

PTT organizes additional training courses such as a sustainable procurement guideline workshop in line with ISO 20400:2017 Sustainable Procurement to provide employees with knowledge and understanding of sustainable procurement principles, the development of PTT Group ESG Auditors to equip employees with knowledge and understanding of assessment criteria, basic auditing principles, guidelines and processes of a good auditor, which can be adapted or integrated into the sustainability vendor audit process, as a guideline for developing each business partner to sustainably conduct business in the environment, society, economy together with PTT Group.

To create an exchange of information and knowledge among PTT and business partners and develop their potential to be ready to support PTT in terms of operating results, business continuity as well as social responsibility, PTT organizes a supplier seminar every year. In 2023, Supplier Seminars were held 4 times at the PTT Head Office, Rayong Gas Separation Plants, Natural Gas Transmission, and Natural Gas for Vehicles. PTT communicated the direction of its business operations, aiming at a Net Zero



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goal in 2050, and introducing Life Science, PTT's new business. Business partners, important stakeholders of PTT, were given opportunities to exchange procurement information for mutual and systematic improvement. New technology was introduced to every step of procurement, accommodating quick changes under the Digital Procurement Project to prepare for and be aware of the world's movements that may affect business operations by focusing on educating suppliers to develop their operational potential in sustainability. In addition, PTT also focuses on responding to the needs and treating all groups of stakeholders with equality, transparency, and fairness, especially those business partners throughout the supply chain that PTT attaches great importance to by developing, supporting, promoting growth, and moving forward sustainably together.

PTT requires bidders to strictly conform to the rules of work safety and handling of tools, as well as other regulations, particularly the types of work affecting health, safety, and the environment. PTT visits business partners' sites to assess their capabilities, particularly those on the Safety, Security, Health, and Environment side. In addition, business partners' employees must undergo the do's and don'ts on PTT's sites in addition to conforming to the requirements for entering sites to work, as described for each.

PTT Approved Vendor List (PTT AVL) is prepared for the benefit of procurement through bidding to ensure that, under the process of determining business groups and procedures or methods of selecting business partners to register for PTT AVL, business partners are efficient and deliver products/ services that meet PTT's requirements and foster sustainable partnership with PTT. In 2023, PTT AVL consisted of 327 companies from 28 business groups.

To ensure efficient preparation of PTT AVL, PTT considers the criteria, conditions, and qualifications of business partners who apply to PTT AVL in each business group. Initial qualifications of business partners must meet the following requirements:

1. Business partners must never have abandoned the work of PTT, the public sector, state enterprises and government agencies.
2. Business partners must not have the following PTT Blacklist criteria:
 - Be a person the NACC resolves as having grounds for fault. Such a person shall be released from the prohibited characteristics under this when it later appears that the case is final, and the person is not guilty.
 - Be a party to PTT in any dispute or case for which criminal penalties are imposed, but not including petty offenses.
 - A person who has been terminated by PTT for any contract due to fraudulent actions against PTT.
 - Be a person who is in the process of being ordered bankrupt by the court.
 - Be a person designated and declared by the Anti-Money Laundering Office under the Anti-Money Laundering and Combating the Financing of Terrorism laws.
3. If business partners were removed from the Vendor List, they would have no right to apply for registration in that particular business group for 3 years from the day of revocation. An exception applies if the removal was the result of abandoning the work of PTT, state enterprises, and public sector agencies, in which case PTT will not accept them to PTT AVL until PTT receives a letter proving the cancelation of such removal.
4. Business partners must understand and acknowledge PTT Suppliers' Sustainable Code of Conduct (SSCoC).

Apart from these initial criteria, PTT assesses business partners' operations and sustainable implementation in parallel.

After business partners deliver products/ services in each allotment, PTT will assess and notify them of the strengths/ improvements to make in operation for future supplier development.

In addition, PTT supports Thai suppliers of goods and services and gives them top priority. Past procurement information reveals that PTT has procured about 79% of local products, generating cash flow in the Thai economic system, promoting procurement of products from the areas where PTT sites are located, also promoting jobs as well as generating income for people in the communities.

6. Directors and Employees

Employee data are reported under Section 7: Corporate Governance Structure, Topic **"7.5 Employees."**

Respect for Universal Human Rights Principles (Code)

With the rollout of the human rights management system in 2016, PTT has clearly demonstrated its commitment to conducting business with respect for human rights principles in PTT's Human Rights Statement, PTT's Sustainability Management Policy and PTT's Compliance Policy. PTT has reviewed risk aspects on human rights covering PTT Group's business operations under PTT Group Way of Conduct of 17 companies in 31 countries, or a total of 81 areas. What the Group found were the aspects that represented core operational risks: security and occupational health of employees and contractors, labor rights, suppliers' workplace conditions, community living standards, and the rights of natives. Control measures have been developed and applied along with human rights management plans to keep risks manageable along with raising the management level to be better and quarterly follow-up on plan implementation and report to the relevant committees, for acknowledgment and comments as an assurance of maximum effectiveness in order to be efficient and achieve the required effectiveness. In 2012, PTT became a member of the United Nations Global Compact (UNGC) and disclosed operating information under the 10 Principles of the UNGC. In addition, PTT enrolled in the effectiveness assessment of operating outcomes on human rights organized by Corporate Human Rights Benchmark (CHRB) and was ranked in the 2nd quartile level of the Extractive industry group despite the more intense assessment methodology. PTT was also awarded the Outstanding Role Model Organization Human Rights Award 2023 in the State Enterprise sector by the Rights and Liberties Protection Department, Ministry of Justice for the 3rd consecutive year.

Significant Disputes with Stakeholders

This appears under Section 1: Business Operations and Performance, **"5.2 Legal Disputes."**

Policies and Guidelines for Stakeholders' Personal Data Protection

PTT attaches great importance to the protection of the personal data of all groups of stakeholders to ensure relevant stakeholders that PTT would protect and treat personal data under PTT's control under the Personal Data Protection Act B.E. 2562 (PDPA), which came into effect on June 1, 2022. PTT has established personal data protection policies and guidelines within the organization to ensure PTT's operations related to the personal data of various groups of stakeholders, including the personal data of customers, business partners, and business associates have regulatory procedures and appropriate, concise, consistent operational guidelines as required by laws. In addition, PTT personnel are to know how to treat personal data and be able to correctly perform their work under the laws, including the collection, use, disclosure, and security of personal data. "Privacy Center" has been set up on PTT Website <https://pttpdpa.pttplc.com/> to provide a channel for various groups of stakeholders who own personal data to know the details of personal data execution such as a Privacy Notice, which is a notification to the personal data owner to know the objectives, collection, use and disclosure of information, retention period, the rights of personal data owner. There are also channels for exercising privacy rights and channels for contacting PTT. Stakeholders can also contact PTT regarding the processing of personal data at the Data Protection Officer at pttdpo@pttplc.com

Disclosure and Transparency

Disclosure of information is a key transparency index of operation, a crucial factor for confidence among investors and stakeholders. PTT values accurate and precise information disclosure and creates numerous channels of disclosure so that all stakeholders can gain easy access towards information. It promotes awareness among directors, management and employees of the importance of information disclosure and transparent operations, and creates appropriate avenues for complaints while providing fair treatment to whistleblowers and those complained against as follows:



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Financial and Non-financial Reports

PTT discloses its sustainability reports and performance, taking into consideration all stakeholders' interests, covering Environmental, Social, and Governance (ESG) aspects, through the annual information disclosure form/ Annual Report (56-1 One Report) under "Driving Business towards Sustainability" and included information on the outcomes of sustainability implementation in Risk Management, Management's Discussion and Analysis (MD&A), and CG, as well as publicizing via PTT Website under Sustainability topic. The sustainability performance reporting was based on the Global Reporting Initiative (GRI) Standards, GRI 11: Oil and Gas Sector 2021, International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards (S1 and S2) of the International Sustainability Standards Board (ISSB), The United Nations Global Compact (UNGC), Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation of the World Economic Forum (WEF), and illustrating PTT's commitment to supporting the UN Sustainable Development Goals (SDGs). Furthermore, PTT applied the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) to report performance on climate change via IFRS S2. There was also an annual review of the report to validate the information by an independent external party continuously.

Investor Relations

Ever since PTT's privatization in October 2001 and share trading on SET in December 2001, the Investor Relations Department has centralized essential information to investors and shareholders, with financial data such as the quarterly performance and financial statements, quarterly Management's Discussion and Analysis (MD&A), corporate strategies, and outlooks of PTT, which are regularly, fairly, and thoroughly disclosed. Investors may directly contact Investor Relations at 0-2537-3518-9, e-mail: ptt-ir@pttplc.com,

and log on to the PTT Website at www.pttplc.com, which is regularly updated, for information in both Thai and English, which includes:

- Company information
- 56-1 One Report
- Information for common shareholders
- Information and activities for debenture holders
- Presentations and Webcasts
- Roadshow/ Conference
- Analyst Research
- Activity Calendar
- Code of Conduct for Investor Relations
- Major investment project information
- Policy and business direction statements by management
- Compliance with public policies
- Key plans
- Corporate Governance Policy
- Financial performance
- Non-financial performance
- Highlights of CSR activities
- Procurement
- Name and contact number of Investor Relations.

Through the years, PTT has valued disclosure of information that is accurate, complete, transparent, and comprehensive, as well as continual direct and indirect presentation of performance while keeping investors, shareholders, and relevant parties informed of its data. Highlights appear below:

- **Direct:** PTT regularly reports performance, capital budgets, and industry outlooks to analysts, institutional investors and employees at Quarterly Analysts' Meetings. In 2023, they were organized through physical meetings in parallel with virtual conferences (Microsoft Teams and Facebook live), in Thai and English, conference call; local and international roadshows/ conferences organized by securities companies and/or those directly contacted with IR; virtual conferences with analysts, institutional investors and/or related parties such as credit rating agencies. To increase communication channels and ease of access to information, continuous application of digital technology e.g. via PTTIR Line Chatbot to provide

information to analysts and institutional investors to access operating results, prices of oil, petroleum and petrochemical products, schedules of AGM and Analyst Meeting of PTT Group; dividend payment schedules of PTT Group; via response with autonomous text conversation; press meetings to discuss performance outcomes and investment projects; knowledge sharing on upstream and downstream businesses, cooperation of PTT Group via PTT Group ESG Day and PTT Group; Investor Day for Thai fund managers; participation in SET's Opportunity Day via Virtual Conferences (Microsoft Teams); global institutional investors quarterly meeting Digital Platform (SET Digital Roadshow) to inform investors and analysts of directions and opportunities of PTT business operations according to the new vision. In 2021 - 2023, the following key activities took place:

Activity	2021 (Times)	2022 (Times)	2023 (Times)
Analyst Meetings via Facebook Live/ Webex/ MS Teams	4	4	4
Conference Calls (presentations of quarterly performances, capital investment, and other key events (if any))	4	4	4
Domestic roadshows/ conferences (including provision of basic PTT business knowledge, and via Physical and Virtual Meeting)	14	12	9
International roadshows/ conferences (Including Virtual Meeting)	11	12	5
Company Visits (via Physical and Virtual Meeting)	69	65	70
Credit Rating Review	3	3	3
Press Meeting	3	2	2
Company visits by analysts and institutional investors	-	1	1
E-mails/ phone calls	10 - 12 times a day	10 - 12 times a day	10 - 12 times a day
Quarterly SET Opportunity Days and SET in the City	4	4	4
Participation in SET Digital Roadshows (organized by SET)	4	4	4
Minor investors' meetings with management and company visits	No common shareholder visit in 2021, due to COVID-19	Two debenture holder visits (2 groups) (August 23 - 25, October 4 - 6)	Two debenture holder visits (2 groups) (May 23 - 25, October 3 - 5)
		No common shareholder visit in 2022, due to COVID-19	One common shareholder visit (3 groups) (November 21 - 23)
Relations activities with debenture holders	12 (via online channel)	14 (3 via online channel)	16 (4 via online channel)



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- **Indirect:** PTT disclosed information regarding, performance, financial statements, and reports filed with SET. The PTT's SET reports can be found at www.set.or.th, www.pttplc.com and the "Happiness" magazine for debenture holders (via PTT Debenture Application).
- Investors and interested parties can also submit inquiries to Investor Relations at Tel. 0-2537-3518-9, e-mail at ptt-ir@pttplc.com, or through www.pttplc.com. In addition, PTT has constantly publicized news, business activities, operations, and project updates as well as addressing questions and facilitating contacts for the media and the public. In 2021 - 2023, the activities appear below:

Activity	2021 (Times)	2022 (Times)	2023 (Times)
E-mails	292	747	684
News/ photo releases	292	261	183
Press conferences	4	2	1
Media visits to operations (domestic and international)	1	3	3
Welcoming and providing information to visiting agencies for assorted purposes	-	5 groups (168 persons)	18 groups (594 persons)

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4) The Use of Inside Information

PTT has defined guidelines in its CG handbook for all employees on best practices, for the use of inside information and guarding of confidential information. They must guard PTT's inside information or confidential information not yet publicly available, and must not share inside information learned during the course of their duties with other parties or use it to fraudulently seek profit or to cause damage to PTT's interests.

In addition, PTT has a policy for the Board, management, and personnel with the privilege of inside information to refrain from insider trading of PTT stocks as well as those of PTT Group. If necessary, they must report such trading to the Company Secretary at least 2 days in advance. All PTT personnel will be reminded to refrain from using inside information through PTT's contact channels, in particular, upon important events such as capital increases, debenture issuance and etc.

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5) Conflict of Interest

PTT requires information disclosure to prevent conflicts of interest and illegal, improper activities. Under the Board's policy, business decisions made by management and employees must be solely in PTT's best interests. All staff must not only avoid engaging in financial and other relationships with external parties that would lead to financial losses for PTT or a conflict of loyalty or interest but also not compromise the efficiency of business operations. Those staff with interests or related businesses that may require PTT's reviews and decisions must report their relationships and connection with potential conflicts of interest. PTT disallows such connected persons from exercising their authority for and involvement in such transactions.

Reporting Transactions of Potential Conflicts of Interest with PTT

PTT has required the directors, management, and all employees to disclose annually regarding potential conflicts of interest and suspected conflicts through a specific disclosure form of interest with PTT. In addition, any approval of such items must not contain special conditions or specifications that are out of the ordinary, which are under PTT's internal controls. PTT's Office of Corporate Audit and the Audit Committee have been entrusted with the monitoring and resolution of issues related to conflicts of interest.

Reporting Vested Interests of Directors, Management, and Related Parties

In the first quarter of 2023, the Board reported a form for reporting the vested interests of directors as basic information to manage the vested interests of directors and senior management. The directors and management are to report such matters every year and with every change in circumstances. The Company Secretary is to compile and submit the copy to the Chairman of the Board and the Chairman of the Audit Committee to check and manage conflicts of interest. During 2023, however, no such cases have arisen.

In addition, newly appointed directors must report their vested interests with directors, executives, and related persons and notify the Company Secretary for further collection and submission to the Chairman of the Board and the Chairman of the Audit Committee within 7 days.

Reporting Changes in Share Portfolios

As part of the oversight of inside-information measures, all PTT directors and management, including their spouses and children under the legal age, must report any changes in their PTT share ownership to the SEC under Article 59 of the Securities and Exchange Act B.E. 2535 (1992) and its amendments within 3 days of the date of sale, purchase, disposal, or receipt of such shares. PTT defines a policy of disclosing or reporting the sale/ purchase/ disposal/ receipt of such shares/ and changes in share ownership of the directors and management to the monthly Board meeting, contained in advance as a regular agenda item.

Furthermore, a week before the closing of the quarterly and yearly financial statements, Office of President issues a letter regarding Insider Trading to the directors, management, or units and issues a letter regarding, forbidding to disclose such insider information to external parties or unrelated parties, and forbidding to buy or sell PTT shares within 45 days (for quarterly financial statements) and 60 days (for the annual financial statements) of the last effective date of the financial statements to SET, in other words before the financial statements are publicized to prevent insider trading. Directors, management, and personnel with the privilege to inside information must not trade securities or derivatives related to securities until after the period of 24 hours (1 day) from the time the information is disclosed to the public.

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Filing of Assets and Debts to the National Anti-Corruption Commission (NACC)

Under the Organic Act on Anti-Corruption B.E. 2561 (2018), PTT's directors and top executives, including directors and top executives in the companies where PTT holds more than 50% shares, are required to file a list of their own assets and debts, including those of their spouses both registered and unregistered, living together as husband and wife, and children under the legal age, to the NACC to verify the transparency of assets and liabilities. PTT has reported in the Online Declaration Registration System: ODRS of the NACC when there is a change in appointment or transfer of those responsible for filing assets and liabilities. PTT issues a reminder to each of the directors and senior management as required through a letter, direct notification, and a notification system.

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Declaring Vested Interests at Meetings

The Board of Directors has established a policy on Vested Interests in every Board meeting and any other meetings. The Chairman reminds directors to conform to the policy on conflicts of interest on all agenda items, which requires those with vested interests to declare themselves to the meeting to abstain from voting or giving any views so that other meeting attendees have the opportunity to consider, analyze and criticize without the influence of stakeholders. In 2023, there were 14 agendas to inform the Chairman of the Board (a total of 23 meetings).

Review of Connected Transactions

The Audit Committee reviews related transactions and those with potential conflicts of interest that could undermine PTT's businesses to ensure conformance to the law and SET's criteria, all of which must be reported to the Board for approval.

6) Right of Shareholders

PTT has defined guidelines on the rights of shareholders and equitable and fair treatment and has a written policy and guidelines for the rights and equitable treatment of shareholders for directors, management, and employees to comply with PTT's "Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook".

7) Anti-Fraud and Corruption

PTT is committed to running its businesses with integrity, transparency, fairness, and adherence to the CG Code, and resisting all forms of Fraud and Corruption, direct or indirect. Anti-Fraud and Corruption Operations were initiated with continuous improvement as follows:

- PTT prepared its annual work plan in line with the National Strategy (2018 - 2037), which aims to balance and develop the public administration system to be transparent and free from corruption and misconduct. PTT joined forces through PTT's Corporate Governance and Anti-Fraud and Corruption strategies aiming to elevate PTT Group Sustainability with Business Integrity, adhering to transparent business management under Corporate Governance, Risk Management, Anti-Fraud and Corruption, Adequate Control and compliance with laws, rules, and regulations.
- PTT realizes that fraud and corruption are critical problem that causes damage to the country. It is thus important to integrate work and develop Anti-Corruption networks with government and private agencies to push forward the fight against fraud and corruption in a concrete manner through various cooperation such as signing of Memorandum of Understanding (MOU) on Driving Good Corporate Governance among the Office of the National Anti-Corruption Commission (NACC), the Securities and Exchange Commission (SEC), Thai Institute of Directors Association (IOD) and 51 state enterprises, the establishment of PTT's Anti-Corruption Operations Center in State Enterprises, joining National Anti-Corruption Day and International Anti-Corruption Day, participating in discussions to exchange ideas in various forums organized by public and private sectors, etc.

- In 2012, PTT joined the United Nations Global Compact (UNGC) to show its desire to apply to its business the principles of human rights, labor rights, environmental preservation, and Anti-Corruption at the international level.

PTT has presented an update of its compliance with the 10 universal principles of UNGC on PTT Website www.pttplc.com under Section Sustainability, Subheading: Sustainability Governance, Topic: Sustainability Network.



- PTT enlisted in the declaration of intention to join the Thai Private Sector Collective Action Against Corruption (CAC), an endeavor of IOD with the support of the government and NACC. As one of the first 27 companies to do so, PTT underwent the certification process and became a certified member in 2014. PTT also won approval for CAC recertification for a third term on March 31, 2021.
- Since 2014, PTT has begun enforcing PTT's and PTT Group's Anti-Corruption Policies. The policies were revised in 2019 to be PTT's and PTT Group's Anti-Fraud and Corruption Policy, containing the essence and practice in line with the laws, practices, and standards of leading companies. In 2023, improvement was made to cover related policies on hiring state officers for implementation clarity and raise awareness among employees not to use such channels in return for any benefit or create a conflict of interest.

- PTT's Anti-Fraud and Corruption Policy was defined as part of the Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook, and PTT Group's Anti-Fraud and Corruption Policy as a part of PTT Group Way of Conduct so that PTT affiliates can act the same way and these will drive to companies achieve synergy under the investment objectives.

Details of PTT's and PTT Group's Anti-Fraud and corruption policies are as shown in https://www.pttplc.com/uploads/CG/PTTGroupAnti-FraudandCorruptionPolicy2022_EN.pdf



Details of PTT's Anti-Fraud and Corruption Policy are as shown in https://www.pttplc.com/uploads/CG/PTTAntiFraudandCorruptionPolicy2023_EN.pdf



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- PTT declared its “No Gift Policy” for any festive period since 2015 to present and enforced practical guidelines under PTT Group’s policy on gifts, entertainment, or other benefits to establish a higher standard for business practices in the hope of having all employees do their best without expecting benefits. To this end, a letter was sent to business partners and external agencies, and signboards were put up on the premises of PTT along with assorted PR channels. PTT was the prototype company of Thailand to truly enforce this policy.
- PTT has developed a Fraud and Corruption Risk Assessment Manual for all units to use as a guideline for fraud and corruption risk assessment in their work processes (Process Level) in order to have an adequate and appropriate internal control process and set to be reviewed regularly.
- PTT places great importance on conducting business based on transparency, fairness, accountability, and compliance with the law, an effective risk management and internal control system. The third-party screening program has thus been set up for auditing and supervising the transparency of transactions with third parties, to create a standard for examining the qualifications of those who enter into transactions with PTT to be rigorous and appropriate. In 2023, PTT promulgated the criteria and manual for auditing and supervising transparency in transactions with third parties under the blacklist criteria to create a rigorous and appropriate standard for examining the qualifications of those who enter into transactions with PTT.
- PTT communicates its Anti-Fraud and Corruption Policy and guidelines to its subsidiaries, associates, and other PTT-controlled companies, business partners, and stakeholders as well as the public through assorted channels including letters, e-mails, website, PTT intranet, seminars, activities and exhibitions so that all stakeholders may acknowledge and conform to PTT’s guidelines.

- PTT communicates with its employees and provides training to ensure their understanding of Anti-Fraud and Anti-Corruption measures, PTT’s expectations and disciplinary actions for non-compliance. The training includes an orientation session, morality courses, and e-Learning, including supports its executives’ and employees’ participation in public courses on Anti-Fraud and Anti-Corruption.
- PTT applies information technology as a means for its personnel to express their transparency such as conflict of interest report system, e-Trading, which shows pre-order trading of PTT and PTT Group for preventing insider trading, and a reporting system on receiving/ offering customary gifts, assets, and others benefit under the No Gift Policy; PTT personnel who have to receive and cannot return a gift must report and give it to the Good Governance and Corporate Ethics Department to collect and donate for public use.
- Oversight and monitoring of performance:
 - The Board is to supervise PTT to command an efficient system for Anti-Fraud and Corruption to ensure that management recognizes and values Anti-Fraud and Corruption and abides by Anti-Fraud and Corruption measures.
 - The Audit Committee reviews the efficiency and effectiveness of corporate governance, risk management and internal control processes; financial reporting, and other procedures concerning Anti-Fraud and Corruption measures to ensure such measures are adequate and effective. The committee also regularly reports internal audit outcomes regarding Anti-Fraud and Corruption measures to the Board and provides best practices to the Board and the executives.
 - The Corporate Governance and Sustainability Committee endorses objectives, goals, strategies, and management framework and grants Anti-Fraud and Corruption Policy and implementation directions.

The committee annually provides recommendations and guidelines, monitors, and assesses performance, and steers and advocates risk management practices concerning Anti-Fraud and Corruption and process-level corruption by assessing fraud and corruption risk and reviewing Anti-Fraud and Corruption measures for adequacy and suitability.

- Executives establish risk assessment for business processes that may lead to corrupt practices, review the efficiency and effectiveness of internal control processes and measures, and personify proper behavior as well as communicating it to all employees and related parties.
- PTT establishes procedures for maintaining auditable documents and records to confirm the accuracy and suitability of financial reports. The internal control of accounting processes and information storage is audited to verify the effectiveness of Anti-Fraud and Corruption processes and ensure that the entry of financial items is well-evidenced for audit.
- The Office of Corporate Audit reviews items of occurring corruption, and corporate efficiency for managing risks arising from corporate corruption and those at the operating level. The office also reviews business ethics principles and the code of conduct for executives and employees. It reviews actions and reports to the Audit Committee and top executives immediately when encountering items or actions that could undermine PTT’s performance outcomes, including fraud.

8) Disciplinary Measures for Non-Compliance with Policies, Regulations and Guidelines

- Measures, scope, and tools for whistleblower protection:
 - PTT’s HR administration process echoes its commitment to Anti-Fraud and Corruption measures. Although refusal to take part in fraud and corruption may deprive PTT of business opportunities, its policy is not to demote, punish, or harm those who do so.
 - PTT’s employees should not ignore actions in potential conflicts with Anti-Fraud and Corruption measures. PTT has established channels for whistleblowing and the protection of whistleblowers or those who need advice about conformance to Anti-Fraud and Corruption measures.
 - PTT has established rules on “complaint-filing and whistleblowing on corruption and non-compliance with laws and corporate regulations” to define applicable criteria and guidelines that are explicit, transparent, fair and uniform throughout the corporation. Protective measures and fair treatment are in place for whistleblowers or those who provide information.
- Punishment
 - PTT has established a suitable and fair process for punishing violators of Anti-Fraud and Corruption measures. Any violation of this policy, direct or indirect, will be called for disciplinary review under PTT’s regulations, consisting of fact-finding, investigation, punishment, and appeal. They could also lead to punishment by law. Employees must therefore master and strictly conform to the Anti-Fraud and Corruption Policy in every step of their works.



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6.2 Code of Conduct

Code of Conduct and Code of Business Ethics

PTT has its written policy and a code of conduct included in the “Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook” (CG Handbook), based on international standards. The handbook compiles the format, scope of standard behaviors, and actions that the directors, management, and employees must comply with during the course of business and in their duties with ethics, integrity, fairness, and equality. The code maintains PTT’s image as an organization of sustainable growth. Supervisors are responsible for the monitoring and promotion of CG compliance among their subordinates. Violators of the code are subject to disciplinary action.

The essential aspects of the code are included below:

1. Respect and compliance with laws and regulations and human rights principles
2. Anti-money Laundering
3. Political neutrality
4. No vested interests or conflicts of interest
5. Maintaining information confidentiality and refraining from using inside information for personal gain
6. Responsibility to customers and their needs
7. Free and fair business competition
8. Transparent procurement and fair treatment of business partners (suppliers)
9. Community, Social and Environmental responsibility
10. Support of employees’ rights and promotion of their engagement
11. Stringent, transparent, and equitable observance of contracts/ agreements with creditors
12. Internal control system and efficient internal audit
13. Guidelines for receiving and offering customary gifts, assets, and other benefits
14. Safety, Health, and the Environment
15. Respect for intellectual properties and proper application of information and communication technology
16. Responsible communication

Corporate Governance, Ethical Standards, and Code of Business Ethics can be found at https://www.pttplc.com/uploads/CG/Publication/CGHandbookforOneReport/PTTCGHandbook_Revision5.2_EN.pdf



6.3 Milestone Development on the CG Policy, Guidelines, and System during the Year

In 2023, the Board approved the review and revision of the essence of the CG Policy, guidelines, monitoring system, and the CG Handbook as follows:

- Updating the CG Handbook, Revision 5th, with significant improvements as follows:
 - Revision of PTT’s Anti-Fraud and Corruption Policy to cover policies related to hiring government officials and add practices on hiring or appointing government officials for implementation clarity and raise awareness among employees not to use such channels in return for any benefit or cause conflicts of interest, which is a channel of fraud and corruption.
- Updating operational governance policies to comply with laws, regulations, and related international practices, e.g. ISO 37301:2021 Compliance Management Systems, and to support PTT’s new business operations.

Other Implementation under CG Code

The survey conducted by the Thai Institute of Directors Association (IOD) under the Corporate Governance Report of Thai Listed Companies for 2023 ranked PTT performance on corporate governance as “Excellent”, with an overall score and by category higher than the average score of 782 other companies surveyed and higher than the average score of listed companies with a market value of not less than THB 10,000 million. The survey was based on publicized information in 2023.

PTT’s other guidelines which might be useful to other listed companies are

- PTT requires that independent directors must consist of at least half of the directors in office.
- PTT limits the number of listed companies in which each director can hold positions in no more than 3 companies.
- The Corporate Governance and Sustainability Committee Meeting No. 4/2023 on December 19, 2023, and the PTT Board Meeting No. 12/2023 on December 21, 2023, considered PTT’s current Corporate Governance Policy and operations, and they were of the opinion that PTT’s policy, measures, and operational processes are comparable with the “Corporate Governance Principles for Listed Companies 2017” (CG Code) prepared by SEC, and the “Corporate Governance Principles and Guidelines for State Enterprises 2019” prepared by the State Enterprise Policy Office (SEPO), Ministry of Finance. PTT also commanded short-term and long-term plans to develop PTT’s CG system to suit the business growth directions and trends of other international leading companies.

In 2023, PTT complied with CG principles but may not cover the criteria under the Corporate Governance Report of Thai Listed Companies regarding the composition of the Board, which should have at least 2 female directors. PTT has placed importance on the diversity of its board. Directors must possess such qualifications as experienced and expert from diversified occupations essential for PTT’s business operations in a balanced manner such as those who have knowledge in energy/ petroleum business, laws, accounting/ finance. PTT also pays attention to differences in society, nationality, gender, religion, belief, and culture. The Nominating Committee has set a target for recruiting at least 2 female directors, in addition to Mrs. Phongsaward Neelayodhin, PTT’s female director in 2023.

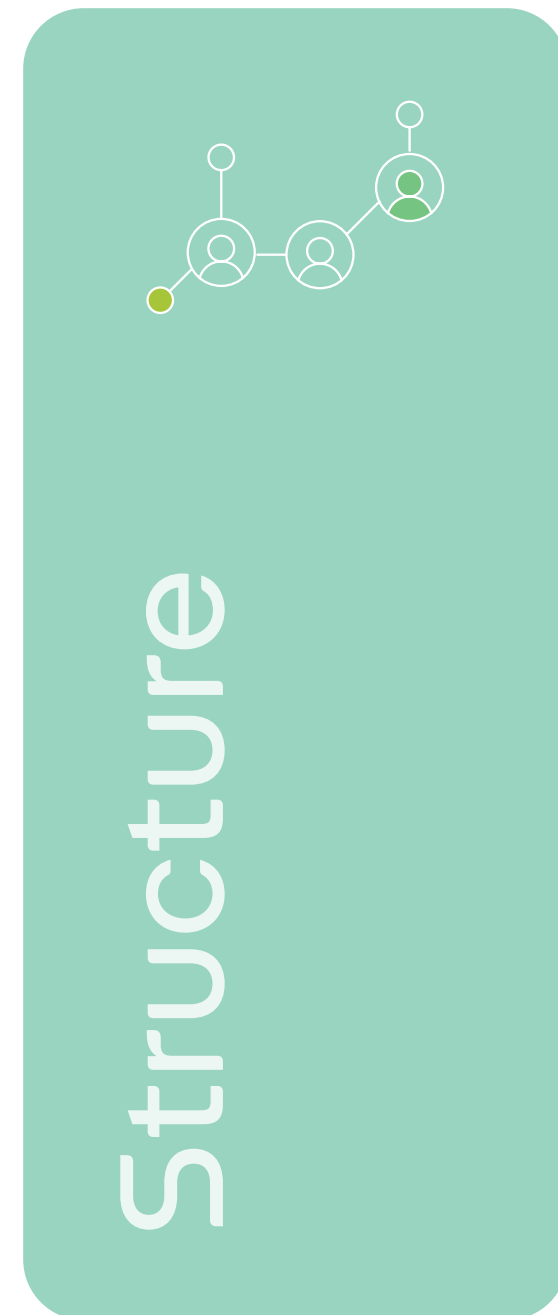
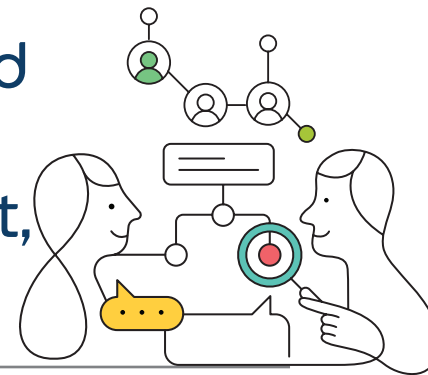
(Meeting attendance of the specific committees is detailed under Section 2: “8.1.2 (1) Board Meetings”).



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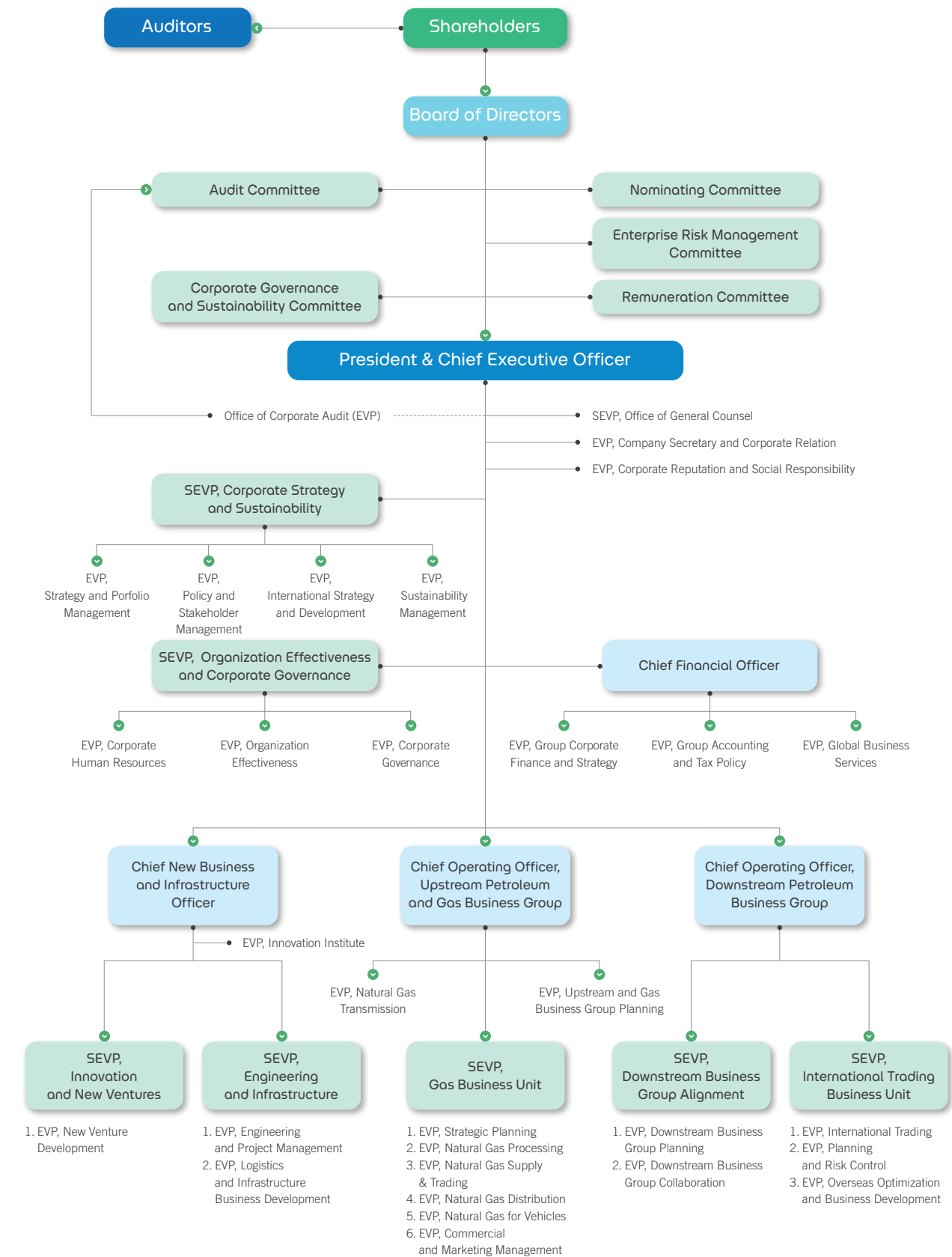
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7. Governance Structure and Key Data on the Board of Directors, Specific Committees, Management, Employees and Others



7.1 Governance Structure

PTT's management structure as of December 31, 2023, comprises the Board of Directors and five specific committees to consider significant matters: Audit Committee, Nominating Committee, Remuneration Committee, Corporate Governance and Sustainability Committee, and Enterprise Risk Management Committee. The President & CEO (President) is the top executive who manages PTT's business groups through 3 groups of 55 management committees.



Remark: EVP = Executive Vice President



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7.2 Board of Directors

7.2.1 Composition of the Board

Under PTT's Articles of Association, the Board consists of:

- 5 - 15 persons
- A minimum of 3 independent directors (PTT's CG requires that independent directors account for no less than half of the Board.)
- At least 1 director must be knowledgeable in accounting and finance.

According to the certification of the Ministry of Commerce dated January 3, 2024, the PTT Board consisted of 15 directors as follows:

- 14 non-executive directors (93.33% of the entire Board)
- 12 independent directors, which exceeds half of the Board (80% of the entire Board)
- 1 executive director
- 1 female director

7.2.2 Information of the Board and Authorized Directors

The Board of Directors as of December 31, 2023, consisted of:

No.	Name	Position	Date of Appointment
1.	Mr. Chatchai Phromlert	Independent Director/ Chairman of the Board (Appointed as Chairman effective from December 23, 2023)	December 1, 2023 (First term)
2.	Mr. Krishna Boonyachai	Independent Director/ Chairman of the Audit Committee (Expertise and experience to review and ensure the accuracy and credibility of financial statements)	July 3, 2020 (First term) April 12, 2023 (Second term)
3.	Mr. Payong Srivanich	Independent Director/ Chairman of the Nominating Committee	April 9, 2021 (First term)
4.	GEN. Teerawat Boonyawat	Independent Director/ Chairman of the Remuneration Committee	April 11, 2019 (First term) April 8, 2022 (Second term)
5.	Mr. Jatuporn Buruspat	Independent Director/ Chairman of the Corporate Governance and Sustainability Committee	April 9, 2021 (First term)
6.	Dr. Prasert Sinsukprasert	Director (Appointed as Chairman effective from November 16, 2023 - December 22, 2023)	December 26, 2022 (First term) April 12, 2023 (Second term)

No.	Name	Position	Date of Appointment
7.	Professor Dr. Thosaporn Sirisumphand	Independent Director (Appointed as Chairman effective from November 18, 2020 - November 15, 2023)	November 6, 2020 (First term) April 8, 2022 (Second term)
8.	Associate Professor Dr. Narongdech Srukhsosit	Independent Director/ Member of the Audit Committee	October 8, 2021 (First term) April 12, 2023 (Second term)
9.	Air Chief Marshal Chanon Mungthanya	Independent Director/ Member of the Audit Committee	April 12, 2023 (First term)
10.	Mr. Chansin Treenuchagron	Independent Director/ Member of the Nominating Committee/ Member of the Enterprise Risk Management Committee	May 14, 2022 (First term)
11.	Mr. Lavaron Sangsnit	Director/ Member of the Nominating Committee/ Member of the Remuneration Committee	April 12, 2023 (First term)
12.	Mr. Phongsthorn Thavisin	Independent Director/ Member of the Remuneration Committee	May 9, 2023 (First term)
13.	Assoc. Prof. Dr. Chayodom Sabhasri	Independent Director/ Member of the Corporate Governance and Sustainability Committee/ Member of the Enterprise Risk Management Committee (Expertise and experience to review and ensure the accuracy and credibility of financial statements)	April 9, 2021 (First term)
14.	Mrs. Phongsaward Neelayodhin	Independent Director/ Member of the Corporate Governance and Sustainability Committee	December 1, 2023 (First term)
15.	Mr. Auttapol Rerkpiboon	Director and Secretary to the Board (President & CEO)	May 13, 2020 (First term) April 9, 2021 (Second term)

Remarks:

In 2023, the Board/ the Annual General Meeting (AGM) appointed new directors to replace those who had either completed their terms and/or resigned as follows:

- No. 1: Mr. Chatchai Phromlert was appointed an independent director with effect from December 1, 2023, replacing Mr. Danucha Pichayanan, who resigned with effect from October 9, 2023, and was appointed Chairman of the Board effective from December 23, 2023.
- No. 9: Air Chief Marshal Chanon Mungthanya was appointed an independent director with effect from April 12, 2023, replacing POL. GEN. Rungroj Sangkram, who retired by rotation at the 2023 Annual General Meeting (AGM).
- No. 11: Mr. Lavaron Sangsnit was appointed a director with effect from April 12, 2023, replacing Mr. Phongsthorn Thavisin, who retired by rotation at the 2023 Annual General Meeting (AGM).
- No. 12: Mr. Phongsthorn Thavisin retired by rotation at the 2023 Annual General Meeting (AGM) on April 12, 2023, and was appointed a director with effect from May 9, 2023, replacing M.L. Chayotid Kridakon who resigned effective from March 22, 2023. His status has been changed to an independent director effective October 19, 2023.
- No. 14: Mrs. Phongsaward Neelayodhin was appointed an independent director with effect from December 1, 2023, replacing Mr. Krisada Chinavicharana who resigned effective from August 31, 2023.



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7.2.3 Authorities, Duties, and Responsibilities of the Board

Authorities of the Board

- The Board is authorized to supervise and oversee PTT's management's compliance with applicable laws, objectives, articles of association, and resolutions of shareholders' meetings.
- The Board is authorized to select one director to serve as Chairman and may select a Vice Chairman if appropriate.
- The Board is authorized to appoint the President & CEO who has been nominated under the nomination process and procedures under relevant laws and regulations. The President & CEO shall be a director and secretary to the Board of Directors.

Duties and Responsibilities of the Board

- The Board is authorized to supervise and manage PTT under PTT's Articles of Association to ensure that PTT abides by laws, objectives, articles of association, and resolutions of shareholders' meetings in addition to policies or policy guidelines.
- The Board shall emphasize and devote time to the formulation of the corporate vision, mission, strategies, policies, and business plans. In addition, they shall pursue helpful information for such formulation; review potential risks; and ensure management's ability to transform such vision, mission, strategies, policies, and key work plans into efficient and effective fruition, complete with competitiveness and proper performance results with due regard for long-term impacts. PTT must conduct business with ethics, respect shareholders' and stakeholders' rights with responsibility, steer good corporate citizenship with corporate resilience, and encourage innovation within the company. The Board shall review the corporate vision, direction, and strategies annually.
- The Board shall review and endorse the company's strategies, policies, and business plans in addition to objectives, financial targets, and budgets as well as key resource allocation to enable objective and goal achievement.

- The Board shall regularly provide oversight, control, monitor, and review of management performance to ensure that they are performing according to the approved business plans in line with the company's direction and strategy at least annually. To this end, the Board shall advocate corporate culture to achieve the mission, objectives, targets, strategic plans, and business policies.
- The Board shall review and approve significant transactions that create obligations for PTT Group in line with laws, articles of association, policies, regulations, or operational authority, including connected transactions and key transactions. To this end, transaction approval processes shall comply with legal requirements with an emphasis on the optimal interests of shareholders and stakeholders as a whole. The Board shall oversee and resolve potential conflicts of interest and connected transactions.
- The Board shall ensure that the company's accounting systems, financial reporting, and account auditing are reliable and that the assessment processes for internal control and internal audit are effective and efficient.
- The Board shall establish clear and written policies on principles and business approaches for the Board, management, and employees, including the Corporate Governance Policy, Ethical Standards, Code of Business Ethics, and Internal Control Policy. The Board shall ensure communication among the Board, management, and employees so that they all may be kept thoroughly informed and apply with true understanding; as well as monitor and assess the implementation while regularly reviewing policies and implementation effectiveness.
- The Board shall ensure that potential risk factors are considered and the risk management policies for the whole of PTT are established with regular review. The management is obliged to implement the policies and report the results thereof regularly to the Board. The Board shall review and evaluate the risk management processes and effectiveness of risk management by emphasizing the potential signs or irregularity while seeking potential business opportunities arising from such risks.
- The Board shall establish an appropriate remuneration system or mechanism for management to motivate both short-term and long-term performance.
- The Board shall conduct a self-assessment and the assessment of the performance of each specific committee annually to examine its own performance and disclose the results in the 56-1 One Report.

- The Board shall assign authority and responsibility to the President & CEO for daily management of PTT's operations, ensuring that the operations are alignment with strategic plans, business directions, objectives, policies, and budget approved by the Board. In addition, the President & CEO's performance shall be appraised on a regular basis.
- The Board shall review and approve the remuneration of the President & CEO in keeping with PTT's short-term and long-term performance outcomes.
- The Board shall provide appropriate communication channels for shareholders and the disclosure of information shall be monitored to ensure high standards of accuracy, clarity, transparency, and reliability.
- The Board shall be leaders and role models for excellent performance, compliance with laws, and in line with PTT's principles of good corporate governance and encourage PTT's culture underlined by the commitment to business ethics.
- When the company gains sufficient profits and does not retain cumulative loss, the Board shall propose the distribution of dividends for shareholders' approval at the Shareholders' Meeting.
- The Board shall set up an appropriate regulatory framework for digital technology development in line with changing internal and external factors, including the use of information technology to increase opportunities and develop operations to achieve PTT's key goals and objectives.
- The Board shall consider and approve the master plan and annual action plan on digital technology development.

The Board's Additional Authorities Include:

- Approve long-term investments, such as common stocks, preferred stocks, bonds, debentures, warrants, or other financial instruments.
- Approve financial support, including funds, common stocks, preferred stocks, loans, or others as appropriate for PTT-invested companies.
- Approve debt financing and issuance of debt instruments such as debentures.
- Approve the annual budget.
- Approve procurement and other related matters if the limits exceed the President's approval authority.

- Consent to employ, appoint, transfer, or promote employees serving as senior executive vice presidents or equivalent upward, and consent to appoint, transfer, or promote employees serving as executive vice presidents or equivalent upward.
- Appoint the Company Secretary.

Authorized Director to Sign and Bind for PTT

According to PTT's Articles of Association, as of January 3, 2024, the directors whose signatures are authorized to sign and bind PTT are either (1) Mr. Auttapol Rerkpiboon, President & CEO, to sign and affix PTT's seal, or (2) Mr. Jatuporn Buruspat and Mr. Phongsthorn Thavisin, jointly sign and affix PTT's seal.

Appointment and Dismissal of Directors

1. The Board consists of 5 - 15 persons who are appointed at shareholders' meetings. In addition, the Board consists of a minimum of 3 independent directors and at least half of the directors must reside in the Kingdom. At least 1 of them must be knowledgeable in accounting and finance. The Nominating Committee also seeks to maintain an appropriate balance and consider board diversity including expertise, skills, and qualifications without discrimination of gender, race, or religion in the appointment. All directors must have qualifications as specified by law and the Articles of Association. Since 2004, the Board has decided that independent directors must consist of at least half of the Board, a requirement that remains effective until the present. As of December 31, 2023, the Board had 12 independent directors, all of whom resided in Thailand. 4 directors are experts in accounting and finance, namely: Mr. Krishna Boonyachai, Assoc. Prof. Dr. Chayodom Sabhasri, Mr. Payong Srivanich, and Mr. Chansin Treenuchagron.
2. The shareholders' meetings are to appoint qualified directors whom the Nominating Committee has elected and proposed to the Board under the following criteria:
 - (1) Each shareholder has one vote per share held.
 - (2) Each shareholder exercises all votes applicable under (1) in electing one or several persons as directors, but may not allot the votes to any person at any number.



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- (3) Candidates with the highest number of votes are to be appointed directors up to the number required at the meeting. If candidates get equal votes, which makes the number of successful candidates exceed that of directors to be elected, the Chairman of that meeting will cast the decisive vote.
3. At the AGM, one-third of the directors or if the number is not a multiple of three, then the number nearest to one-third - will retire from directorship. The directors retiring in the first and second year after PTT was listed are to be drawn by lots. For subsequent years, those with the longest terms are to retire.
 4. If a director's seat is vacated for reasons other than term completion, the Board may elect a qualified person without the prohibitions stipulated by PTT's Articles of Association to fill the vacancy at the next Board meeting unless the remaining term of the vacated director is less than two months. The acting director must secure at least three-quarters of the votes of the remaining directors. He or she can also stay in office only for the remaining term of the predecessor.
 5. Any director who wishes to resign from directorship must tender his or her resignation to PTT. Such resignation will take effect from the date the resignation letter reaches PTT.
 6. For voting to remove any director from the directorship before the completion of his or her term, a three-quarter vote of eligible shareholders present at the meeting is required as well as at least half of the total number of shares represented by the eligible shareholders present at the meeting.

Qualifications of Directors

Directors must be duly qualified, without the prohibitions stated in the Public Company Limited Act B.E. 2535 (1992) and the Standard Qualifications of State Enterprise Directors and Officials Act B.E. 2518 (1975) and its amendments, as well as relevant Cabinet resolutions, including:

- Must not be over 65 years of age.
- Must not hold more than three directorships in state enterprises or juristic persons in which state enterprises hold shares, including appointments due to their positions and those due to acting assignments.

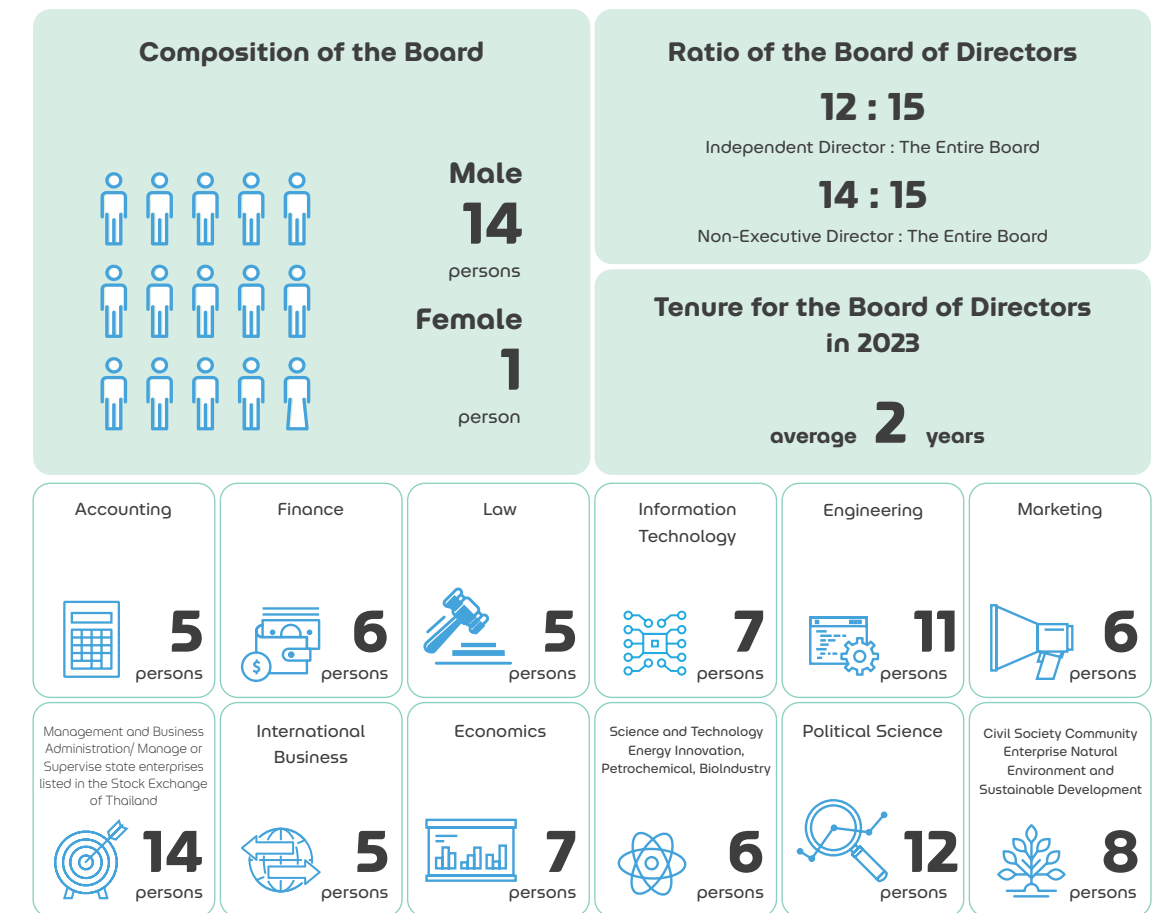
- Independent directors must command independence as required by SET's Notification on the Qualifications and Scope of Work of the Audit Committee.
- Must not be sentenced to imprisonment, except for violations of the law by negligence or a petty offense.
- Must not be a political official, except for holding a director position under a provision of law.
- Must not hold any position in a political party or be an official of a political party.
- Must not be expelled, dismissed, or removed from a position because of malfeasance.
- Must not be a shareholder of such state enterprise or a shareholder of a juristic person in which such state enterprise holds shares. Exceptions apply to directors of state enterprises who are not government officials, government employees, or wage earners with positions or position salaries of centralized, provincial, or local government, or other government agencies. Also, such state-enterprise directors can hold no more than 0.5% of the paid-up capital of the state enterprise in which they serve as directors or juristic persons where the state enterprise in question holds shares.
- Must not hold any position in a juristic person in which such state enterprise holds shares, except where entrusted by the Board of Directors of such state enterprise to hold a directorial position or other position in the juristic person in which such state enterprise holds shares.
- Must not be a director or an executive or person with authority over the management or an interest in a juristic person who is a concessionaire or joint-venture party, or having an interest in the undertakings of such state enterprise, except for being a chairperson of the Board of Directors, director or executive by entrustment of such state enterprise.

In addition, the Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook (Revision 5th), defines the term holding of a director with the following limits:

1. A maximum of three directorships in the state enterprises/ juristic persons of which the state enterprise is a shareholder.
2. A maximum of three directorships in SET-listed companies provided that the directorships under 2. do not contradict 1. Such directorships in 1. and 2. must not exceed five.

Besides, independent directors and members of specific committees shall serve no more than nine consecutive years.

In compliance with the law, PTT ensures that at least one-third of the Board is listed in the Director's Pool of the Ministry of Finance. As of December 31, 2023, 14 out of 15 PTT directors' names were listed in the Director's Pool.



7.3 Specific Committees

PTT's Specific Committees consist of:

(1) The Audit Committee

Each quarter, the Audit Committee, together with the Chief Financial and Accounting functions and the external auditor (EY Office Limited), reviews PTT's financial reports. The Board is accountable for PTT Group's consolidated financial statements as well as other financial information presented in the annual report. The financial reports are prepared under generally accepted accounting principles and are audited and certified by Mr.Kittiphun Kiatsomphob, C.P.A. No. 8050, of EY Office Limited. Material information, financial and non-financial, is accurately, completely, and consistently disclosed.

The Board approved the appointment of the Audit Committee on October 1, 2001, which consisted of directors with the qualifications specified by SEC and SET laws. The committee must consist of at least three directors. As of December 31, 2023, it consisted of three independent directors as follows:



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Name	Position in the Audit Committee	Position in the Board
1. Mr. Krishna Boonyachai	Chairman	Independent Director
2. Associate Professor Dr. Narongdech Srukhsosit	Member	Independent Director
3. Air Chief Marshal Chanon Mungthanya	Member	Independent Director

The Executive Vice President, Office of Corporate Audit served as secretary.

Remarks:

1. Mr. Krishna Boonyachai was appointed member with effect from July 3, 2020 and appointed Chairman with effect from April 12, 2023 (replacing POL. GEN. Rungroj Sangkram who was Chairman from June 17, 2021 to April 12, 2023.) He commands sufficient expertise and experience to review and ensure the accuracy and credibility of financial report.
2. Associate Professor Dr. Narongdech Srukhsosit was appointed member with effect from December 1, 2023 (replacing Associate Professor Dr. Chayodom Sabhasri who was a member from May 20, 2021 to November 30, 2023).
3. Air Chief Marshal Chanon Mungthanya was appointed member with effect from April 12, 2023.

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Duties and Responsibilities

1. Review and reassess the adequacy of the Audit Committee Charter at least one time annually in accordance with the PTT strategic objectives. Final approval of the Charter resides with PTT's Board of Directors.
2. Review the effectiveness and efficiency of governance, risk management, and control processes.
3. Review and ensure that PTT financial statement is appropriate and in accordance with the accounting standard.
4. Review and ensure that PTT business processes are in line with the Securities Law, the Stock Exchange's regulations, policy, rules, ordinances, the Articles, the Cabinet Resolutions, and the relevant laws.
5. Review and ensure that PTT internal audit system is appropriate including the sufficiency of internal control budget, resources, and organizational independence of the internal audit activity.
6. Consider any connected or Conflict of Interest transactions or fraud occurrence that may affect PTT business accordance with the Stock Exchange's regulations and rules.
7. Review and ensure that the business processes are in accordance with the State Enterprise Assessment Model (SE-AM), including monitoring the implementation of the relevant observations/ recommendations.
8. Recommend to PTT's Board of Directors, the Chief Audit Executive appointment, removal, and performance.
9. Recommend to PTT's Board of Directors, the external auditor nomination, appointment, or termination including its fee.
10. Coordinate with the external auditor and may propose to review or assess any significant accounting and reporting issues.
11. Receive complaints through the channels and methods identified in PTT's Rule on Complaints and Whistleblowing against Fraud, Malpractice, Misconduct, and Non-Compliance with Laws or Organizational Regulations.
12. Report to PTT's Board of Directors the Audit Committee performance at least one time quarterly. For the fourth quarter, the Audit Committee's Annual Report must be prepared and submitted to responsible of Ministry of Government agencies and the Ministry of Finance.
13. Report to PTT's Board of Directors, the Audit Committee performance on internal audit activity assessment at least one time annually.
14. Disclose the Audit Committee Annual Report and the external auditor annual fee in the PTT Annual Report.

15. Either the Chairman or a member of the Audit Committee must attend PTT annual general shareholders' meeting.
16. If competent advice or assistance is needed to perform internal audit activity or other Audit Committee tasks, the Audit Committee can propose PTT's Board of Directors to appoint any independent consultant or expert. The costs and expenses of such services or invitations shall be on PTT's account.
17. Inform the CEO, any breach of the Securities Law, the Stock Exchange's regulations, policies, rules, ordinances, the Articles, the Cabinet Resolutions, and the relevant laws to resolve the issue.
18. Meet at least one time quarterly and must hold a private meeting with the external auditor at least one time annually.
19. Officially meet with the management at least one time annually.
20. Perform any designated tasks by the laws or PTT's Board of Directors under the Audit Committee duties and responsibilities.

As found in PTT Public Company Limited's ordinance on the Audit Committee and the Internal Audit Unit, B.E. 2564 (2021).

In 2023, the Committee held 20 meetings and duly reported its findings to the Board. In addition, it participated in quarterly audits along with the external auditor and the Chief Financial Officer functions.

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The Audit Committee disclosed its annual performance in the Report of the Audit Committee.

(2) The Nominating Committee

The Board approved the appointment of the Nominating Committee on October 1, 2001, by appointing three directors.

As of December 31, 2023, it consisted of 3 members.

Name	Position in the Nominating Committee	Position in the Board
1. Mr. Payong Srivanich	Chairman	Independent Director
2. Mr. Chansin Treenuchagron	Member	Independent Director
3. Mr. Lavaron Sangsnit	Member	Director

The Company Secretary served as secretary.

Remarks:

1. Mr. Payong Srivanich was appointed the Chairman with effect from October 19, 2023 (replacing Mr. Danucha Pichayanan who served as Chairman from April 8, 2022 to October 9, 2023).
2. Mr. Chansin Treenuchagron was appointed a member with effect from October 19, 2023.
3. Mr. Lavaron Sangsnit was appointed a member with effect from April 12, 2023.



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Duties and Responsibilities

1. Determine procedures and criteria for nomination of PTT's directors to ensure transparency.
2. Select director nominees to fill vacancies (due to resignation or term completion) for the Board's or the shareholders' meeting's consideration and appointment with due regard for the composition of the Board, expertise, competencies, and experience that would be useful to PTT in compliance with PTT's Board Skill Matrix and the Director Pool of the Ministry of Finance and Thai Institute of Directors Association (IOD). Equally important, nominees must have no conflict of interest with PTT, and the qualifications of desirable directors must prove compatible with PTT's business strategies.
3. Propose suitably qualified directors to perform duty as Specific Committee, considering the compositions of committees in question, suitability, qualifications, knowledge, and competencies. Then, propose the list to the Board for approval, except for the Nominating Committee which is being appointed directly by the Board.
4. Be directly accountable to the Board, while the Board is accountable for PTT's businesses to all stakeholders.
5. Assess the performance of the Nominating Committee and report to the Board of Directors for further disclosure in the PTT Annual Report.
6. Disclose its performance in the PTT Annual Report.
7. Hold at least two meetings a year.
8. Consider and approve the recruitment, appointment, transfer or promotion of employees (EVP or equivalent) to propose for approval from the Board. Exceptionally, in case that the Chief of Corporate Audit require to follow the PTT regulations for the Internal Audit Committee.
9. Perform other Board-assigned tasks.

The procedures and criteria for the nomination of directors are as follows:

1. The Committee defines the qualifications needed for replacements to ensure that new directors meet the criteria and qualifications required by applicable laws and regulations and align with PTT's strategy and operations.
According to the Corporate Governance, Ethical Standards, and the Code of Business Ethics Handbook, the Board should consist of experts from a variety of disciplines needed for the administration of PTT businesses. Specifically, its composition should consist of at least three experts in the petroleum business, one expert in the law, and one expert in finance and accounting. Currently, PTT's Board Skill Matrix consists of Accounting/ Finance/ Laws/ Information Technology/ Engineering/ Marketing/ Business Administration and Management/ Listed State Enterprise Management and Supervision/ International Business/ Economics/ Science and Technology/ Energy Innovation/ Petrochemical/ Biological Industry/ Digital/ Automation/ Artificial Intelligence or Robotics/ Political Science/ Security/ Crisis Risk Management/ Social, Community, Natural Resources and Environmental Activities, Sustainable Development, and Life Science.
2. The Committee summarizes the result of the nomination process and presents a shortlist of qualified candidates for the directorship along with supporting rationale to the Board.
3. The Board considers and selects qualified candidates from the list prepared by the Committee and submits their names to the shareholders' meeting for approval. The list must also be endorsed by the State Enterprise Policy Office (SEPO) in conformance with the guidelines on the appointment of state enterprise directors under the Cabinet resolution of August 6, 2019.

In 2023, the Committee held 11 meetings, with all committee members at the time in attendance. The Company Secretary served as secretary.

The Nominating Committee disclosed its annual performance in the Report of the Nominating Committee.

(3) The Remuneration Committee

The Board approved the appointment of the Remuneration Committee on October 1, 2001, by appointing three directors. As of December 31, 2023, it consisted of:

Name	Position in the Remuneration Committee	Position in the Board
1. GEN. Teerawat Boonyawat	Chairman	Independent Director
2. Mr. Lavaron Sangsnit	Member	Independent Director
3. Mr. Phongsthorn Thavisin	Member	Independent Director

The Company Secretary served as secretary.

Remarks:

1. GEN. Teerawat Boonyawat was appointed Chairman with effect from April 11, 2019.
2. Mr. Lavaron Sangsnit was appointed member with effect from December 1, 2023.
3. Mr. Phongsthorn Thavisin was appointed member with effect from December 1, 2023.

Duties and Responsibilities

1. Define the criteria for remuneration and propose fair, sensible remuneration of directors and specific committees to the Board and the shareholders' meeting for approval.
2. Propose guidelines for assessing performance outcomes and remuneration for the President & CEO to the Board for approval.
3. Acknowledge and recommend organization restructuring and job levels, including performance assessment and remuneration for Senior Executive Vice Presidents.
4. Be directly accountable to the Board, while the Board is accountable for PTT's businesses to all stakeholders.
5. Assess its performance outcomes and report to the Board for acknowledgment and disclose them in the annual report.
6. Disclose its performance in the annual report.
7. Hold at least two meetings a year.
8. Perform other Board-assigned tasks.

In 2023, the Committee held 8 meetings, with most committee members at the time in attendance. The Company Secretary served as secretary.

The Remuneration Committee disclosed its annual performance in the Report of the Remuneration Committee.



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(4) The Corporate Governance and Sustainability Committee

The Board approved the appointment of the Corporate Governance Committee on June 24, 2004, and approved the restructuring to be the Corporate Governance and Sustainability Committee on October 27, 2022, by appointing three independent directors. As of December 31, 2023, it consisted of:

Name	Position in the Corporate Governance and Sustainability Committee	Position in the Board
1. Mr. Jatuporn Buruspat	Chairman	Independent Director
2. Associate Professor Dr. Chayodom Sabhasri	Member	Independent Director
3. Mrs. Phongsaward Neelayodhin	Member	Independent Director

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Senior Executive Vice President, Organization Effectiveness and Corporate Governance served as secretary, and Executive Vice President, Corporate Governance, Executive Vice President, Company Secretary and Corporate Relation, and Executive Vice President, Sustainability Management served as assistant secretaries.

Remarks:

1. Mr. Jatuporn Buruspat was appointed a member of the Corporate Governance Committee with effect from April 9, 2021, and appointed Chairman of the Corporate Governance and Sustainability Committee with effect from April 8, 2022.
2. Associate Professor Dr. Chayodom Sabhasri was appointed a member with effect from December 1, 2023 (replacing Associate Professor Dr. Narongdech Srukhsosit who was appointed a member of the Audit Committee effective from December 1, 2023).
3. Mrs. Phongsaward Neelayodhin was appointed a member with effect from December 1, 2023 (replacing Mr. Payong Srivanich who was appointed the Chairman of the Nominating Committee effective from October 19, 2023).

Duties and Responsibilities

1. Corporate Governance, operational risk and internal control, and compliance (GRC), and anti-fraud and corruption
 - Formulate objectives, targets, strategies, and management framework, and assign policy and operational guidelines in line with PTT's strategies and targets as well as laws, regulations, and national and international practices, with annual review required.
 - Provide advice and recommendations to the Board and management on matters dealing with PTT's corporate governance, operational risk management and internal control, and compliance (GRC), and anti-fraud and corruption according to the good corporate governance principles, for the formulation of the organization's policies and guidelines in compliance with relevant laws, regulations, criteria, standard, national and international practices.
 - Establish the policy and define the scope of guidelines for the supervision, support, and monitoring of PTT's whistleblowing mechanism dealing with fraud and corruption, and non-compliance with laws and corporate regulations.
 - Supervise and monitor the implementation of PTT's corporate governance, operational risk management and internal control, and compliance (GRC), and anti-fraud and corruption, as well as whistleblowing and non-compliance cases, and report the outcome to the Board.

2. Sustainability Management (SM)

- Formulate objectives, targets, policies, master plans, strategies, guidelines, and sustainability management plans based on Environmental, Social, and Governance (ESG) to be in line with PTT's strategies and targets, including standards, national and international practices, and require annual reviews.
 - Formulate objectives, targets, strategies, and management framework on Corporate Social Responsibility (CSR) and assign policy and operational guidelines in line with PTT's strategies and targets as well as international practices, with an annual review required.
 - Be a role model, advise, and support PTT's operation to comply with PTT's Sustainability Management Policy for target achievement and compatibility with leading companies, as well as support the Board, management, and employees to comply with PTT's Sustainability Management Manual.
 - Supervise and monitor the implementation of PTT's Sustainability Management and Corporate Social Responsibility (CSR), and report the outcome to the Board.
3. Establish the policy of allowing minority shareholders to nominate directors and propose the Annual General Meeting's agenda items.
 4. Advise and provide consultation to the Governance, Risk and Compliance Management Committee (GRCMC).
 5. Perform other Board-assigned tasks.
 6. Hold at least one meeting each quarter.

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In 2023, the Committee held 4 meetings with all committee members at the time in attendance. The Senior Executive Vice President, Organization Effectiveness and Corporate Governance served as secretary.

The Corporate Governance and Sustainability Committee disclosed its annual performance in the Report of the Corporate Governance and Sustainability Committee.

(5) The Enterprise Risk Management Committee

The Board approved the appointment of the Enterprise Risk Management Committee (ERMC) on October 25, 2013, by appointing at least three directors, and at least one of whom must be an independent director. As of December 31, 2023, it consisted of:

Name	Position in the Enterprise Risk Management Committee	Position in the Board
1. Mr. Chansin Treenuchagron	Member	Independent Director
2. Associate Professor Dr. Chayodom Sabhasri	Member	Independent Director

Senior Executive Vice President, Corporate Strategy and Sustainability tasked as Chief Risk Officer (CRO) and Chief Stakeholder Officer (CSO) served as secretary.

Remarks:

1. Mr. Chansin Treenuchagron was appointed member with effect from December 1, 2023.
2. Associate Professor Dr. Chayodom Sabhasri was appointed member with effect from December 15, 2023.
3. Mr. Chatchai Phromlert was resigned from Chairman of the Enterprise Risk Management Committee with effect from December 23, 2023. Mrs. Phongsaward Neelayodhin was appointed Chairman of the Enterprise Risk Management Committee effective from February 9, 2024.



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Duties and Responsibilities

1. Define and review PTT's corporate risk management and stakeholder management policies and scopes.
2. Supervise and support corporate risk management and stakeholder management practices in line with strategies and business goals as well as prevailing circumstances.
3. Provide recommendations, monitor, and evaluate risk management and stakeholder management for further implementation of the Corporate Plan and Risk Management Committee (CPRC) (management level).
4. Review risk management outcome reports and provide recommendations on risks, including specifications of control measures or mitigation plans and development of the risk management system to CPRC for continued efficiency.
5. Review reports of corporate stakeholder management outcomes and provide recommendations on relevant plans to extend positive outcomes or minimize/ offset potential impacts on stakeholders, including the development of a stakeholder management system for CPRC to ensure continued efficiency.
6. Support the Chief Risk Officer (CRO) and Chief Stakeholder Officer (CSO) in achieving PTT's corporate risk management and stakeholder management goals.
7. Report risk management and stakeholder management outcomes to the Board at least every quarter. For factors or events with potentially significant impacts on PTT, the Board must be notified immediately.
8. Screen and comment before submitting for the Board's approval contractual items that are complicated businesswise and contain risks potentially affecting PTT or potentially and significantly affecting PTT's stakeholders, as endorsed by PTT Management Committee.
9. Screen and comment on investment agendas:
 - PTT's investment projects and wholly owned companies with investment values exceeding THB 5 billion presented to the Board for approval.

- PTT's investment projects in companies where it holds less than 100% shares and those not SET-listed, with investment values exceeding THB 5 billion, presented to the Board for approval before PTT's representative votes in the shareholders' meetings or company's board meetings.
 - Investment with risks potentially significantly impacting PTT or its stakeholders, as endorsed by PTT Management Committee.
10. Define and review the corporate innovation policy.
 11. Provide recommendations and guidelines for the monitoring and assessment of the long-term and annual innovation management master plan for further implementation.
 12. Supervise and promote implementation under the innovation policy and master plan to ensure that the annual operation plan can achieve its goals.
 13. Report the results of the implementation outcomes of creative thinking and innovation to the Board for acknowledgment at least every quarter.
 14. Define and review the customer and market management framework.
 15. Supervise, promote, and support operations under the customer and market management framework to achieve the set goals according to the business direction.
 16. Report the performance of customer and market management to the Board for acknowledgment at least every quarter.
 17. Hold at least one meeting each quarter.
 18. Perform other Board-assigned duties.

The review of the risk management system remains the duty of the Audit Committee and the Office of Corporate Audit.

In 2023, the Committee held 13 meetings with all committee members at the time in attendance. The Senior Executive Vice President, Corporate Strategy and Sustainability served as secretary.

The Enterprise Risk Management Committee disclosed its annual performance in the Report of the Enterprise Risk Management Committee.

7.4 Management

7.4.1 Management Team Members as of December 31, 2023

(PTT Management Structure as in the organization chart "7.1 Governance Structure")

Name	Position
1. Mr. Auttapol Rerkpiboon	President & CEO
2. Mr. Wuttikorn Stithit	Chief Operating Officer, Upstream Petroleum and Gas Business Group
3. Mr. Noppadol Pinsupa	Chief Operating Officer, Downstream Petroleum Business Group
4. Dr. Buranin Rattanasombat	Chief New Business and Infrastructure Officer
5. Miss Pannalin Mahawongtikul	Chief Financial Officer
6. Mr. Terdkiat Prommool	Senior Executive Vice President, Corporate Strategy and Sustainability
7. Mr. Chadil Chavanalikhikorn	Senior Executive Vice President, Organization Effectiveness and Corporate Governance
8. Miss Peangpanor Boonklum	Senior Executive Vice President, Office of General Counsel ^{1/}
9. M.L. Peekthong Thongyai	Senior Executive Vice President, Gas Business Unit
10. Mr. Prasong Intaranongpai	Senior Executive Vice President, Downstream Business Group Alignment
11. Mr. Pongpun Amornvivat ^{2/}	Senior Executive Vice President, International Trading Business Unit
12. Mr. Cherdchai Boonchoochauy	Senior Executive Vice President, Innovation and New Ventures
13. Mr. Chansak Chuenchom	Senior Executive Vice President, Engineering and Infrastructure
14. Mr. Montri Rawanchaikul	Senior Executive Vice President, seconded to CEO, PTT Exploration and Production Plc.
15. Dr. Kongkrapan Intarajang	Senior Executive Vice President, seconded to President & CEO, PTT Global Chemical Plc.
16. Mr. Bandhit Thamprajamchit ^{3/}	Senior Executive Vice President, seconded to President & CEO, Thai Oil Plc.
17. Mr. Kris Imsang	Chief Operating Officer, seconded to President & CEO, IRPC Plc.
18. Mr. Worawat Pitayasiri	Senior Executive Vice President, seconded to President & CEO, Global Power Synergy Plc.



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Name	Position
19. Mr. Suchat Ramarch	Senior Executive Vice President, seconded to President, PTT Oil and Retail Business Plc.
20. Mrs. Nivadee Jaroensitipun	Executive Vice President, Acting Senior Executive Vice President, Government Relations
21. Mrs. Wanida Boonpiraks ^{4/}	Executive Vice President, Group Corporate Finance and Strategy
22. Miss Numpetch Supharatanasit ^{5/}	Executive Vice President, Global Business Services
23. Miss Jaroonsri Wankertphon ^{6/}	Executive Vice President, Group Accounting and Tax Policy

Remarks:

Nos. 1 - 5 are "Management" under SEC's notification.

1/ The position name was changed to Senior Executive Vice President, Office of General Counsel, effective from January 1, 2023.

2/ Appointed on January 1, 2023, replacing Mr. Disathat Panyarachun, who retired early on December 1, 2022.

3/ Appointed on January 1, 2023, replacing Mr. Noppadol Pinsupa assigned as Acting President & CEO, Thai Oil Plc. from October 1, 2022 to December 31, 2022.

4/ Appointed on December 1, 2023, replacing Mrs. Chanamas Sasnanand appointed Executive Vice President seconded to Executive Vice President - Finance and Accounting, Thai Oil Plc.

5/ Appointed on December 1, 2023, replacing Miss Jaroonsri Wankertphon appointed Executive Vice President, Group Accounting and Tax Policy

6/ Appointed on December 1, 2023 as Executive Vice President, Global Business Services, Acting Executive Vice President, Group Accounting and Tax Policy from October 1, 2022 to November 30, 2023.

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Duties and Responsibilities of the President & Chief Executive Officer (President)

Under the Articles of Association, the President is authorized and responsible for managing the Board-assigned and PTT's overall business, which must be strictly and prudently managed with integrity under the Board-approved plans or budget in the best interests of PTT and its shareholders. The President's authority and responsibilities include:

- Operate or manage day-to-day business or both.
- Hire, appoint, remove, transfer, promote, demote, deduct the salaries or wages of, punish and dismiss any employee under the Board's regulations.
- Ensure the preparation and submission of business policies, including operational plan and budget estimation, for the Board's approval, and report the performance outcomes to the Board every three months.
- Ensure implementation of the Board-approved policies, plans, and budgets.

The Board authorizes the President to manage PTT's business under the following scope:

- Manage the overall business under the objectives, Articles of Association, policies, rules and regulations, directives, and resolutions of the Board and/or shareholders' meetings.
- Order, contact, command, implement, and sign juristic acts, agreements, orders, announcements, or correspondence with government agencies, state enterprises, or other parties and engage in any essential and suitable action to facilitate this duty.

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- Command all employees, including hiring, appointing, removing, promoting, demoting, deducting the salary or wages of, taking disciplinary action against, or dismissing any employee under the rules, regulations, and directives of the Board. For employees serving as advisers, senior executive vice presidents, or equivalent upward, prior approval of the Board is required. The President is also authorized to specify employment conditions for employees and issue rules for PTT's operations provided that they do not contradict the rules, regulations, and directives of the Board.
- Assign the power of attorney or delegate specific tasks to other persons, or both, provided that the action complies with the document on the power of attorney or rules, regulations, or directives of the Board or PTT, or both.

The authority and duties of the President stated above are invalid for any conflict of interest with PTT in any form resulting from the President's exercise of the authority. In 2023, no such cases have arisen.

The Management Committee

The PTT Management Committee (PTTMC) was appointed on October 1, 2001, with the mandate of operating PTT's business. As of December 31, 2023, the Committee consisted of 15 members as follows:

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Name	Position
1. President & CEO	Chairman
2. Chief Operating Officer, Upstream Petroleum and Gas Business Group	Member
3. Chief Operating Officer, Downstream Petroleum Business Group	Member
4. Chief New Business and Infrastructure Officer	Member
5. Chief Financial Officer	Member
6. Senior Executive Vice President, Gas Business Unit	Member
7. Senior Executive Vice President, International Trading Business Unit	Member
8. Senior Executive Vice President, Downstream Business Group Alignment	Member
9. Senior Executive Vice President, Innovation and New Ventures	Member
10. Senior Executive Vice President, Engineering and Infrastructure	Member
11. Senior Executive Vice President, Organization Effectiveness and Corporate Governance	Member
12. Senior Executive Vice President, Office of General Counsel*	Member
13. Senior Executive Vice President, Government Relations	Member
14. Senior Executive Vice President, Corporate Strategy and Sustainability	Member and Secretary
15. Executive Vice President, Company Secretary and Corporate Relation	Assistant Secretary

Remark:

* The position name was changed to Senior Executive Vice President, Office of General Counsel, effective from January 1, 2023.

The Management Committee meets at least twice a month or as appropriate. In 2023, there were altogether 48 meetings (43 regular and 5 special meetings).

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Duties and Responsibilities of PTT Management Committee (PTTMC)

Provide advice and recommendations to the President on significant issues regarding corporate strategy and business directions, long-term planning, business performance, investment plans, budgets, and allocation of resources to PTT and its affiliates, and ensure the uniformity of PTT's operations. PTTMC also provides consultation and recommendations to the President & CEO and promotes operation on the following matters:

- Set the vision and key missions for PTT Group.
- Establish directions, strategies, and business targets for PTT Group along with the performance targets of business units and the group as a whole.
- Define a direction for corporate governance monitoring and integration of Governance, Risk, and Compliance of PTT Group.
- Consider the capital allocation structure (budgets and resources) to support future investment and operations of PTT and PTT Group (PTT Group's Capital Allocation Structure).
- Consider the investment management of PTT and PTT Group (PTT Group's Portfolio Management).
- Consider and monitor PTT Group's international investment expansion.
- Establish a policy on human resource management, prepare and develop the Group's management of level 14 up in a systematic, professional way for its future missions in line with the Leadership Affiliation and Alignment Program.
- Screen and provide opinions on standards/ organization management mechanisms/ human resource system, as well as business processes and organizational structures of PTT and PTT Group to be a corporation of sustainability excellence.
- Consider, screen, and define policies and principles for PTT Group Way of Conduct, and ensure desirable direction.
- Prioritize significant matters about the allocation of human and financial resources of PTT and its affiliates.
- Jointly resolve significant conflicts between PTT's upstream and downstream petroleum and new business and infrastructure businesses.

- Follow up on progress and assess the performance of the Group against KPIs (PAs & KPIs).
- Scrutinize risk management in the business operations of the Group.
- Screen meeting agendas before presenting to the Board.
- Prioritize Board decision outcomes to ensure effective implementation.
- Appoint sub-committees or working groups, or both, to assist PTTMC's tasks.
- Perform other work as assigned by the President & CEO.

To efficiently manage PTT Group to drive the strategies and operations to achieve their goals, PTT has divided its committees into three categories, as of December 31, 2023, as follows:

1. Strategy Committees

Consider, screen, define strategies/ policy, business directions, and operational plans of PTT/ PTT Group in various management aspects, comprising:

- 1.1 PTT Group Management Committee (PTTGMC)
- 1.2 PTT Management Committee (PTTMC) (mentioned above)
- 1.3 Minor PTT Group Management Committee (Minor PTTGMC)
- 1.4 Corporate Plan and Risk Management Committee (CPRC)
- 1.5 Gas Business Strategic Alignment Committee (GBSC)
- 1.6 Downstream Petroleum Business Group Strategic Alignment Committee (DBSC)
- 1.7 Trading Business Strategic Alignment Committee (TBSC)
- 1.8 Upstream Management Committee (UMC)

2. PTT Group Alignment Committees

Provide advice/ suggestions, drive/ decide when cooperation between business units or PTT Group is required to enhance synergy and good collaboration, consisting of:

- 2.1 Upstream & Gas Business Group Alignment & Coordination Management Committee (UAC)
- 2.2 Downstream Business Group Alignment & Coordination Committee (DAC)
- 2.3 New Business and Infrastructure Group Alignment & Coordination Management Committee (NBIAC)
- 2.4 Finance & Accounting Group Alignment & Coordination Management Committee (FAAC)
- 2.5 Human Resources Group Alignment & Coordination Management Committee (RAC)
- 2.6 PTT Group Core Values & KM Alignment Committee
- 2.7 PTT Group Operational Excellence Steering Committee (OpEx SteerCo.)
- 2.8 PTT Group Internal Audit Management Committee
- 2.9 PTT Group Corporate Social Responsibility Steering Committee, Rayong province
- 2.10 LNG Business Cooperation Committee (LBCC)
- 2.11 PTT Group Digital Steering Committee
- 2.12 PTT Group Technology Committee (PTTGTC)
- 2.13 Procurement Strategic Alignment Committee (PSAC)
- 2.14 Properties Acquisition and Utilization Committee (PAC)

- 2.15 International Business Development Committee (IBDC)
- 2.16 PTT Group Corporate Governance Committee
- 2.17 PTT Group ONE Project Committee
- 2.18 PTT Group Sustainability Management Committee (GSMC)
- 2.19 PTT Group Corporate Reputation and Social Responsibility Committee (PTT Group CRSR)
- 2.20 Petrochemical and Refining Integrated Synergy Management (PRISM Committee)
- 2.21 Business Association Strategic Collaboration (BASC)

3. Corporate Management Committees

Responsible for overseeing, follow-up on the progress of operations, approval/ screening/ giving opinions/ advice/ suggestions in various aspects of organization management, comprising:

- 3.1 Governance, Risk, and Compliance Management Committee (GRCCM)
- 3.2 PTT Procurement Oversight Committee (KorTorJor)
- 3.3 PTT Credit Committee
- 3.4 Upstream Petroleum and Gas Credit Committee
- 3.5 Trading Credit Committee (TCC)
- 3.6 Strategic Investment Management Committee (SIMC)
- 3.7 Upstream Petroleum and Natural Gas Business Group (USIM)
- 3.8 Support Function Budgeting Committee (SFBC)
- 3.9 Non-Life Insurance Fund Management Committee
- 3.10 PTT Innovation Management Committee (PTT IMC)



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- 3.11 Information Security Management System Committee (ISMSC)
- 3.12 PTT Idea to Commercialization Gate Committee (PTT I2C Gate Committee)
- 3.13 Thailand Energy Academy Management Committee
- 3.14 Thailand Energy Academy Board
- 3.15 PTT Customer Excellence Committee (PTT CEC)
- 3.16 Social Enterprise Committee
- 3.17 Structure, Job Weight, and Manpower Committee (SJMC)
- 3.18 Human Resources Management Committee (HRMC)
- 3.19 Corporate Human Resources Committee (HRC)
- 3.20 Screening Committee for the Request for the Royal Bestowment of the Most Exalted Order of the White Elephant and the Most Noble Order of the Crown of Thailand
- 3.21 Potential Pool and Scholarship Management Committee
- 3.22 Employee Welfare Fund Committee
- 3.23 PTT Group Committee on International Sanctions against Myanmar
- 3.24 Vendor Selection Committee
- 3.25 Trading Risk Management Committee (TRMC)
- 3.26 Gas Business Unit Hedging Committee (Gas HC)
- 3.27 Powering Digital Organization With ERP Project (POWER)

Succession Plan

As PTT is a state enterprise, the President must be nominated and appointed according to the Standard Qualifications of Directors and State Enterprise Officer Act. Candidates must meet the qualifications outlined in Section 8 Ter and then go through the recruitment process / outlined in Section 8 Quarter, in which the PTT Board appoints a nominating committee of five people who meet the qualifications and do not have any prohibited characteristics under the law. Applicants must be knowledgeable, have competent and relevant experience for PTT executives, have no prohibited characteristics under the law, are not positioned as a PTT director, except for executives who are directors by position, and are under the age of 58 on the date of application submission. When the Nominating Committee selects a suitable candidate, he/she will be recommended for appointment. This must be completed within one year of the former executive's departure from office. The employment contract has a term of no more than four years. If the Board of Directors decides to hire the former executive after the contract period has expired, no new recruitment process is required; however, the former executive may not be hired for more than two consecutive terms.

PTT has been grooming top management to become qualified candidates to replace the top management due to retire in the next 3 - 5 years. In 2007, PTT set up a Group Leader Development Program (GLDP) to develop a succession plan for potential leaders to assume higher positions in PTT Group that become vacant, namely:

- President & CEO
- Senior Executive Vice President (SEVP) or equivalent
- Executive Vice President (EVP) or equivalent
- Vice President (VP) or equivalent.

Management mechanisms are as follows:

- PTT Group Management Committee (PTTGMC)
- Minor PTT Group Management Committee (Minor PTTGMC)
- Human Resources Group Alignment & Coordination Management Committee: HRAC)
- Human Resources Management Committee (HRMC)

Performance in 2023

- Selection of SEVP pool members from potential EVPs (PTT Group)
 - 51 pool members (as of December 31, 2023)
 - 48 pool members already promoted (2008 - 2023)
- Selection of EVP pool members from potential VPs (PTT Group)
 - 108 pool members (as of December 31, 2023)
 - 115 pool members already promoted (2009 - 2023)
- Selection of VP pool members from PTT potential division managers (PTT)
 - 160 pool members (as of December 31, 2023)
 - 303 pool members already promoted (2009 - 2023)

Labor Disputes

No reports of labor disputes have been received over the past three years.

7.4.2 Management's Remuneration Policy

Management's Remuneration

Management's remuneration is set under the policy and regulations specified by the Board, aligning with the Company's Performance Agreement (PA) stipulated by the Ministry of Finance. The President & CEO and all executives together define Key Performance Indicators (KPIs) on annual performance targets.

The Remuneration Committee is responsible for considering the remuneration of the President & CEO to reflect his performance management, which is also in line with the principles and standards of other industrial peers, with clear criteria, transparency, and fairness. As a result, the increasing of annual salary and bonus payment would align with the results of KPIs, the short-term and long-term performance of PTT. Overall, it should reflect his vision and long-term value-added and capacity enhancement for the Company. The principles and the appropriate remuneration must be presented to the Board for approval. To this end, key factors to evaluate the performance of the President & CEO were (1) PTT's performance under the State Enterprise Assessment Model (SE-AM), (2) the performance based on the vision presented to the Board, (3) management capability and leadership, and (4) 360° assessment.

According to the definition of "Management" defined by the Securities and Exchange Commission (SEC), 5 members included the President & CEO, Chief Operating Officer, Upstream Petroleum and Gas Business Group; Chief Operating Officer, Downstream Petroleum Business Group; Chief New Business and Infrastructure Officer; and Chief Financial Officer. The remuneration paid to management (excluding those seconded to PTT affiliates and those from PTT affiliates seconded to PTT) is detailed below:



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Total Remuneration Paid to President & CEO in 2022 - 2023

Unit: THB

Remuneration	2022	2023
	Amount	Amount
Total Remuneration	32,910,960	34,734,240
Bonus	10,532,951	10,897,049
Total	43,443,911	45,631,289

Remark:

The remuneration of the President & CEO included an allowance for additionally assigned tasks, namely the positions of Chairman or Director (or both) of PTT's subsidiaries. The President & CEO has duly complied with the terms of the employment contract as president.

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Total Remuneration Paid to 4 Top Management according to SEC's Definition (2022 - 2023)

Unit: THB

Remuneration	2022		2023	
	Management (under SEC's Definition)		Management (under SEC's Definition)	
	Person	Amount	Person	Amount
Salary	4	35,395,740	4	34,618,560
Bonus	4	17,685,657	4	17,378,021
Total		53,081,397		51,996,581

Remuneration Paid to Management (5 persons) from 2020 - 2023

Unit: THB

Remuneration	2020		2021		2022		2023	
	Person	Amount	Person	Amount	Person	Amount	Person	Amount
Salary	5	62,396,185	5	64,611,840	5	68,306,700	5	69,352,800
Bonus	5	22,296,874	5	26,487,086	5	28,218,608	5	28,275,070
Total		84,693,059		91,098,926		96,525,308		97,627,870

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Remuneration Paid to Top 5 Management according to SEC's Definition as Chairman and Directors of PTT Group and Subsidiaries, 2022 - 2023

Unit: THB

Remuneration	2022		2023	
	Person	Amount	Person	Amount
Meeting Allowance and Monthly Allowance	5	15,373,229.17	5	19,436,358.13
Bonus	5	25,769,554.92	5	20,152,517.70
Total		41,142,784.09		39,588,875.83

Remark:

The remuneration paid to top 5 Management according to SEC's Definition as Chairman and Directors of PTT Group and Subsidiaries. In addition, the remuneration of the President & CEO has complied with the employment term contract as president.

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Provident Fund Contribution to Management from 2020 - 2023

Unit: THB

Remuneration	2020		2021		2022		2023	
	Person	Amount	Person	Amount	Person	Amount	Person	Amount
Provident Fund Contributions	4	5,460,684.00	4	4,584,004.80	4	4,872,019.50	4	5,136,311.20

Additional information on the management:

Records have shown no violation of the law within the past 10 years regarding:

1. Being sentenced for criminal charges except for violations of traffic laws, petty charges, or similar charges,
2. Being sentenced to bankruptcy or having assets controlled,
3. Serving as an executive or an authority in a company or partnership sentenced to bankruptcy or whose assets are controlled.

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7.5 Employees

Employees are essential to corporate operations, and their quality is a key to its business success. PTT, therefore, set policies to underline the development of HR management systems compatible with technological advancement and international standards. This is not only to promote both conscientious merit and business competence among its employees but also to encourage our employees to actively take part in public service. It is indeed through employees that PTT focuses on its development into a sustainable organization to elevate competitiveness and respond to internal changes of a corporation in pursuit of national energy security.

Headcount and Remuneration

286 The employee headcount (including those seconded to PTT's affiliates) as of December 31, 2023, stood at 3,574 (Male 2,202 and Female 1,372). PTT has continued to set its manpower plans in line with its operations under economic uncertainty. The focus is on allocating resources where significant value supplementation is likely or where continuing investment is needed.

The business-group headcounts from 2020 to 2023 were as follows:

Unit: person

Business Unit	2020		2021		2022		2023	
	PTT	PTT Group	PTT	PTT Group	PTT	PTT Group	PTT	PTT Group
1. Gas	1,440	-	1,480	-	1,471	-	1,487	-
2. Petrochemical and Refining	141	-	112	-	121	-	130	-
3. New Business and Infrastructure	429	-	462	-	478	-	476	-
4. Support staff/ secondees to PTT affiliates	1,117 ^{1/}	379 ^{2/}	1,104 ^{1/}	393 ^{2/}	1,083 ^{1/}	387 ^{2/}	1,100 ^{1/}	381 ^{2/}
5. Subsidiaries and joint ventures	-	29,042	-	29,372	-	30,241	-	30,391
Total	3,127	29,421	3,158	29,765	3,153	30,628	3,193	30,772

Remarks:

1/ Excluding PTT secondment

2/ PTT secondment

Remuneration for Personnel (excluding the President and management) from 2020 - 2023

Unit: THB

Remuneration	2020	2021	2022	2023
Salary	3,966,160,901.90	4,122,373,594.88	4,329,636,122.70	4,549,904,844.95
Bonus	1,628,293,859.46	2,078,579,310.45	2,163,016,469.28	2,255,856,193.86
Provident Fund Contributions	477,524,458.33	490,980,568.77	517,863,032.09	548,488,317.14
Others (if any)	2,077,146,865.96	2,593,728,683.64	2,982,723,913.24	3,084,264,816.02
Total	8,149,126,085.65	9,285,662,157.74	9,993,239,537.31	10,438,514,171.97

287 PTT sets the remuneration of employees based on the Company's short-term and long-term performance through Performance Management, a continuous and systematic process to drive the Company's performance to its achievement and in line with the Performance Agreement (PA) which is also linked to the corporate targets, business unit targets, and individual targets in the same direction, as well as PTT's strategic direction, to drive the operating results according to business plan targets.

PTT employees' annual salary increase is considered according to their performance. To this end, KPIs were applied to manage employee performance evaluation, which would be accordingly reflected in their salary increases and benefits. Employee KPIs could be divided into 2 key types: corporate KPIs and business/ operational/ personal (or functional KPIs). Individual KPIs must align with the four aspects of the balanced scorecard, namely finance, customers, internal process, and learning and development. To achieve company's targets sustainably, PTT has added two more important aspects: products and personnel, to align with current performance results (short-term) and long-term business plans. Besides, PTT set a variable bonus aligned with the KPIs of PTT executives and employees of the management group to create motivation in achieving the annual targets.

Provident Fund

PTT has established and registered a provident fund called the "Provident Fund of PTT Public Company Limited and Affiliates" (the Fund). Employees of PTT and its joint ventures are eligible to participate in the scheme, and currently, 3,476 employees out of the total 3,513 employees of PTT, or 98.95%, have joined the Fund, managed by Krungthai Asset Management Plc. and TISCO Asset Management Co., Ltd. The two companies disclosed related information in compliance with the Investment Governance Code (I Code).



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The Fund engaged in investment with due regard for Environmental, Social, and Governance (ESG) factors and jointly with the companies set a policy and assigned them to invest in entities with committed responsibility for all stakeholders: shareholders, employees, customers, business partners, society, and the world. PTT has defined CG criteria and applied its decision-making process to ensure that the Fund makes the right investment in transparent businesses. Moreover, the Investment Committee required the fund managers to report PTT's current assets that are currently invested and compare them with the lists of SETTHSI index (Thailand Sustainability Investment) of the Securities Exchange of Thailand to learn of the ratio of its assets and the change whenever they submit investment performance.

Other Remunerations

PTT has instituted employee welfare and other remuneration programs apart from salary, bonus, and provident fund contributions for management and all employees. This is to keep balance with economic conditions, the cost of living, and other standards of peer companies as well as PTT's current and future performance, achieved through constant revision and improvement. In addition, PTT has adopted a Flexible Benefits scheme, in response to the needs of individual employees. Each employee can choose to apply for flexible benefits by declaring his or her intention once a year under the period, conditions, and details prescribed by PTT, provided that such customized flexible benefits are not against the law, tradition, and good morals. However, mandatory employee benefits vital to the well-being of employees and in performing his or her duties will not be included as a choice.

HR System Development and Improvement

To become a sustainable organization, PTT continuously improves its HR management processes and mechanisms to ensure higher efficiency and realize the full potential of its employees, which will lead PTT towards its goals. PTT employees can fully demonstrate their competence, advance in their careers, and keep growing together with PTT.

PTT has focused on participation across the board in designing business plans to suit its direction and targets since this will efficiently align all its components. To this end, it has instituted a process in which senior PTT Group management along with support staff jointly define a vision and directions before propagating the agreed items for other units to apply in turning business strategies into business plans and budget plans in broad alignment. All PTT employees define individual objectives and KPIs, cascaded through the ranks from the corporate, department, to an individual level. Such objectives and indicators defined by employees then serve as a scope for performance and performance assessment standards to reflect individual performance.

PTT has applied Career Management guidelines to prepare and promote management and all employees with skills and knowledge to fit the PTT-designed model in coping with its missions and creating value for the organization. PTT has applied this model to the management and development of all its employees and, taking into account business direction to enhance corporate competitiveness, has divided them into two professional groups (senior management and employees), with clear, efficient interconnected systems for recruitment, assessment, and individual development planning (IDP) in place.

- Executives (equivalent to Vice Presidents upwards) undergoes PTT Group Leadership Development, which sustains the needs of senior executives in both quantity and quality. Management of this group is supervised by a panel of CEOs in PTT Group called the "PTT Group Management Committee (PTTGMC)", responsible for defining directions and policies for development plans for senior management. Another team, called "Human Resources Group Alignment & Coordination Management Committee (HRAC)", provides counseling and recommendations to the Senior Executive Vice President, Organization Effectiveness & Corporate Governance, to enhance decision-making on key coordination issues regarding human resource development strategies and directions of the PTT Group to align with those of PTT.
- Employees (division manager or equivalent and below): This internal management is specific to PTT or a PTT affiliate in developing employees to suit future operational needs. For PTT, Corporate Human Resources Committee (HRC) was established to promote and monitor career development planning to ensure goal achievement. Career Counseling Teams (CCT) for 16 professional groups take charge of defining and developing individuals, providing counseling and guidance, and monitoring and following up on implementation. An individual development plan is a tool for employees to set their goals and develop their career paths, thus adding value to their work in line with PTT's directions and goals. Such employee development can be undertaken through proper training via success profiles or job rotation in line with their career paths. This would enable all employees to develop skills in their new positions, as would suitable appointments and promotions in line with their responsibilities and potential. With this development framework, employees will be qualified to assume top management positions in PTT Group and enable PTT to achieve its goals.

- To ensure that the policy defined and HR management align with and support the business directions of PTT Group, the Human Resources Management Committee HRMC), appointed to define and propose policies and make decisions on HR management, provide recommendations on the preparedness and development of PTT's current as well as future executives and employees, screen and give recommendations on the corporate structure and manpower, and approve or screen matters on HR management under the authority assigned.

PTT continues to focus on career and competency management by preparing and reviewing the success profile and career path of each position and pushing for the evaluation of the success profile in line with the performance cycle, where supervisors must discuss with employees (two-way) their responsibilities at the beginning of the year and follow up and evaluate the results in the half and end of the year to follow up and/or prepare an Individual Development Plan (IDP) for employees.

PTT Group encourages and supports employees' learning through the PTT Leadership and Learning Institute (PLLI) with goals of establishing standards and developing employee capability through the management and implementation of compulsory courses for all PTT employees in the same direction.

PLLI has continuously developed management and employees of PTT and PTT Group to be both "good and talented" to support organization growth and develop personnel capabilities. Hybrid learning is introduced and designed to suit target groups by mixing formats and learning techniques including classroom, virtual classroom, online learning, field trips, etc. for the highest efficiency in learning, which can be adjusted in line with changing circumstances. Experiential Learning is developed



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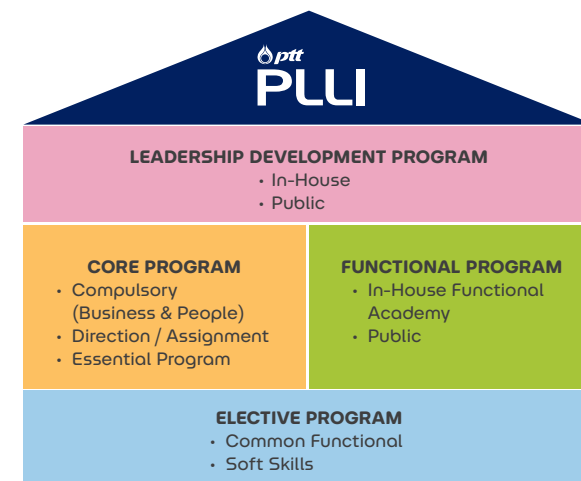
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for employee learning through role play, simulation, board games, etc. for enjoyable and interesting learning, with opportunities for actual practices, leading to more knowledge and understanding of business operations. It also develops digital learning materials in many different formats on the Learning Management System (LMS) to meet employees' learning and needs in various generations, thereby responding to learning Anywhere, Anytime, and Lifelong learning, such as e-Learning about organizational knowledge, rules, regulations, and corporate policies. Online learning and learning resources selected by PTT from outside cover business, technology, soft skills, lifestyle, and more than 300 courses. PTT E-Library (E-Book, E-Magazine, Magazine, Book) is for employees to search, reserve, borrow, and return books, and magazines, as well as read books online anywhere, anytime. There are also podcasts, and online audio programs, as another option for employee self-development with a variety of content both within and outside the organization. Casual Learning, a new learning style, is additionally adopted as a short-time learning, fun and easy to understand for employees as well.

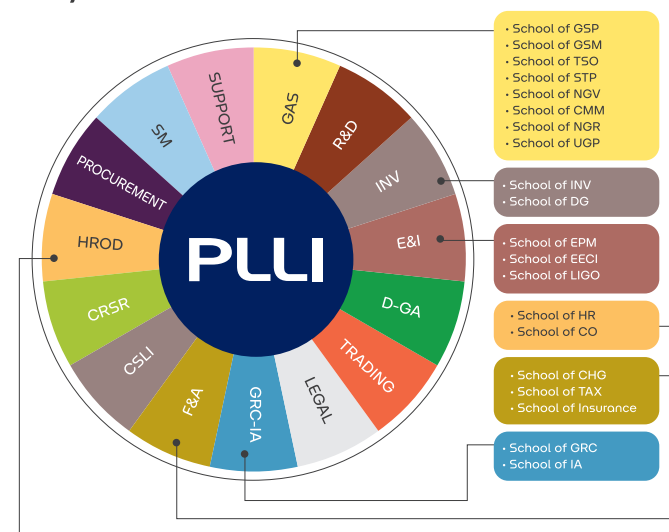
In addition, a Feature Playlist has been developed in the LMS system where courses are grouped into categories, easier to find. This allows supervisors or employees to select the group of courses of interest based on the New Core Competencies and various interesting skill topics, as well as having a customized playlist according to the needs of each department to help promote the IDP of supervisors and subordinates.

The curriculum structure of PLLI covers employee development at all levels from new employees to senior executives. The courses are divided into 3 main groups:

1. **Leadership Development Program** is designed to prepare and accelerate the development of high-potential management team members for skills, knowledge, and ability in people and business management through learning, knowledge-sharing, and experience-sharing with world-class instructors, including learning and experience-sharing with top management both internal and external. Participants of this program are potential management team members selected under the given criteria.
2. **Core/ Functional Program** (a group of compulsory courses for employees at all levels) is the core curriculum to develop the potential of all employees according to the work level group or career, divided into Compulsory, Direction/ Assignment, Essential Program, and Functional Program.
3. **Elective Program** (additional elective course as needed) is a curriculum to develop employees' potential according to individual needs by mutual consideration of supervisors and employees in choosing development courses as per employees' needs.



Functional Program by Academies



In addition, PTT also pays attention to environmental training courses for employees working in related jobs and interested parties. In 2023, environmental training courses were organized as follows:

Course	Batch	Participants	Training Format
Corporate Sustainability Assessment and Disclosure	1	29	Classroom
Advanced Water Treatment	1	27	Classroom
Carbon Management : Pathways to Net Zero Emissions	1	124	Classroom
Biodiversity	1	34	Classroom
Social & Environmental Benefits Valuation	1	10	Classroom
Biofuel Technology for Net Zero	1	42	Classroom
Circular Economy : ISCC	1	27	Classroom
Environmental, Social and Governance (ESG)	1	37	MS Teams
Integrated Management System Internal Auditor (ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018) (School of NGV)	1	33	Classroom + Workshop
Premium T-VER	1	142	MS Teams

In addition, PTT continues to organize the Young People to Global (YP2G) program, the latest of which is the 9th batch (Batch 9), to develop employees to be ready for difficult and challenging tasks, as well as new important projects according to PTT's strategy. These YP2G employees will be assigned challenging responsibilities through the following 3 core functions: Strategy & Planning, Business Development, and Commercial & Marketing. These tasks will enable them to learn and increase experience in business acumen through on-the-job training (OJT).

Summary of Human Resource Development

Unit: Hours per person per year

Training hours/person/year	2019	2020	2021	2022	2023
Employee	78.88	30.26	37.40	42.78	45.87
Management	89.15	45.93	34.25	64.93	49.57

Unit: THB per person per year

Expense/person/year	2019	2020	2021	2022	2023
Employee & Management	53,143.21	13,471.73	13,485.45	29,502.06	30,513.87



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Fostering Relationship between Management and Staff in Search of Common Goal

Communication between management and staff comes in various forms. The President & CEO constantly holds regular meetings with employees, allowing them to learn the Company's operation directions, obstacles, or emerging impacts during the development and efficiency enhancement each year. The focus is primarily on employees' participation and views.

Annual employee satisfaction and engagement survey is implemented for solution and improvement of satisfaction and engagement. PTT believes that proper communication and information exchange among staff and management will foster smooth relations and cooperation, thus driving the organization towards goal achievement. In addition, PTT surveys the basic human resource needs of management and staff through various committees such as the Human Resource Management Committee, PTT Labor Relations Committee, and Career Path Management Committee. An annual survey of staff opinions is undertaken by an external human resource management expert advisor. There was also cooperation with PTT Group to jointly develop a database of management as well as development plans for senior management.

The PTT Labor Relations Committee was established under the State Enterprise Labor Relations Act B.E. 2543 (2000). The committee consists of 19 members with the President (as PTT director) as Chairman, nine members representing employer, and nine members representing employees. The committee considers issues about employment conditions, employees' rights, and benefits, as well as employee complaints. The committee meets monthly to monitor the progress of related issues with prudence.

Besides the monthly Labor Relations Committee meetings, PTT holds meetings of a working group on the study and development of employees' welfare and other benefits, appointed with the resolution of the Labor Relations Committee. Members comprised representatives from the employer and employees to jointly search and analyze information on employees' welfare and benefits of PTT Group in comparison with those of other leading businesses for use in the improvement of PTT's regular and probationary employees.

PTT also holds Joint Consultation Committee (JCC) meetings between its management team and staff of regional offices nationwide, e.g., Rayong Gas Separation Plant, Khanom Gas Separation Plant in Nakhon Si Thammarat, and Chon Buri Operations Center. The JCC comprising the top management of certain establishments as chairman and employee representatives would jointly consider every issue of proposals and complaints of both management and employees for employees' good standard of living in line with laws and PTT's regulations.

PTT Group Core Values

PTT Group defined its core values as SPIRIT, which is significant in molding PTT management and employees to command uniform work behavior. The SPIRIT (S: Synergy, P: Performance Excellence, I: Innovation, R: Responsibility for Society, I: Integrity & Ethics, and T: Trust & Respect) is the fundamental principle that mold the executives and employees of PTT Group to have indentity of smart, conscientious, and responsible for the company and the outside society alike.

Core values align with the corporate vision and future challenges by focusing on PTT Group employees as the driving force for Thailand to move through the transformation into a new future through SPIRIT values, namely:



- **Synergy: Synchronize through partnership** by focusing on employee knowledge sharing and instigating collaborative power both inside and outside the company.
- **Performance Excellence: Agile for excellence** by focusing on employees' readiness to quickly adapt to changes, and work hard to accomplish beyond-expectation results to create and deliver the best value to stakeholders.
- **Innovation: Invent future growth through innovation** by focusing on employees to have a positive attitude. Seek opportunities for new ideas and think creatively. Able to apply new digital technologies to increase work efficiency along with continuous learning and self-development.
- **Responsibility for Society: Reach sustainability with green economy and social care** by focusing on employees working with awareness by taking into account the impact on stakeholders for sustainable development, develop an environmentally conscious business, and have a volunteer spirit to do for the public, community, society, and the nation.
- **Integrity & Ethics: Embed integrity & ethics to enhance good corporate citizenship** by focusing on employees' ability to perform properly, transparently, and as excellent employees of the company, with honesty and ethics at the forefront.
- **Trust & Respect: Tune-up trust through empowerment and respect** by focusing on employees working together with trust and confidence, open to opportunities and trust in others' potential capabilities, and open to and respect others' diversity.

7.6 Other Key Information

Company Secretary

To comply with the corporate governance principles of listed companies under the category of directors' responsibilities and the terms of the Securities and Exchange Act, the Board appointed a Company Secretary to provide the Board with legal advice and remind them of assorted regulations that they need to know and comply with; hold meetings; supervise Board activities to enable them to perform efficiently and effectively in the best interests of PTT; prepare and maintain key documents, including directors' registration, notice Board meeting and minutes, annual reports; issue shareholders' meeting notices and minutes; and keep reports on vested interests reported by directors or management.

The Board has appointed Company Secretary since 2008. Since October 1, 2020, Mr. Nisit Phongvutiprapant has served as the Company Secretary. He is knowledgeable, capable, and experienced in company secretary work. He attended training courses that are important to his duties and is also a lecturer on matters related to his duties.



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Company Secretary



Mr. Nisit Phongvutirapant

Company Secretary
(October 1, 2020 - present)

Age: 53

Shareholding:

- 0.000003%

Education:

- Bachelor of Economics (Development Economics), Bangkok University

Company Secretary Training Record:

- Director Certification Program (DCP195/2014), Company Secretary Program (CSP 113/2020), Thai Institute of Directors Association (IOD)
- Advanced Management Program II (Class 1/2018), PTT Group Leadership and Learning Institute

- Leadership Development Program 1 (2013), PTT Group Leadership and Learning Institute (PLLI)
- Bain Academy Asia Pacific 2019 Program, Bain & Company SE Asia, Inc., Singapore
- Advanced Management Program (AMP) 3 - Business & People Management, PTT Group Leadership and Learning Institute (PLLI)

Professional Experience (past five years):

- October 1, 2020 - Present
Senior Executive Vice President, PTT Oil and Retail Business Plc. (OR), seconded to Executive Vice President, Company Secretary and Corporate Relation, PTT Plc.
- June 1 - September 30, 2020
Senior Executive Vice President, Corporate Strategy, Innovation and Sustainability, PTT Oil and Retail Business Plc. (OR)
- February 1 - May 31, 2020
Vice President, Strategy and Portfolio Management, PTT Oil and Retail Business Plc. (OR)
- May 1, 2019 - January 31, 2020
Vice President, OR, seconded to PTT Oil Myanmar Co., Ltd.
- July 1, 2018 - April 30, 2019
Vice President, International Business Development and Planning, PTT Oil and Retail Business Plc. (OR)
- January 1, 2017 - June 30, 2018
Vice President, International Business Development and Planning, PTT Public Company Limited

Related Key Positions Held:

- -None-

Family Relationship among Directors and Executives:

- -None-

Important Special Activities:

- Director, Executive Committee, Vidyasirimedhi Institute of Science and Technology
- Vice Chairman and Treasurer, Power of Innovation Foundation
- Director, Thai Company Secretary Club

The Person Supervising Accounting

The Executive Vice President, Global Business Services, PTT, is assigned by position to be directly responsible for PTT's accounting. Miss Numpetch Supharatanasit has been holding the position since December 1, 2023, and is directly in charge of accounting management. She is qualified as an accountant under the criteria set by the Department of Business Development. **More profile details appear in the Executive Profile in Attachment 1.**

Head of the Office of Corporate Audit

The Executive Vice President, Office of Corporate Audit, PTT, is by position assigned as Head of the Corporate Audit. Mr. Chayagorn Leangruenrom is the present Head of the Office of Corporate Audit. More profile details appear in section 2 **"9. Internal Control and Connected Transactions"** and details of the Head of the Office of Corporate Audit also appear in Attachment 3.

Head of Compliance

The Senior Executive Vice President, Organization Effectiveness and Corporate Governance, PTT, is by position assigned as Head of Compliance. Mr. Chadil Chavanalikhorn was appointed to the position and is currently responsible for PTT's compliance. More details about the Compliance Unit are presented in Part 2 **"9. Internal Control and Connected Transactions"** and profile details of the Head of Compliance also appear in Attachment 1.

Head of Investor Relations and Contact Information

Mr. Tanapon Prapapan, Investor Relations, was appointed Vice President, Investor Relations Department with effect from April 16, 2021, and can be contacted at Investor Relations, PTT, Tel.: 0-2537-3518-9, E-mail: ptt-ir@pttplc.com, or PTT Website (www.pttplc.com).

Audit Fee

PTT and its affiliates paid a total of THB 337,686,464 (Three Hundred Thirty Seven Million and Six Hundred Eighty Six Thousand and Four Hundred Sixty Four) in audit fees to the office of the external auditors for the previous fiscal year. They also paid THB 76,360,507 (Seventy Six Million and Three Hundred Sixty Thousand and Five Hundred Seven) for other services (non-audit fees) such as consulting services for M&A in the areas of Financial Due Diligence, tax and accounting, tax service fees and other certification fees in the previous fiscal year.



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8. Corporate Governance Milestones



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Good Corporate Governance

8.1 Performance of the Board of Directors in 2023

8.1.1 Nomination, Development, and Performance Assessment of the Board

(1) Independent Directors

The Board of Directors, at Meeting No. 1/2013 on January 17, 2013, approved the revised definition of independence of directors, proposed by the Corporate Governance Committee which was more stringent than the criteria set by the Securities and Exchange Commission (SEC) and The Stock Exchange of Thailand (SET), and defined their roles, duties, and responsibilities. PTT published a handbook on their execution of duties and responsibilities, signed by the Chairman, on January 21, 2013. Board meeting No. 3/2021 dated March 18, 2021, approved the revision of roles and responsibilities of PTT's independent directors to be more updated and in line with regulation criteria of various agencies, which was signed by the Chairman of the Board on April 1, 2021. Essential elements of the revised handbook are:

Qualifications of Independent Directors

- (1) Must not hold more than 0.5% of the total voting shares of PTT, its subsidiaries, associated and related companies of which PTT's major shareholders or PTT's controlling person, including the shares held by persons related to such an independent director.
 - (2) Must not be or have not been involved as the management, employee, staff member, or advisor who earns a regular salary, or authorized controlling person of PTT, its subsidiaries, associated companies, related companies, or a juristic person of which PTT's major shareholders or PTT's controlling person during the period of two preceding years before the appointment. This forbidden characteristic excludes former government officials or consultants of the government agency, which is PTT's majority shareholder or has a controlling interest in PTT.
 - (3) Must not have blood relationship or relationship through legal registration as parents, spouses, siblings, and children, including the spouse of the children, of any other directors, management, major shareholders, authorized controlling person, or any person to be nominated as a director, management, or authorized controlling person of PTT or its subsidiaries.
 - (4) Must never have engaged or not engage in a business relationship with PTT, its parent company, subsidiaries, associated or related companies, major shareholders, or controlling person in a way that could obstruct his or her exercise of independent discretion; including must never have been or be a significant shareholder or controlling person of parties with a business relationship with PTT, its parent company, subsidiaries, associated or related companies, major shareholders, or controlling person except where such an association has ended at least two years before his or her appointment as an independent director.
- The business relationship in the preceding paragraph includes engagement in normal business transactions for operation, property rent, asset or service transactions, financial assistance involving borrowing, guaranteeing, provision of assets as collateral, and similar behavior that incurs debts on the part of PTT or its contract counterpart to each other amounting to 3% or more of PTT's net tangible assets or THB 20 million (whichever is smaller). Calculation of such debts is to follow the method for connected transactions under the announcement of the Capital Market Supervisory Board on connected transaction criteria mutatis mutandis; such debts must, however, include all debts incurred during the entire year before the business relationship with the same party begins.
- (5) Must never have been or not be an auditor for PTT, its parent company, subsidiaries, associated or related companies, major shareholders, or controlling person, and must not be a significant shareholder, controlling person, or partner of an audit office in which an auditor of PTT, its parent company, subsidiaries, associate or related companies, major shareholders, or controlling person serves, except where such association has ended at least two years before his or her appointment as an independent director.
 - (6) Must never have been or not be a professional service provider, including legal or financial advisor with a fee of more than THB 2 million a year paid by PTT, its parent company, subsidiaries, associated or related companies, major shareholders, or controlling person, and must not be a significant shareholder, controlling person, or partner of the professional service provider in question, except where such association has ended at least two years before his or her appointment as an independent director.
 - (7) Must not be a director appointed to represent PTT, a major shareholder, or a shareholder connected to PTT's major shareholder.
 - (8) Must not engage in similar businesses that compete significantly with PTT or its subsidiaries and must not be a significant partner in partnerships or director participating in business management, staff, employee, advisor on payroll, or hold more than 1% shares of the total voting shares of other companies that are in similar businesses and compete significantly with PTT or its subsidiaries.
 - (9) Must not have any other qualification that may compromise the expression of independent views on PTT's businesses.

Independent directors with qualifications under (1) - (9) above may be assigned by the Board to decide on the business operations of PTT, its subsidiaries,

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associated companies, sister companies, juristic persons, major shareholders, or controlling persons that could pose conflicts of interest; such decisions will be collective decisions.

If a person appointed by PTT as an independent director has or used to have a business relationship or professional service provision with PTT exceeding the value given under (4) or (6) of the previous paragraphs, PTT is allowed to relax such prohibitions on a business relationship or professional service provision with excessive value if it could secure the Board of Directors' views regarding the criterion of Section 89/7 of the Securities and Exchange Act has illustrated that the appointment of such person will not affect his or her performance and independent expression of views. To this end, PTT must disclose the following information in the meeting notice to shareholders under the agenda item on consideration of independent director appointment:

- (1) Business relationship or professional service provision depriving the qualifications of that person.
- (2) Justification and necessity for appointing that person as an independent director.
- (3) PTT's Board of Directors views on the appointment of that person as an independent director.

Under Nos. (5) and (6) of the previous paragraph, "partner" means a person assigned by the audit office or professional service provider to serve as a signatory of the audit report or professional service report (as applicable) on behalf of the company.

In addition, these qualifications must not contradict the applicable laws.

Incidentally, if independent directors serve in this position in PTT, its subsidiaries, associated companies, or sister companies, PTT must also disclose information about such service and the total compensation of such directors in the 56-1 One Report.

- Business relationship or professional service provision of independent directors in the past fiscal year -None-

Roles, Duties, and Responsibilities of PTT's Independent Directors

- (1) Recommend essential and beneficial matters to PTT, shareholders, and minor shareholders to the Board and/or the President and Chief Executive Officer.
- (2) Advocate roles and responsibilities of the Board and provide views commonly expected of independent directors for the benefit of PTT, its shareholders, and minor shareholders.
- (3) Review matters to ensure PTT's compliance with laws dealing with independent directors and duly revise the definition of independent directors for suitability and legal completeness.
- (4) Perform other Board-assigned duties provided that these actions do not compromise their independence.
- (5) An independent director's term begins once he or she fulfills all the requirements under the definition of PTT's corporate governance; it ends when he or she lacks qualifications or completes the PTT term.
- (6) The independent directors must hold their own meeting at least once a year.

Segregation of the Chairman and the President & CEO

To segregate policy-making duties from those of day-to-day management and to enable directors to look after and assess performance effectively, PTT has required that the Chairman and the President & CEO are always two persons. This is because the Chairman needs to oversee management's performance, guide, and assist it, but not to take part in or interfere with day-to-day management, which is the duty of the President & CEO under the authority delegated by the Board.

The current Chairman is an independent director. He exercises high-level leadership and ensures that directors do not fall under the influence of management by encouraging them to exercise their voting rights and strictly comply with CG principles.

Independence of the Chairman

Board Meeting No. 12/2023 on December 21, 2023, appointed Mr. Chatchai Phromlert, an independent director, as Chairman of the Board with effect from December 23, 2023. The appointment complied with the 2017 CG Code for Listed Companies. It would allow the work of the Chairman to be independent and boost confidence in the transparency of operations and fair treatment of all stakeholders.

(2) Nomination of Directors and the President & CEO

Nomination of Directors

In 2023, The Nominating Committee nominated to the shareholder's meeting to consider and appoint 5 new directors to replace directors who resigned and/or completed their terms at the 2023 Annual General Meeting (AGM):

- Air Chief Marshal Chanon Mungthanya, Independent Director
- Mr. Lavaron Sangsnit, Director
- Mr. Phongsthorn Thavisin, Director (Changed to Independent Director with effect from October 19, 2023)
- Mr. Chatchai Phromlert, Independent Director
- Mrs. Phongaward Neelayodhin, Independent Director

The Committee also nominated to the shareholder's meeting to consider and reappoint the directors who completed their terms at the 2023 AGM for another term, as follows:

- Dr. Prasert Sinsukprasert, Director
- Mr. Krishna Boonyachai, Independent Director
- Associate Professor Dr. Narongdech Srukhsosit, Independent Director

Nomination procedures are reported under Section 2, Corporate Governance, **the topic of Proposing Additional Meeting Agenda Items and Nominating Directors**, and **Item 7.3 (2) The Nominating Committee**.

Nomination of the President & CEO/ Succession Planning

Nomination of the President & CEO and succession plan are reported under Section 2 Corporate Governance, **Item 7.4 Information about executives**.

(3) Director Development

Training Courses/ Seminars/ Engagement in PTT Activities

The Board and management value regular participation in training and seminars concerning their competencies for their jobs. (Training details appear in directors' profiles in Attachment 1.) Most PTT directors (more than 90%) underwent training with the Thai Institute of Directors Association (IOD) and other leading entities and institutes as well as seminars on related topics.

At present, the Board was trained in courses related to director duties, namely 14 in the Director Certification Program (DCP) and 3 in the Director Accreditation Program (DAP), a total of 14 out of 15 directors, equivalent to 93.33%.

PTT supports and sponsors IOD membership for all directors to provide them with communication and more information channels which is useful for their directorships. PTT also delivers seminar information for directors to consider enrollment in curricula of their interest; this also applies to other continual seminars or curricula throughout the year. It regularly organizes in-house briefings by leading consultants and experts from PTT Group on useful business data. Finally, it organizes company site visits for directors to other units or entities as seen fit to provide helpful insights for application to PTT's businesses for sustainable growth.

In 2023, training and seminars to foster their work knowledge and PTT's activities include the items below.



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Directors	Training/ Seminar/ Activity
Mr. Chatchai Phromlert	<ul style="list-style-type: none"> • Director Orientation
Mr. Krishna Boonyachai	<ul style="list-style-type: none"> • The Executive Program in Energy Literacy for a Sustainable Future, Class 17, Thailand Energy Agency (TEA) • Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen • In-house briefing on PTT Group Way of Conduct • In-house briefing on PEs and CVs • IIA International Conference 2023 organized by the Institute of Internal Auditors, July 10 - 12, 2023 • CAE Forum 2023 on "ESG Derisking: A New Challenge for IA" and "Perspectives from Experience and Expectations for CAE" organized by the Institute of Internal Auditors of Thailand and the Stock Exchange of Thailand, August 25, 2023 • "PTT Group AC Forum 2023: Wind of Changes" on "2023 Audit Committee Priorities: How Audit Committee Can Plan for Success" and "Financial Business Threat Management Measures and Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes, B.E. 2566 (2023)", organized by PTT's Office of Corporate Audit, August 29, 2023 • Seminar for Audit Committee on "Manipulating Financial Statements to Commit Corruption in the Thai Capital Market" and "Sustainability under Recession Economy and Global Warming Reduction Measures" organized by EY Office Ltd., October 26, 2023
Mr. Payong Srivanich	<ul style="list-style-type: none"> • Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen • In-house briefing on PTT Group Way of Conduct • In-house briefing on PEs and CVs
GEN. Teerawat Boonyawat	<ul style="list-style-type: none"> • The Executive Program in Energy Literacy for a Sustainable Future, Class 17, Thailand Energy Agency (TEA) • Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen • In-house briefing on PTT Group Way of Conduct • In-house briefing on PEs and CVs
Mr. Jatuporn Buruspat	<ul style="list-style-type: none"> • Special in-house briefing on PTT Group's business operations e.g. AI, Logistics, and Life Science • In-house briefing on PTT Group Way of Conduct • In-house briefing on PEs and CVs
Dr. Prasert Sinsukprasert	<ul style="list-style-type: none"> • Director Orientation • Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen

Directors	Training/ Seminar/ Activity
Professor Dr. Thosaporn Sirisumphand	<ul style="list-style-type: none"> • In attendance at a visit by HRH Princess Maha Chakri Sirindhorn to VISTEC's School of Information Science and Technology, PTT's Intelligent Operation Center (IOC), Wangchan Valley, Rayong province, November 6 - 8, 2023. • "Geopolitics, Energy Transition & Energy Crisis: How do Oil & Gas markets fit into this complicated triangle?", Petroleum Institute of Thailand (PTIT) • Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen • In-house briefing on PTT Group Way of Conduct • In-house briefing on PEs and CVs
Associate Professor Dr. Narongdech Srukhosit	<ul style="list-style-type: none"> • Special in-house briefing on PTT Group's business operations e.g. AI, Logistics, Life Science and Hydrogen • In-house briefing on PTT Group Way of Conduct • In-house briefing on PEs and CVs • Digital Transformation Development Program for the Board, "The Cullinan: The Making of the Digital Board", (Class 2), Digital Economy Promotion Agency and Thailand Management Association
Air Chief Marshal Chanon Munghanya	<ul style="list-style-type: none"> • Director Orientation • Director Certification Program (DCP 338/2023), Thai Institute of Directors Association (IOD) • Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen • In-house briefing on PTT Group Way of Conduct • In-house briefing on PEs and CVs • CAE Forum 2023 on "ESG Derisking: A New Challenge for IA" and "Perspectives from Experience and Expectations for CAE" organized by The Institute of Internal Auditors of Thailand and The Stock Exchange of Thailand, August 25, 2023 • "PTT Group AC Forum 2023: Wind of Changes" on "2023 Audit Committee Priorities: How Audit Committee Can Plan for Success" and "Financial Business Threat Management Measures and Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes, B.E. 2566 (2023)", organized by PTT's Office of Corporate Audit, August 29, 2023 • Seminar for Audit Committee on "Manipulating Financial Statements to Commit Corruption in the Thai Capital Market" and "Sustainability under Recession Economy and Global Warming Reduction Measures" organized by EY Office Ltd., October 26, 2023
Mr. Chansin Treenuchagron	<ul style="list-style-type: none"> • Strategic Board Master Class (SBM 12/2023), Successful Formulation & Execution of Strategy (SFE 41/2023), Thai Institute of Directors Association (IOD) • Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen • In-house briefing on PTT Group Way of Conduct • In-house briefing on PEs and CVs

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Directors	Training/ Seminar/ Activity
Mr. Lavaron Sangsnit	<ul style="list-style-type: none"> Director Orientation Special in-house briefing on PTT Group's business operations e.g. AI, Logistics, Life Science and Hydrogen
Mr. Phongsthorn Thavisin	<ul style="list-style-type: none"> Board Nomination and Compensation Program (BNCP 16/2023), Thai Institute of Directors Association (IOD) Special in-house briefing on PTT Group's business operations e.g. AI, Logistics, Life Science and Hydrogen In-house briefing on PTT Group Way of Conduct In-house briefing on PEs and CVs
Associate Professor Dr. Chayodom Sabhasri	<ul style="list-style-type: none"> Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen In-house briefing on PTT Group Way of Conduct In-house briefing on PEs and CVs IIA International Conference 2023 organized by the Institute of Internal Auditors, July 10 - 12, 2023 CAE Forum 2023 on "ESG Derisking: A New Challenge for IA" and "Perspectives from Experience and Expectations for CAE" organized by The Institute of Internal Auditors of Thailand and The Stock Exchange of Thailand, August 25, 2023 "PTT Group AC Forum 2023: Wind of Changes" on "2023 Audit Committee Priorities: How Audit Committee Can Plan for Success" and "Financial Business Threat Management Measures and Emergency Decree on Measures for the Prevention and Suppression of Technological Crimes, B.E. 2566 (2023)", organized by PTT's Office of Corporate Audit, August 29, 2023 Seminar for Audit Committee on "Manipulating Financial Statements to Commit Corruption in the Thai Capital Market" and "Sustainability under Recession Economy and Global Warming Reduction Measures" organized by EY Office Ltd., October 26, 2023
Mrs. Phongsaward Neelayodhin	<ul style="list-style-type: none"> Director Orientation
Mr. Auttapol Rerkpiboon	<ul style="list-style-type: none"> In attendance at a visit by HRH Princess Maha Chakri Sirindhorn to VISTEC's School of Information Science and Technology, PTT's Intelligent Operation Center (IOC), Wangchan Valley, Rayong province, November 6 - 8, 2023. Special in-house briefing on PTT Group's business operations e.g. EV, AI, Logistics, Life Science and Hydrogen

The PTT Board also engaged in other corporate activities, such as business visits to PTT and PTT Group companies, and attended Committee attained PTT Inauguration Day, etc.

(4) Board Self-assessment

In compliance with the CG policy, PTT requires the Board to conduct a self-assessment to scope its regular review of its performance. In 2022, PTT worked with PricewaterhouseCoopers ABAS Co., Ltd. (PwC) in reviewing and preparing the 2022 PTT Board Performance Assessment Form to ensure effective and up-to-date assessment of the Board's performance in line with the corporate governance principles of SEC, SET, SEPO, including other related criteria and guidelines in Thailand and international. The Board Meeting No. 9/2023 on September 21, 2023, approved all five 2023 self-assessment forms: Assessment of the Board (Entire Board), Assessment of Individual Directors (Self-assessment), Individual Assessment of Other Directors (Cross-assessment), Assessment of Specific Committees (Self-assessment), and Assessment of Chairman's roles and performance, along with satisfaction with specific committees and chairman of each committee. The five assessment forms stipulated the percentages corresponding to the levels of performance achieved in each topic with reference scoring criteria: 90 - 100 = excellent, 80 - 89 = very good, 70 - 79 = good, 60 - 69 = satisfactory, 50 - 59 = pass, and below 50 = not pass. The self-assessment findings were as follows:

1. Assessment of the Board (Entire Board): consisted of four topics: Board composition and qualifications, Board roles and responsibilities, Meeting preparation and conducting, Board training and self-development.

The overall results indicated excellent performance, with an average score of 93.81%.

2. Assessment of Individual Directors (Self-assessment): consisted of four topics: Board roles and responsibilities, Board meetings, Relationship with the Management, and Board self-development.

The overall results indicated excellent performance, with an average score of 96.56%.

3. Individual Assessment of Other Directors (Cross assessment): consisted of four topics same as self-assessment of individual directors for direct comparison.

The overall results in these four topics indicated excellent performance, with an average score of 97.74%.

4. Self-assessment of Specific Committees (Entire Committees) consisted of four topics: Specific Committee composition and qualifications, Specific Committee roles and responsibilities, Meeting preparation and conducting, training, and self-development.

The results indicated excellent overall performance as follows:

- 4.1 The Nominating Committee indicated excellent performance, with an average score of 96.67%.
- 4.2 The Remuneration Committee indicated excellent performance, with an average score of 90.00%.
- 4.3 The Corporate Governance and Sustainability Committee indicated excellent performance, with an average score of 96.27%.
- 4.4 The Enterprise Risk Management Committee indicated excellent performance, with an average score of 97.33%.

5. Chairman's Roles & Duties and Performance Assessment, Satisfaction of the Committees, and the Chairman of each. The assessment of the Chairman consisted of eight topics, and ten topics on work satisfaction assessment indicated excellent performance, with an average score of 92.88%.

Audit Committee's Performance Assessment: To comply with the best practices of The Stock Exchange of Thailand (SET), the Audit Committee assesses its audit performance by undertaking a self-assessment at least one time annually. Also, the Audit Committee's Performance Assessment, problems, and improvement plan are presented annually to the Board. In 2023, the Audit Committee's Meeting No. 9/2023 on September 7, 2023,

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approved its assessment forms, namely Assessment of the Committee (entire committee), Assessment of Individual Directors (self-assessment), and Individual Assessment of Other Directors (cross-assessment). The scoring criteria are 1 = disagree, no action was taken in that regard, or little action was taken in that regard, 2 = agree, or have taken reasonable action on the matter, 3 = quite agree or have taken good action on that matter, 4 = strongly agree, or have excellent action on that matter. The Audit Committee Meeting No. 11/2023 on November 13, 2023, approved the assessment of its 2023 performance and reported the results together with the performance improvement plan of 2024 to Board Meeting No. 12/2023 on December 21, 2023. The results indicated good performance, with an average score of 99.48%.

PTT also analyzes the assessment topics to develop/ improve performance efficiency and formulates an annual plan for directorship efficiency enhancement to the Board for approval. In addition to developing the annual performance assessment forms for the Board, the Board has since 2017 begun gauging directors' efficiency and effectiveness by defining KPIs for their performance early in the year for measuring the Board's performance and determining their remuneration.

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Director Orientation

For new directors, PTT arranges an orientation program on its business policies, capital structure, shareholding structure, business performance, and information systems, as well as applicable laws and regulations. In addition, each director receives a Director's Handbook, with useful information for performing duties as PTT directors. The Director's Handbook/ Information for Directors consists of the following:

Director's Handbook:

- | | |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1. Public Company Act | 8. Articles of Association |
| 2. Securities and Exchange Act | 9. Company Regulations (15 regulations) |
| 3. Standard Qualifications of State Enterprise Directors and Employees Act | 10. PTT Corporate Governance, Ethical Standards and Code of Business Ethics Handbook |
| 4. Emergency Decree on Electronic Meetings, B.E. 2563 (2020) | 11. Manual for Directors of Listed Companies |
| 5. Company Registration Certificate | 12. Principles and Guidelines on Corporate Governance for Stated-Owned Enterprises B.E. 2562 (2019) (SEPO) |
| 6. Company Certificate | |
| 7. Company Objectives | |

Information Kit for Directors:

- | | |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1. Business overview presentation of PTT | 9. Annual Registration Statement/ Annual Report (Form 56-1 One Report) Financial Report |
| 2. List of directors, specific committees, and management structure | 10. Corporate Governance |
| 3. Director Fiduciary Duty Check List | 11. Debenture Magazine ("Happiness") |
| 4. CG Principles for Listed Companies (CG Code) | 12. Article: "Truth about Privatization" |
| 5. Connected Transactions of Listed Companies | 13. PTT GROUP WAY OF CONDUCT |
| 6. Guidance on Providing Information for Listed Company Management | 14. PTT Technology and Innovation Management Operating System |
| 7. PTT Plc. Company Profile (short version) | 15. PLLI Course Catalog |
| 8. Annual Registration Statement/ Annual Report (Form 56-1 One Report) | |

This year, in the briefing to the new directors, the President & CEO along with senior management presented information about PTT, its management structure, strategies and policies on business operations and performance, and relevant information for their overview of the business operations. The above-mentioned documents and handbook for new directors were handed over. In 2023, five director orientations were organized.

8.1.2 Meeting Attendance and Individual Directors' Compensation

(1) Board Meetings

PTT schedules its board meetings in advance for each month of the year. In 2023, the monthly meetings took place on the third Thursday of each month, with occasional special meetings on special agendas as seen fit. The Office of President sends each director meeting notices, agendas with complete details and rationale, and supplementary documents with enough essential details for decision-making about seven days ahead of each meeting to give them time to study these. Directors consider the agenda through application software to streamline the process of agenda delivery and the paperwork involved, thus speeding up directors' work while efficiently providing them with adequate details for decision-making.

Since 2015, for each meeting, the Board has required a regular follow-up agenda on the updates of implementation of Board observations and comments to ensure the execution of PTT's strategies.

The Board's policy is that, for a given agenda item, if any director has potential conflicts of interest with PTT, the secretariat will not deliver such agenda item to that director, who will not attend the meeting and abstain from voting on such an agenda item. In voting, the minimum quorum of directors is two-thirds of all attending directors. If the quorum does not comply with this guideline, the discretion of the Chairman will be sought, a policy that is stated in the Corporate Governance Handbook.

For each agenda item, the minutes contain written comments and observations. The Board-certified minutes are filed for perusal by the directors and related parties. Each meeting normally takes 3 - 4 hours. In addition, the meeting schedule for the whole year has been set in advance, and directors have been informed of the meeting schedule at the end of the previous year or the beginning of the year.

In 2023, PTT held a total of 23 Board meetings, 12 regular meetings, and 11 special meetings. Out of 23 meetings, 21 were physical meetings and 2 were electronic meetings (e-Meeting). A special meeting is held annually to determine, review, and approve PTT Group's vision, mission, directions, and strategies (five-year rolling). This year, the Board and management took part in reviewing such matters and approved the direction and strategy to scope and guide the work by business units, subsidiaries, and associates in developing enterprise and budgeting plans for 2024 - 2028. In addition, one non-executive meeting was held in June 2023 on the topic of PTT's businesses on various issues and recommendations to management for further business improvement. This is in line with the Principles and Guidelines on Corporate Governance for State-owned Enterprises B.E. 2562 (2019) as well as the guidelines given by the State Enterprise Policy Office. Management process after the meeting included disclosing the issues discussed and notifying the results of the meeting to the Board or the President and CEO for acknowledgment.

Three independent director meetings were held: (1) June 2023: "PTT Group Way of Conduct", (2) October 2023: "PEs and CVs" and (3) December 2023: PTT's businesses on various issues and recommendations to management for further business improvement. At every meeting, the Chairman allowed all directors to express their opinions freely and independently. The Board meetings are detailed below.

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Attendance of the Board and Five Specific Committee Meetings for 2023

No.	Name	Special 1/2023	1/2023	2/2023	3/2023	Special 2/2023*	Special 3/2023	4/2023	5/2023	Special 4/2023	6/2023	7/2023	Special 5/2023	8/2023	Special 6/2023	9/2023	Special 7/2023	10/2023	Special 8/2023*	11/2023	Special 9/2023	Special 10/2023	Special 11/2023	12/2023	Total (times)	%	
1	Professor Dr. Thosaporn Sirisumphand	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X	/	/	22	95.65
2	POL. GEN. Rungroj Sangkram	/	/	/	/	/	Retired by rotation at the 2023 AGM																5	100			
	Air Chief Marshal Chanon Mungthanya	Appointed with effect from April 12, 2023					/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	18	100
3	Mr. Danucha Pichayanan	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	15	100	
	Mr. Chatchai Phromlert	Appointed with effect from December 1, 2023																				/	/	2	100		
4	GEN. Teerawat Boonyawat	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	23	100	
5	Mr. Jatuporn Buruspat	X	/	/	/	/	/	/	/	/	X	/	/	/	/	X	/	/	/	/	/	/	X	/	19	82.61	
6	M.L. Chayotid Kridakon	/	/	/	/	Resigned with effect from March 22, 2023																4	100				
	Mr. Phongsthorn Thavisin	Appointed with effect from May 9, 2023					/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	16	100
7	Mr. Krishna Boonyachai	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	23	100	
8	Associate Professor Dr. Chayodom Sabhasri	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	23	100	
9	Mr. Payong Srivanich	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	23	100	
10	Mr. Phongsthorn Thavisin	/	/	/	/	/	Retired by rotation at the 2023 AGM																5	100			
	Mr. Lavaron Sangsnit	Appointed with effect from April 12, 2023					/	/	/	/	/	/	/	/	/	/	X	/	/	/	/	/	/	X	X	15	83.33
11	Mr. Krisada Chinavicharana	X	/	/	/	/	/	/	/	/	/	X	/	Resigned with effect from August 31, 2023										11	84.62		
	Mrs. Phongsaward Neelayodhin	Appointed with effect from December 1, 2023																				X	/	1	50.00		
12	Associate Professor Dr. Narongdech Srukhsosit	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	23	100	
13	Mr. Chansin Treenuchagron	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	23	100	
14	Dr. Prasert Sinsukprasert	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	23	100	
15	Mr. Auttapol Rerkpiboon	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	X**	/	22	95.65	
Total Attendance		13	15	15	15	14	14	14	15	14	15	15	14	15	14	13	12	13	13	13	12	12	12	14			
Total Directors		15	15	15	15	14	14	14	15	15	15	15	15	14	14	13	13	13	13	13	13	13	15	15			
%		86.67	100	100	100	100	100	100	93.33	100	100	93.33	100	100	92.86	92.31	100	100	100	92.31	92.31	80.00	93.33				

Remarks:

* e-Meeting totally 2 times.

** Mr. Auttapol Rerkpiboon was absent the meeting due to conflict of interest.

Directors	Board and Specific Committee Meetings in 2023						Appointment during the Year
	Board of Directors Total 23	Audit Committee Total 20	Corporate Governance and Sustainability Committee Total 4	Nominating Committee Total 11	Remuneration Committee Total 8	Enterprise Risk Management Committee Total 13	
1. Mr. Chatchai Phromlert	2/2	-	-	-	-	1/1	December 1, 2023 (Replacing Mr. Danucha Pichayanan)
2. Mr. Krishna Boonyachai	23/23	20/20	-	-	-	-	-
3. Mr. Payong Srivanich	23/23	-	3/3	11/11	-	-	-
4. GEN. Teerawat Boonyawat	23/23	-	-	-	8/8	-	-
5. Mr. Jatuporn Buruspat	19/23	-	4/4	-	-	-	-
6. Dr. Prasert Sinsukprasert	23/23	-	-	-	-	11/11	-
7. Professor Dr. Thosaporn Sirisumphand	22/23	-	-	-	-	-	-
8. Associate Professor Dr. Narongdech Srukhsosit	23/23	5/5	3/3	-	-	12/12	-
9. Air Chief Marshal Chanon Mungthanya	18/18	16/16	-	-	-	-	April 12, 2023 (Replacing POL. GEN. Rungroj Sangkram)
10. Mr. Chansin Treenuchagron	23/23	-	-	4/4	7/7	1/1	-
11. Mr. Lavaron Sangsnit	15/18	-	-	6/6	1/1	-	April 12, 2023 (Replacing Mr. Phongsthorn Thavisin)
12. Mr. Phongsthorn Thavisin	16/16	-	-	-	1/1	7/7	May 9, 2023 (Replacing M.L. Chayotid Kridakon)
13. Associate Professor Dr. Chayodom Sabhasri	23/23	15/15	1/1	-	-	-	-
14. Mrs. Phongsaward Neelayodhin	1/2	-	1/1	-	-	-	December 1, 2023 (Replacing Mr. Krisada Chinavicharana)
15. Mr. Auttapol Rerkpiboon	22/23	-	-	-	-	-	-



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Attendance Record of Directors Who Retired/ Resigned in 2023 (Total: 5 directors)

Directors	Board and Specific Committee Meetings in 2023						Appointment during the Year
	Board of Directors Total 23	Audit Committee Total 20	Corporate Governance and Sustainability Committee Total 4	Nominating Committee Total 11	Remuneration Committee Total 8	Enterprise Risk Management Committee Total 13	
1. M.L. Chayotid Kridakon	4/4	-	-	-	-	3/3	Resigned with effect from March 22, 2023
2. POL. GEN. Rungroj Sangkram	6/6	4/4	-	-	-	-	Retired by rotation on April 12, 2023
3. Mr. Phongsthorn Thavisin	5/5	-	-	4/4	-	-	Retired by rotation on April 12, 2023
4. Mr. Krisada Chinavicharana	11/13	-	-	-	4/5	-	Resigned, effective from August 31, 2023
5. Mr. Danucha Pichayanan	15/15	-	-	7/7	-	-	Resigned, effective from October 9, 2023

Remarks:

In 2023, a total of 23 Board meetings were held (12 regular and 11 special meetings).

** Reasons for meeting absence were prior scheduled official engagements or urgent special meeting appointments. Leave of absence letters were duly forwarded to the Chairman ahead of the meetings.*

(2) Remuneration of Directors

PTT fairly and sensibly specifies the remuneration of directors, by appointing the Remuneration Committee to review directors' proper compensation. This year, the Remuneration Committee adopted the consideration practices for directors and specific committees, taking into account practices of other listed peer companies, leading domestic as well as international companies, and state enterprise companies, the corporate governance principles, PTT's financial performance, responsibilities of the Board, and economic growth. Directors' remuneration consists of monthly allowance, meeting allowance, and bonuses. Directors appointed to specific committees receive additional allowances for additional responsibilities. Shareholder-approved directors' compensation rates are as follows:

Remuneration of Directors

The Directors' Remuneration was approved at the 2023 Annual General Meeting (AGM) held on Friday, April 12, 2023, as follows:

1. Monthly Fee and Meeting Attendance Fee for 2023, of which rates remained the same.

1.1 Monthly fee and meeting attendance fee of the Board:

- Monthly fee of THB 30,000 per month per director with the Chairman receiving twice the amount received by directors.
- Meeting attendance fee of THB 60,000 per meeting for those in attendance only and the Chairman shall receive 25% higher than the directors. The payment was limited to one meeting per month. Where necessary, the attendance fee may be paid for more than one meeting during a month but must not exceed 15 meetings per year.

1.2 Monthly fee and meeting allowance fee of specific committees shall be **at the same rate** as follows:

1.2.1 The Audit Committee

- Monthly fee of THB 15,000 per month per director with the Chairman receiving the same rate as the members.
- Meeting attendance fee of THB 45,000 per meeting for those in attendance only. The Chairman receives 25% more than the members, and the secretary to the meeting receives a monthly fee of THB 7,500 (the same rate as last year).

1.2.2 The remuneration for other committees, namely **the Nominating Committee, the Remuneration Committee, the Corporate Governance and Sustainability Committee, the Enterprise Risk Management Committee**, and other sub-committees that may be appointed by the Board as necessary and appropriate in the future, shall be the same rate as last year as follows:

- Monthly fee - None (same as last year)
- Meeting attendance fee of THB 30,000 per meeting for those in attendance only. The Chairman receives 25% more than the members.

1.3 Other benefits - None (same as last year)

A vehicle was provided to the Chairman to facilitate his duties only.

Directors' Bonuses in 2023

Bonus payouts for directors, at 0.05% of the net profit of 2023, corresponded with PTT's performance and net profit, with a maximum limit of THB 60 million for the entire Board. Bonuses were prorated with each director's term, with the Chairman receiving 25% higher than members (same as previously).



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The Remuneration for Directors in 2023

Unit: THB

No.	Directors	Days of Service Jan. - Dec. 2023	Bonus 2023	Meeting Allowance (Inclusive of Monthly)	Meeting Allowance (Specific Committee)	Total Allowance	Total Remuneration
1.	Mr. Chatchai Phromlert	31	334,587.25	98,709.68	37,500.00	136,209.68	470,796.93
2.	Mr. Krishna Boonyachai	365	3,814,852.28	1,260,000.00	847,500.00	2,107,500.00	5,922,352.28
3.	Mr. Payong Srivanich	365	3,814,852.28	1,260,000.00	382,500.00	1,642,500.00	5,457,352.28
4.	GEN. Teerawat Boonyawat	365	3,814,852.28	1,260,000.00	330,000.00	1,590,000.00	5,404,852.28
5.	Mr. Jatuporn Buruspat	365	3,814,852.28	1,140,000.00	180,000.00	1,320,000.00	5,134,852.28
6.	Dr. Prasert Sinsukprasert	365	3,913,628.89	1,326,290.32	300,000.00	1,626,290.32	5,539,919.21
7.	Professor Dr. Thosaporn Sirisumphand	365	4,647,147.48	1,770,000.00	-	1,770,000.00	6,417,147.48
8.	Associate Professor Dr. Narongdech Srukhsosit	365	3,814,852.28	1,260,000.00	480,000.00	1,740,000.00	5,554,852.28
9.	Air Chief Marshal Chanon Mungthanya	263.5	2,778,297.83	858,500.00	519,250.00	1,377,750.00	4,156,047.83
10.	Mr. Chansin Treenuchagron	365	3,814,852.28	1,260,000.00	330,000.00	1,590,000.00	5,404,852.28
11.	Mr. Lavaron Sangsnit	263.5	2,778,297.83	798,500.00	180,000.00	978,500.00	3,756,797.83
12.	Mr. Phongsthorn Thavisin	237	2,492,920.97	712,258.06	255,000.00	967,258.06	3,460,179.03
13.	Associate Professor Dr. Chayodom Sabhasri	365	3,814,852.28	1,260,000.00	690,000.00	1,950,000.00	5,764,852.28
14.	Mrs. Phongsaward Neelayodhin	31	311,946.13	90,000.00	30,000.00	120,000.00	431,946.13
15.	Mr. Auttapol Rerkpiboon	365	3,814,852.28	1,260,000.00	-	1,260,000.00	5,074,852.28
Total			47,775,644.62	15,614,258.06	4,561,750.00	20,176,008.06	67,951,652.68

Remarks:

- No. 1. Mr. Chatchai Phromlert was appointed as an independent director on December 1, 2023, and appointed as Chairman of the Board on December 23, 2023.
- No. 6. Dr. Prasert Sinsukprasert was appointed as Chairman of the Board from November 16, 2023, to December 22, 2023.
- No. 7. Professor Dr. Thosaporn Sirisumphand was appointed as Chairman of the Board from November 18, 2022, to November 15, 2023.
- No. 9. Air Chief Marshal Chanon Mungthanya was appointed as an independent director on April 12, 2023.
- No. 11. Mr. Lavaron Sangsnit was appointed as an independent director on April 12, 2023.
- No. 12. Mr. Phongsthorn Thavisin was appointed as a director on May 9, 2023.
- No. 14. Mrs. Phongsaward Neelayodhin was appointed as an independent director on December 1, 2023.
- Mr. Auttapol Rerkpiboon has been in full compliance with the terms of his employment contract as President and CEO for the remuneration that he received as a director from January 1 to December 31, 2023.

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The Remuneration for Directors Who Completed the Terms and/or Resigned in 2023

Unit: THB

No.	Directors	Days of Service Jan. - Dec. 2023	Bonus 2023	Meeting Allowance (Inclusive of Monthly)	Meeting Allowance (Specific Committee)	Total Allowance	Total Remuneration
1.	M.L. Chayotid Kridakon	80	805,022.27	330,000.00	112,500.00	442,500.00	1,247,522.27
2.	POL. GEN. Rungroj Sangkram	101.5	1,036,554.44	401,500.00	275,750.00	677,250.00	1,713,804.44
3.	Mr. Phongsthorn Thavisin	101.5	1,036,554.44	401,500.00	90,000.00	491,500.00	1,528,054.44
4.	Mr. Krisada Chinavicharana	242	2,469,088.05	840,000.00	120,000.00	960,000.00	3,429,088.05
5.	Mr. Danucha Pichayanan	281	2,889,076.65	997,741.94	225,000.00	1,222,741.94	4,111,818.59
Total			8,236,295.85	2,970,741.94	823,250.00	3,793,991.94	12,030,287.79

Remarks:

- No. 1. M.L. Chayotid Kridakon was appointed as a director on December 16, 2020 and resigned with effect from March 22, 2023.
- No. 2. POL. GEN. Rungroj Sangkram was appointed as an independent director on July 3, 2020, and completed his term on April 12, 2023.
- No. 3. Mr. Phongsthorn Thavisin was appointed as a director on October 8, 2021, and completed his term on April 12, 2023.
- No. 4. Mr. Krisada Chinavicharana was appointed as a director on October 1, 2021, and resigned with effect from August 31, 2023.
- No. 5. Mr. Danucha Pichayanan was appointed as an independent director on April 12, 2018, and resigned with effect from October 9, 2023.

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Directors' Remuneration Profile, 2020 - 2023

Unit: THB

Remuneration	2020		2021		2022		2023	
	Person	Amount	Person	Amount	Person	Amount	Person	Amount
Meeting Attendance	15	24,215,338.71	15	24,182,451.62	15	24,350,806.45	15	23,970,000.00
Bonus	15	18,882,904.18	15	54,181,705.42	15	45,587,428.76	15	56,011,940.47
Total		43,098,242.89		78,364,157.04		69,938,235.21		79,981,940.47

Remark:

The 2022 - 2023 directors' remuneration shown in the table includes the remuneration of the President and CEO who has already complied with the terms of the employment contract as President and CEO.



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Remuneration of PTT's Directors/ Independent Directors from being a Director/ an Independent Director of Subsidiaries* in 2023 (The table below presents remuneration paid to directors/ independent directors only for the period they served on PTT.)

Unit: THB

Directors	Director Remuneration		Committee Meeting Allowance	Total Remuneration	Remarks
	Bonus**	Meeting Allowance and Monthly Allowance			
1. Professor Dr. Thosaporn Sirisumphand	-	772,500.00	-	772,500.00	Director/ Chairman of the Board, Arun Plus Co., Ltd. (ARUN PLUS) from January 1 to December 31, 2023
2. Mr. Danucha Pichayanan	-	376,500.00	-	376,500.00	Director, Arun Plus Co., Ltd. (ARUN PLUS) from January 1 to October 4, 2023
3. M.L. Chayotid Kridakon	-	135,000.00	-	135,000.00	Director, Arun Plus Co., Ltd. (ARUN PLUS) from January 1 to March 22, 2023
	-	333,870.97	90,000.00	423,870.97	Independent Director/ Member of the Corporate Governance and Sustainability Committee, PTT Global Chemical Plc. from January 1 to March 21, 2023

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Directors	Director Remuneration		Committee Meeting Allowance	Total Remuneration	Remarks
	Bonus**	Meeting Allowance and Monthly Allowance			
4. Mr. Auttapol Rerkpiboon***	4,181,584	1,480,000	-	5,661,584	Director, PTT Exploration and Production Plc. from January 1 to December 31, 2023
	2,855,695.55	1,770,000.00	-	4,625,695.55	Director/ Chairman of the Board, PTT Oil and Retail Plc. from January 1 to December 31, 2023

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Remarks:

* According to the new International Financial Reporting Standards

** Directors have received the 2023 annual bonuses (for the 2022 performance) for serving with PTT Global Chemical Plc., and PTT Oil and Retail Business Plc., approved by the 2023 AGM of each company.

*** Mr. Auttapol Rerkpiboon has complied with the terms of his employment contract as President and CEO.

8.1.3 Governance of Subsidiaries and Associates

The Corporate Governance and Sustainability Committee oversees, monitors, and assesses the corporate governance and Anti-fraud and Corruption performance of PTT and PTT Group through PTT Group Way of Conduct. The Committee provides policies and guidelines to the Governance, Risk and Compliance Management Committee (GRCMC), chaired by the Senior Executive Vice President, Organization Effectiveness and Corporate Governance. GRCMC is tasked with the supervision of conformance with good governance principles, operational risk management, internal control, and compliance with laws, rules, and regulations of the organization, including setting an action plan and annual goals, approved by the Corporate Governance and Sustainability Committee and PTT's Board of Directors.

PTT's operations to promote compliance with policies and guidelines on supervision of subsidiaries and associated companies to achieve strong governance and uniform standards across PTT Group are as follows:

1. Communicated overview and compliance with policies and practices according to PTT Group Way of Conduct to ensure that PTT Group companies can follow correctly and appropriately with the company's context, including providing PTT Group Guideline for New Company through the New Company Setup Integration Taskforce meeting and sub-meetings with PTT policy owners to support and advise the company on its implementation.

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2. Monitored the implementation to ensure consistency and thoroughness through the indicators of the top management of PTT Group companies. This is in line with those of the State Enterprise Assessment Model (SE-AM) for monitoring the achievement of PTT Group's governance. The implementation of PTT Group's management guidelines was reported to the meeting of PTT Group Management Committee (PTTGMC) and Minor PTT Group Management Committee (Minor PTTGMC) to monitor the efficiency and effectiveness of operations on an annual basis.
3. Developed PTT Group Way of Conduct Web Portal, a channel for communicating news, publicizing the contact information of those involved, regulations, and important guidelines related to PTT Group management to be completed and up to date. It is also a channel for submitting operational evidence and supporting monitoring of the implementation of PTT Group management guidelines between policy owners, subsidiary management units, and PTT Group companies to be completed and in a timely manner.
4. Site visits to drive PTT Group governance to be efficient and exchange best practices, focusing on "Multi-Level Governance" through the transfer of PTT Group Way of Conduct from PTT to PTT Group companies of the next hierarchy. The concept is to study best practices in supervising companies in the Flagship Group as well as other perspectives to be used as a guideline to improve and develop PTT Group Way of Conduct to be more efficient, including providing advice on PTT Group management practices.
5. Conducted PTT Group Way of Conduct Effectiveness Survey 2023 to take scores, comments, and suggestions into consideration in developing, improving, and preparing an ongoing operational plan on an annual basis.
6. Enhanced knowledge and understanding of Governance, Risk Management and Internal Control, and Compliance (GRC), as well as various practices through knowledge-sharing sessions and development programs for PTT Group companies as follows:
 - MD on Board for senior management team members that are MDs or CEOs in PTT Group,
 - Secondment Development Program for PTT's executives and employees serving in affiliates.

8.1.4 Corporate Governance Policy and Compliance Control Guideline

(1) Inside Information Guideline

PTT provides notifications and campaigns against the use of insider information through PTT's communication channels, for example, internal PR e-mail to refrain from purchase/ sale/ transfer of PTT's securities after 1 day during the financial statement closing date to the date of reporting the financial statement to the Stock Exchange of Thailand on a quarterly basis; and communicate good practices in the CG Handbook through CG Tips.

PTT has instituted a system for reporting trading of PTT Group's securities in advance. If PTT's personnel need to trade such securities, they must inform the Company Secretary through the system at least two days in advance. In 2023, there was no reported transaction outside silent periods involving those whose jobs involved internal information; no major incidents occurred that impacted PTT, and no accusations of using inside information by regulators.

(2) Conflict of Interest

PTT requires disclosure of information with conflicts of interest between self-interest and PTT to prevent activities that could cause conflicts as well as illegal or improper activities.

Preparation of Reports on Potential Conflicts of Interest with PTT

To prevent conflicts of interest, PTT requires all employees to annually file reports to disclose possible items where employees or their relatives develop conflicts of interest with PTT each time this is discovered. In 2023, the Board, management, and all employees all filed their reports (100%) through PTT intranet; no material cases were found. The disclosed items of conflicts of interest with PTT confirm acknowledgment that a breach of ethics and PTT's code of conduct is regarded as a disciplinary offense, subject to disciplinary actions according to disciplinary procedures and severity. This year, there was no case of a conflict of interest related to a disciplinary offense.

(3) Corporate Governance, Code of Conduct, and Anti-Fraud and Corruption Activities

The Corporate Governance and Sustainability Committee (Board level) and the Governance, Risk and Compliance Management Committee (GRCMC) (Management level) provide oversight and monitor PTT's execution of corporate governance, operational risk management, internal control, and compliance. GRMC serves as PTT's Anti-Fraud and Corruption Operation Center for State Enterprises and is charged with steering and implementing plans for corporate governance and Anti-fraud and Corruption together with the definition of goals and KPIs approved by the Corporate Governance and Sustainability Committee and the Board. Besides its constant implementation and development as mentioned under Section 6 Corporate Governance on the topic of Anti-Fraud and Corruption, this year PTT executed the following promotional activities on Corporate Governance, Code of Conduct, and Anti-fraud and Corruption:

- Revision of PTT's Anti-Fraud and Corruption Policy to cover policies related to hiring government officials, and added guidelines in hiring or appointing government officials in the CG Handbook to clarify the implementation regarding this, and raise awareness among employees not to use such channels in return for any benefit or cause conflict of interest.
- Communicated corporate governance and Anti-Fraud and Corruption together with delivering the CG Handbook to all new employees for study and acknowledgment as their guidelines.

- Prepared e-Learning courses in the areas of corporate governance and Anti-Fraud and Corruption for employees to choose, for example (1) CG and Anti-Fraud and Corruption e-Learning to comply with the CG Handbook, covering good practices such as prevention of inside information use, prevention of conflict of interest, and anti-fraud and corruption, (2) Conflict of Interest, and (3) Basic knowledge on Organic Act on Anti-Corruption, B.E. 2561 (2018). Executives and employees were informed of this for self-study in all work areas. The total number of PTT employees participating in the training was 91.8%, 90.9% and 90.0%, respectively.

In addition, in 2023, training courses on good corporate governance and anti-fraud and corruption were held, by inviting external expert speakers to educate employees, e.g. Introduction to Major Anti-Corruption Laws, Conflict of Interest and Insider Trading, Principles and Techniques of Fact-finding Investigation and Disciplinary Investigation, etc.

- Fostered an ambiance of awareness through various internal media, including GRC intranet/ CG Intranet, GRC Advisory Program for inquiries from employees, CG/ GRC reminders through CG Tips and Do-Don't, GRC PODCAST, GRC Short Video, GRC Lesson Learned via internal PR e-mail, GRC video clips in elevators and LED video wall on 1st floor hall of PTT Head Office for everyone's information about CG/ GRC, and knowledge sharing as well as engagement in activities of interest. In order to enhance GRC-based functioning, PTT also mandates that GRC Talk be included in the agenda for all functional meetings, such as PTT Management Committed meetings. GRC Talk serves as a channel of communication and a tool for raising CG/ GRC awareness.



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- In 2023, PTT organized the GRC Forum as a hybrid event consisting of a seminar to educate and share experiences in office of General Counsel operations by senior executives in the Office of General Counsel and business functions on “Beyond GRC for Sustainable Growth” as well as a special guest speaker on “The Integrity Seed: Pluk Phak Praw Rak Mae” for PTT employees to apply the knowledge to their operations and jointly create value as a company with good governance. Integrity culture was also strengthened to drive the sustainability of PTT’s business both domestically and internationally.
- Valued corporate governance among PTT Group in line with the PTT Group Way of Conduct by appointing PTT Group Corporate Governance Committee, whose goal is to upgrade corporate governance standards for PTT Group to comparable levels and define action plans and relentlessly proactive guidelines for public relations through PTT Group CG Day, a campaign to promote and publicize corporate governance by PTT Group, namely PTT, PTTEP, GC, TOP, IRPC, GPSC and OR. Guests of honor from external agencies included representatives of the NACC Office, the Foundation of Anti-Corruption Networks, the Office of the Ombudsman, SEC, along with business partners, the Boards, executives, and employees of PTT Group. In 2023, the event was organized under the concept of “Good to Great: CG Empowering for the Future” in a hybrid form to demonstrate the enhancement of good corporate governance cooperation, prepare for business transformation towards a sustainable future, and build confidence among all stakeholders.
- Strived to build transparent networks for a robust Thai society by strongly advocating its business partners’ declaration of the intention to join Thai Private Sector Collective Action Against Corruption (CAC) to lower risks of corrupt practices across the supply chain. In 2023, PTT educated and urged business partners to join CAC at the annual suppliers’ seminar and the annual supplier seminars for NGV and gas distribution pipeline functions.

- Promoted and shared knowledge with external agencies to upgrade corporate governance standards. Management team members served as speakers to share CG experience and concepts on various occasions. Welcomed public and private entities, including educational institutions, on-site visits, where the experience was shared, and observation was made on PTT’s corporate governance practices.
- In 2023, PTT assessed corporate governance and anti-fraud and corruption performance to develop related tasks. It was found that 99.74% commanded good understanding, 97.59% were satisfied with good to very good CG communication, and 96.87% were satisfied with CG and anti-fraud and corruption implementation by PTT.

(4) Whistleblowing

All stakeholders can use mechanisms to contact and stay informed of information, news, and complaints of products and services through PTT Intranet and from outside through PTT Website, phone, written notification, and e-mail to Investor Relations Department, Office of the President, Corporate Communication and Branding Department, Good Governance and Corporate Ethics Department, or Customer Relation Center as follows:

- Phone : 1365 Contact Center, 0-2537-2000
- LINE@ : @contact1365
- Website : www.pttplc.com
- E-mail : Customer Relations Center:
1365@pttor.com
Corporate Communication and Branding Department:
contact@pttplc.com
Office of the President:
corporatesecretary@pttplc.com
Investor Relations Department:
ptt-ir@pttplc.com
GRC Hotline:
GRChelpdesk@pttplc.com
Whistleblowing:
pttvoice@pttplc.com

All questions, comments, and recommendations are forwarded to related units to act or remedy through the whistleblowing system, with follow-ups made through alerts under the e-mail system under applicable service level agreements (SLA). If action is not completed, the next superior is reminded to take action. When the action is taken, the responsible unit informsthe whistleblower and follows up again by inquiring about service satisfaction by a Contact Center officer. Executives monitor all information monthly to gauge trends and use them as guidelines for process and goods and service improvement to meet all stakeholders’ needs. This year, (excluding complaints about PTT Oil and Retail Business Plc. (OR)), 9,038 cases were filed, most dealing with NGV privilege cards for public buses and their use, and contacts with PTT’s employees/ offices.

PTT enables the public to file grievances and complaints when coming across improper or unethical behavior of directors, executives, or employees towards PTT Board, the Audit Committee, President and CEO, Senior Executive Vice President, Organization Effectiveness and Corporate Governance. Senior Executive Vice President, Office of General Counsel, Executive Vice President, Corporate Human Resources, and Executive Vice President, Office of Corporate Audit. PTT values to all complaints in an equitable, transparent, attentive, and fair manner, with suitable action periods and due safeguarding of confidential information and whistleblower protection.

To this end, Good Governance and Corporate Ethics Department is a center for grievances and whistleblowing, follow-ups of notifications, protection and fairness assurance for whistleblowers concerning corporate corrupt practices, including reports of investigation and punishment to management and relevant committees, apart from notification to related parties. In 2023, a total of 15 complaints were made through whistleblowing channels for fraud and non-compliance. After due consideration under the process, 13 were found to be without grounds for fraud, and 2 were under screening processes.

In this regard, PTT considered disciplinary action against the offenders based on one complaint received by PTT in 2022 and completed the complaint management process in 2023 with termination of employment without compensation. The conclusion of the complaint was already informed to the relevant persons and is in the process of legal proceedings. Improvement has been made in the job inspection process and measures to prevent recurrence. For example, requiring employees involved in the process to undergo training courses regarding procurement requirements and various committee duties, establishing mechanisms to systematically review the progress and success of assigned tasks, etc.

(5) The Reporting of Securities Holding Portfolio

In 2023, PTT, by Office of President, issued a reminder on four occasions to directors and management team on forbidding the trading or transfer of PTT securities (1) from January 1 to March 1, 2023 (fiscal year 2022) or 1 day after PTT disclosed its 2022 financial statements to The Stock Exchange of Thailand (SET); (2) from April 1 to May 16, 2023 (first quarter budget of 2023) or 1 day after PTT disclosed the financial statements of the first quarter budget of 2023 to SET; (3) from July 1 to August 16, 2023 (second quarter budget of 2023) or 1 day after PTT disclosed the financial statements of the second quarter budget of 2023 to SET; (4) from October 1 to November 16, 2023 (third quarter budget of 2023) or 1 day after PTT disclosed the financial statements of the third quarter budget of 2023 to SET. In addition, PTT defined a policy of avoiding securities trading of PTT Group outside these periods. Directors and management strictly complied with this. If necessary to trade PTT Group securities, they must inform the Company Secretary at least two days ahead.



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Securities Portfolios of Directors, 2022 - 2023

No.	Name	Number of Shares			Remarks
		As of Dec. 31, 2022	As of Dec. 31, 2023	Change during the Year (Shares)	
1.	Mr. Chatchai Phromlert	N/A	-	-	Appointed on December 1, 2023 (No PTT share held)
	Spouse and children under legal age	N/A	-	-	
2.	Mr. Krishna Boonyachai	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	
3.	Mr. Payong Srivanich	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	
4.	GEN. Teerawat Boonyawat	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	
5.	Mr. Jatuporn Buruspat	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	
6.	Dr. Prasert Sinsukprasert	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	
7.	Professor Dr. Thosaporn Sirisumphand	-	-	-	
	Spouse and children under legal age	18,000	18,000	-	(No trading transaction of PTT shares in 2023)
8.	Associate Professor Dr. Narongdech Srukhosit	-	-	-	
	Spouse and children under legal age	1,399	1,399	-	(No trading transaction of PTT shares in 2023)
9.	Air Chief Marshal Chanon Mungthanya	N/A	-	-	Appointed on April 12, 2023 (No PTT share held)
	Spouse and children under legal age	N/A	-	-	
10.	Mr. Chansin Treenuchagron	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	
11.	Mr. Lavaron Sangsnit	N/A	-	-	Appointed on April 12, 2023 (No PTT share held)
	Spouse and children under legal age	N/A	-	-	
12.	Mr. Phongsthorn Thavisin	10,000	10,000	-	(No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	-	-	-	
13.	Associate Professor Dr. Chayodom Sabhasri	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	
14.	Mrs. Phongsaward Neelayodhin	N/A	-	-	Appointed on December 1, 2023 (No PTT share held)
	Spouse and children under legal age	N/A	-	-	

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No.	Name	Number of Shares			Remarks
		As of Dec. 31, 2022	As of Dec. 31, 2023	Change during the Year (Shares)	
15.	Mr. Auttapol Rerkpiboon	225,000	225,000	-	Information is shown in Securities Portfolio of Executives
	Spouse	43,000	43,000	-	
	Children under legal age	-	-	-	

Remarks:

1. No PTT share was held by directors' spouses and children under legal age except those of 7, 8 and 15.
2. Mr. Phongsthorn Thavisin completed his term on the 2023 AGM and was appointed as a director with effect from May 9, 2023, replacing M.L. Chayotid Kridakon who resigned effective March 22, 2023.

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Securities Portfolios of Directors Who Completed Their Terms or Resigned in 2023

No.	Name	Number of Shares			Remarks
		As of Dec. 31, 2022	As of Dec. 31, 2023	Change during the Year (Shares)	
1.	M.L. Chayotid Kridakon	-	N/A	N/A	Resigned, effective from March 22, 2023 (No PTT share held during his directorship in 2023)
	Spouse and children under legal age	-	N/A	N/A	
2.	POL. GEN. Rungroj Sangkram	-	N/A	N/A	Completed his term on April 12, 2023 (No PTT share held during his directorship in 2023)
	Spouse and children under legal age	-	N/A	N/A	
3.	Mr. Phongsthorn Thavisin	10,000	10,000	-	Completed his term on April 12, 2023, and was appointed as a director with effect from May 9, 2023 (replacing M.L. Chayotid Kridakon)
	Spouse and children under legal age	-	N/A	N/A	
4.	Mr. Krisada Chinavicharana	-	N/A	N/A	Resigned, effective from August 31, 2023 (No PTT share held during his directorship in 2023)
	Spouse and children under legal age	-	N/A	N/A	
5.	Mr. Danucha Pichayanan	-	N/A	N/A	Resigned, effective from October 9, 2023 (No PTT share held during his directorship in 2023)
	Spouse and children under legal age	-	N/A	N/A	



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Securities Portfolio of Executives, 2022 - 2023

No.	Name	Number of Shares			Remarks
		As of Dec. 31, 2022	As of Dec. 31, 2023	Change during the Year (Shares)	
1.	Mr. Auttapol Rerkpiboon	225,000	225,000	-	(No trading transaction of PTT shares in 2023)
	Spouse	43,000	43,000	-	(No trading transaction of PTT shares in 2023)
	Children under legal age	-	-	-	-
2.	Mr. Wuttikorn Stithit	141,210	141,210	-	(No trading transaction of PTT shares in 2023)
	Spouse	90,960	90,960	-	(No trading transaction of PTT shares in 2023)
	Children under legal age	-	-	-	-
3.	Mr. Noppadol Pinsupa	136,000	136,000	-	(No trading transaction of PTT shares in 2023)
	Spouse	298,000	298,000	-	(No trading transaction of PTT shares in 2023)
	Children under legal age	-	-	-	-
4.	Dr. Buranin Rattanasombat	214,190	214,190	-	(No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	-	-	-	-
5.	Miss Pannalin Mahawongtikul	288,120	288,120	-	(No trading transaction of PTT shares in 2023)
6.	Mr. Terdkiat Prommool	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	-
7.	Mr. Chadil Chavanalikhorn	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	-
8.	Miss Peangpanor Boonklum	-	-	-	(No PTT share held)
9.	M.L. Peekthong Thongyai	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	-
10.	Mr. Prasong Intaranongpai	20,750	20,750	-	(No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	N/A	-	-	-
11.	Mr. Pongpun Amornvivat	N/A	8,000	-	Newly appointed executive on January 1, 2023 (No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	N/A	-	-	-
12.	Mr. Cherdchai Boonchoochauy	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	-

No.	Name	Number of Shares			Remarks
		As of Dec. 31, 2022	As of Dec. 31, 2023	Change during the Year (Shares)	
13.	Mr. Chansak Chuenchom	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	-
14.	Mr. Montri Rawanchaikul	64,000	-	(64,000)	(There were trading transaction of PTT shares in 2023)
	Spouse and children under legal age	-	-	-	-
15.	Dr. Kongkrapan Intarajang	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	-
16.	Mr. Bandhit Thamprajamchit	N/A	-	-	Newly appointed executive on January 1, 2023 (No PTT share held)
	Spouse and children under legal age	N/A	121,000	-	(No trading transaction of PTT shares in 2023)
17.	Mr. Kris Imsang	100,000	100,000	-	(No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	-	-	-	-
18.	Mr. Worawat Pitayasiri	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	-
19.	Mr. Suchat Ramarch	160,800	160,800	-	(No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	-	-	-	-
20.	Mrs. Nivadee Jaroensitipun	-	-	-	(No PTT share held)
	Spouse and children under legal age	-	-	-	-
21.	Mrs. Wanida Boonpiraks	N/A	677,290	-	Newly appointed executive on December 1, 2023 (No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	N/A	3,000	-	(No trading transaction of PTT shares in 2023)
22.	Miss Numpetch Supharatanasit	N/A	-	-	Newly appointed executive on December 1, 2023 (No PTT share held)
	Spouse and children under legal age	-	-	-	-
23.	Miss Jaroonsri Wankertphon	26,000	26,000	-	(No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	-	-	-	-

Remark:

No PTT share was held by executives' spouses and children under legal age except those of Nos. 1, 2, 3, 16 and 21.

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Securities Portfolios of Management Transferred/ Resigned/ Retired in 2023

No.	Name	Number of Shares			Remarks
		As of Dec. 31, 2022	As of Dec. 31, 2023	Change during the Year (Shares)	
1.	Mrs. Chanamas Sasnanand	130,000	N/A	N/A	Executive Vice President PTT working on a secondment as Executive Vice President - Finance and Accounting, Thai Oil Plc. effective from December 1, 2023 (No trading transaction of PTT shares in 2023)
	Spouse and children under legal age	-	N/A	N/A	-

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Remark:

PTT issued and offered 60,000,000 warrants to the President, management, PTT employees, and employees of PTT Group companies seconded to PTT consisting of two batches: 1) PTT-W1 (40,000,000 units), offered in 2005, with the last exercise date on August 31, 2010, and 2) PTT-W2 (20,000,000 units), offered in 2006, with the last exercise date on September 28, 2011. All warrants were exercised, and no new ones have been issued.

(6) Filing of Assets and Debts to NACC

Details appear in Section 6 Corporate Governance Policy “**Section 6.1 Overview of Corporate Governance Policy and Guidelines**”

(7) Declaration of Vested Interests in Meetings

Details appear in Section 6 Corporate Governance Policy “**Section 6.1 Overview of Corporate Governance Policy and Guidelines**”

(8) Deliberation and Review of Connected Transactions

Details appear in Section 6 Corporate Governance Policy “**Section 6.1 Overview of Corporate Governance Policy and Guidelines**”

8.2 Reports of Specific Committees’ Performance This Past Year

The Board of Directors values corporate governance and thus appoints five specific committees to consider significant matters: Audit Committee, Nominating Committee, Remuneration Committee, Corporate Governance and Sustainability Committee, and Enterprise Risk Management Committee.

8.3 Report of the Audit Committee for 2023

8.3.1 Report of the Audit Committee

Details can be found on pages 324 - 327.

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8.4 Report of the Specific Committees for 2023

8.4.1 Report of the Nominating Committee

Details can be found on pages 328 - 329.

8.4.2 Report of the Remuneration Committee

Details can be found on pages 330 - 331.

8.4.3 Report of the Corporate Governance and Sustainability Committee

Details can be found on pages 332 - 336.

8.4.4 Report of the Enterprise Risk Management Committee

Details can be found on pages 337 - 339.



Report of the Audit Committee



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Mr. Krishna Boonyachai
Chairman of the Audit Committee

PTT's present Audit Committee is made up of three knowledgeable independent directors, chaired by Mr. Krishna Boonyachai, with Air Chief Marshal Chanon Mungthanya, and Associate Professor Dr. Narongdech Srukhsit serving as members. Serving as secretary to this committee is Mr. Chayagorn Leangruenrom, Executive Vice President, Office of Corporate Audit. The tenure in 2023 is summarized as follows:

January 1, 2023 to April 12, 2023

- POL. GEN. Rungroj Sangkram
Chairman
- Mr. Krishna Boonyachai
Member
- Associate Professor Dr. Chayodom Sabhasri
Member

April 12, 2023 to November 30, 2023

- Mr. Krishna Boonyachai
Chairman
- Associate Professor Dr. Chayodom Sabhasri
Member
- Air Chief Marshal Chanon Mungthanya
Member

December 1, 2023 to Present

- Mr. Krishna Boonyachai
Chairman
- Air Chief Marshal Chanon Mungthanya
Member
- Associate Professor Dr. Narongdech Srukhsit
Member

In 2023, the Committee executed its Board-assigned duties and those under its own charter, which agreed with SEC's best practices. It reviewed and advocated PTT's good governance, together with adequate risk management and internal control system. It ensured PTT's emphasis on being a transparent organization with efficient and effective internal audit activity, while aligning corporate goals, and enhancing the internal audit quality, the journey of Office of Corporate Audit to be a trustworthy partner for sustainable long-term value creation for PTT with due regard for satisfying stakeholders' expectations. The Key highlights are as follows:

1. Advocated the enhancement of internal control, good governance, and risk management processes, as well as compliance by emphasizing the management to focus on raising employees' awareness for careful and thoughtful actions, including reviewing internal regulations related to operations appropriately according to organizational context, along with supervising the implementation of internal control processes to be tightened to build stakeholder confidence.
2. Encouraged the management to focus on PTT's operational safety and cybersecurity standards, as well as encouraged collaboration with PTT Group companies to build trust and prepare for complex cyber threats more efficiently.
3. Provided recommendations to the management regarding PTT's implementation process to supervise and monitor the operational processes of various

departments, such as reputation risk management, human resource management and corporate culture formulation, whistleblowing, third party screening etc., as well as enhancing the organization's operations in accordance with the State Enterprise Assessment Model (SE-AM) to ensure that PTT has a reliable and robust operating process for further sustainable business practices.

4. Focused on the investment supervision process of PTT and its affiliates by meeting with the Enterprise Risk Management Committee to exchange information and ensure that PTT analyzes, scrutinizes, and reviews the investment process carefully, concisely, efficiently, and in line with the changing global business environment. Emphasized sustainability processes covering Environmental, Social, and Governance (ESG) to ensure that PTT continues to efficiently and effectively operate in line with its sustainable development guidelines in the future.
5. Assigned a policy to strengthen PTT Group's internal audit quality to efficiently, effectively, and credibly accommodate stakeholders' expectations by focusing on efficient and effective audits. Advisory roles are added to add value to PTT and its affiliates, in parallel with promoting professional certifications and developing internal auditors to align with the strategic directions of PTT and PTT Group companies. The internal audit processes have been continuously developed by applying more technology in internal audit activities.



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In 2023, the Committee held 20 meetings, as detailed below:

January 1, 2023 to April 12, 2023: 4 meetings

- POL. GEN. Rungroj Sangkram
Attended 4 meetings
- Mr. Krishna Boonyachai
Attended 4 meetings
- Associate Professor Dr. Chayodom Sabhasri
Attended 4 meetings

April 12, 2023 to November 30, 2023: 11 meetings

- Mr. Krishna Boonyachai
Attended 11 meetings
- Associate Professor Dr. Chayodom Sabhasri
Attended 11 meetings
- Air Chief Marshal Chanon Mungthanya
Attended 11 meetings

December 1, 2023 to 31, 2023: 5 meetings

- Mr. Krishna Boonyachai
Attended 5 meetings
- Air Chief Marshal Chanon Mungthanya
Attended 5 meetings
- Associate Professor Dr. Narongdech Srukhsosit
Attended 5 meetings

Summary of Performance

1. Review of Financial Reports:

The Committee reviewed quarterly and annual financial reports together with consolidated financial reports with the Management, the Office of Corporate Audit, and the External Auditor. It asked the External Auditor about the accuracy and completeness of financial reports, adjustment of material account entries and accounting projections affecting such reports, adequacy, and suitability of account recording, audit scope, information disclosure that was accurate, complete, and adequate, as well as its own freedom. All these elements ensured that the preparation of financial reports abided by legal requirements as well as accounting standards under generally accepted accounting principles that were credible and timely, and that adequate information was disclosed for users' benefit.

2. Review of Risk Management Process:

In conjunction with the Management, the Committee regularly reviewed the efficiency and effectiveness of the risk management process as well as the policy, action plans, and risk management approach that affect PTT Group's operations. It also provided advice for process improvement and prompt actions for unforeseen events.

3. Review of Internal Control Process:

The Committee reviewed PTT's internal control with the Office of Corporate Audit every quarter by examining its operation, resource consumption, stewardship of properties, prevention or reduction of errors or damage, losses, waste, or potential of fraud, the credibility of financial reports, including compliance with laws, regulations, and Cabinet resolutions. No significant problems or material shortcomings were detected. This year's assessment outcomes of internal control against SET's best practices and the Ministry of Finance's Internal Control Standards for Government Agencies, B.E. 2561 (2018), according to PTT management, were that PTT had indeed designed adequate and appropriate control mechanisms.

4. Review of Governance Process:

The Committee reviewed the process of compliance with applicable laws and regulations, business protocols, related party transactions, or those with potential conflicts of interest and connected transactions among PTT Group to ensure sensible conformance to normal business terms. The Committee also reviewed the complaint handling and whistleblowing process.

5. Review of the Implementation According to the State Enterprise Assessment Model (SE-AM) of the State Enterprise Policy Office, Ministry of Finance:

The Committee reviewed PTT's operating process according to the SE-AM together with the Office of Corporate Audit and related parties per year, covering eight Core Business Enablers i.e. Corporate Governance & Leadership, Strategic Planning, Risk Management and Internal Control, Stakeholder and Customer Management, Digital Technology, Human Capital Management, Knowledge Management and Innovation Management and Internal Audit by monitoring the implementation of relevant observations/ recommendations to ensure that PTT's operating process complied with the SE-AM, with continuous improvement.

6. Monitoring of Internal Audit Activity:

The Audit Committee reviewed the Office of Corporate Audit's strategic plan, annual plan and long-term audit plans, including audit results and performance according to the plans. To this end, it recommended and monitored corrective actions for significant aspects of good governance and adequate internal control. It considered amending the internal audit charter. Also reviewed were the KPIs, the Office's budget and resource adequacy, personnel, independence of the Office, and the annual merit consideration for the Executive Vice President heading the Office for further presentation to the Board. The Committee also supervised the continuing quality assurance and improvement program of the Office of Corporate Audit.

7. Maintaining the Quality of the Audit Committee:

The Committee reviewed its own charter and assessed its performance as a group and as individuals (self-assessment and cross-assessment) against SET's best practices to ensure efficient and fruitful performance. Overall assessment result was "good", and action plans for performance improvement were set. The Committee reported its performance outcomes to the Board every quarter.

8. Appointment of the External Auditor for 2024:

The Committee considered and endorsed the auditor from EY Office Company Limited to be the External Auditor of PTT for 2024 for the Board's concurrence and the shareholders' approval at the 2024 AGM, together with its audit fees. The Committee also met exclusively with the External Auditor on one occasion in the absence of PTT management to discuss the audit scope, guidelines, and plans together with its performance freedom and comments with a focus on accurate, complete, and adequate presentation of data.

In summary, the Audit Committee executed its charter duties and responsibilities with due competence, care, prudence, and adequate independence while providing comments and advice for the equitable benefit of all stakeholders. Its view is that PTT's financial statements are accurate, credible, and align with generally accepted accounting standards. In addition, PTT practiced compliance with applicable laws and business obligations, together with good governance, adequate risk management and internal control, conformance to rules along with efficient and effective internal audit activity.

Mr. Krishna Boonyachai
Chairman of the Audit Committee



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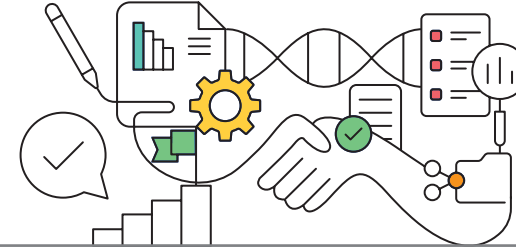
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Report of the Nominating Committee



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Mr. Payong Srivanich
Chairman of the Nominating Committee

The Nominating Committee consists of three directors, chaired by Mr. Payong Srivanich, independent director, with Mr. Chansin Treenuchagron, independent director, and Mr. Lavaron Sangsnit, director, as members. The Company Secretary or the Executive Vice President, Company Secretary and Corporate Relation serves as its secretary.

In 2023, the Committee executed Board-assigned duties with due prudence, transparency, and fairness and improved its approach to align with up-to-date business strategies with due regard for shareholders' and stakeholders' best interests. This year, the Committee held 11 meetings as shown below:

January 1, 2023 to March 24, 2023

- Mr. Danucha Pichayanan
Chairman
Attended 4 meetings
- Mr. Payong Srivanich
Member
Attended 4 meetings
- Mr. Phongsthorn Thavisin
Member
Attended 4 meetings

March 25, 2023 to April 12, 2023

- Mr. Danucha Pichayanan
Chairman
Attended 1 meeting
- Mr. Payong Srivanich
Member
Attended 1 meeting

April 13, 2023 to September 12, 2023

- Mr. Danucha Pichayanan
Chairman
Attended 2 meetings
- Mr. Payong Srivanich
Member
Attended 2 meetings
- Mr. Lavaron Sangsnit
Member
Attended 2 meetings

September 13, 2023 to December 31, 2023

- Mr. Payong Srivanich
Chairman
Attended 4 meetings
- Mr. Lavaron Sangsnit
Member
Attended 4 meetings
- Mr. Chansin Treenuchagron
Member
Attended 4 meetings

The Nominating Committee considered the following important matters:

- Nominated directors to replace those who were due to retire by rotation, based on diverse information, from various professions with suitable qualifications under applicable laws and regulations, PTT's Articles of Association, and the corporate governance code. Nominated candidates must be duly competent, skillful, and qualified for PTT's business strategies, based on an analysis of the PTT Board Skill Matrix and the Director Pool of the Ministry of Finance and Thai Institute of Directors Association (IOD). Their track records as well as past to present roles must ensure stakeholders' confidence. Their background must also be unblemished and without conflicts of interest with PTT. The names of qualified candidates were tabled for the Board's concurrence for appointment by the Annual General Meeting (AGM) according to the relevant laws and regulations.
- Nominated directors to replace those resigning during the year. To this end, the Committee carefully tabled qualified individuals with knowledge, abilities, and appropriate qualifications according to the above criteria to the Board for the appointment.

- Nominated directors for specific committees, based on their compositions, qualifications, knowledge, expertise, competencies, related skills, and suitability (Skill Matrix) for the Board's appointment, except for the Nominating Committee itself, which is to be appointed by the Board directly. The suitability of specific committees must be considered in line with the Company's vision, strategy, and sustainability goals.
- Reviewed the Board Skill Matrix as well as the matrix for the five specific committees and added skills, knowledge, and expertise in logistics and infrastructure under the category of engineering expertise, added skills and expertise in stakeholder management and geopolitics for the Board to align with PTT's vision and strategies. Legal knowledge and comprehension were added for the Audit Committee, and knowledge in accounting, finance, economics, marketing, and international business for the Enterprise Risk Management Committee. In addition, the goal of nominating at least two female directors was considered for diversified Board structure and composition, as well as setting KPIs for Board performance assessment (in addition to the Board assessment) and tabling the reviews for the Board's comments.
- Considered and screened the appointment, transfer, and promotion of Executive Vice President levels and above, and provided guidelines for the appointment, transfer, or promotion of the management level for appropriateness, including considering succession plan and up-to-date succession pool of senior executives in line with PTT's strategy for its continuous growth.
- Discussed the supervision/ the driving of the Board's performance guidelines for sustainable development.
- In addition, in 2023, the Board gave minor shareholders the opportunity to nominate directors, but no such nomination was put forward for the 2023 AGM. For transparency, other details appear in this form 56-1 One Report.

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Mr. Payong Srivanich
Chairman of the Nominating Committee



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Report of the Remuneration Committee



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General Teerawat Boonyawat
Chairman of
the Remuneration Committee

In 2023, the Board of Directors appointed the Remuneration Committee, which consists mainly of independent directors. The Committee is chaired by General Teerawat Boonyawat, independent director, with Mr. Lavaron Sangsnit, director, (appointed on December 1, 2023), and Mr. Phongsthorn Thavisin, independent director, (appointed on December 1, 2023), as members. The Remuneration Committee members who served during the year were Mr. Krisada Chinavicharana, director, (was a member of the Remuneration Committee from October 1, 2021 to August 31, 2023), and Mr. Chansin Treenuchagron, independent director, (was a member of the Remuneration Committee from May 14, 2022 to November 30, 2023). The Company Secretary or the Executive Vice President, Company Secretary and Corporate Relation serves as its secretary.

The Committee performed its duties with prudence and care by screening and commenting on key issues for the Board's consideration. In 2023, the Committee held 8 meetings as shown below:

January 1, 2023 to August 15, 2023

- GEN. Teerawat Boonyawat
Chairman
Attended 5 meetings
- Mr. Krisada Chinavicharana
Member
Attended 4 meetings
- Mr. Chansin Treenuchagron
Member
Attended 5 meetings

August 16, 2023 to November 30, 2023

- GEN. Teerawat Boonyawat
Chairman
Attended 2 meetings
- Mr. Chansin Treenuchagron
Member
Attended 2 meetings

December 1, 2023 to December 31, 2023

- GEN. Teerawat Boonyawat
Chairman
Attended 1 meeting
- Mr. Lavaron Sangsnit
Member
Attended 1 meeting
- Mr. Phongsthorn Thavisin
Member
Attended 1 meeting

The summary of performance is highlighted as follows:

- Considered the 2023 remuneration for the Board and its specific committees, based on PTT's performance and business size, practices of listed companies of the same industry and leading ones worldwide, along with Board responsibilities and the outcomes of Board assessment under various topics defined in the annual assessment forms. The remuneration was tabled for the Board's concurrence and subsequent proposal for approval at the 2023 AGM.
- Considered the assessment guidelines for determining remuneration for the President & CEO by taking into account factors and weights in various aspects such as performance which is linked to PTT's performance agreement with the Ministry in charge, the Ministry of Finance, his performance against the corporate vision, as well as his managerial ability, leadership, and

self-assessment. Key recommendations and indicators were provided based on the State Enterprise Assessment Model (SE-AM) according to the same guidelines used for Board assessment to evaluate the President & CEO.

- Considered and made recommendations on organizational restructuring to be in line with corporate direction and strategy according to the new vision "Powering Life with Future Energy and Beyond", taking into account the revenue-generating functions and redundancy of work.
- Acknowledged and commented on the assessment of senior executive vice presidents.
- Considered and provided suggestions on salary restructuring to be comparable to leading state enterprises and private companies, that reflects the current situation to attract potential people to join PTT and at the same time retain current employees.
- Reviewed and made observations on the implementation of the Variable Bonus system at the employee and management levels as an assisting tool to drive work efficiently for the organization's optimum benefit.

For transparency, the Remuneration Committee has disclosed the remuneration of all directors and specific committees together with management remuneration in this form 56-1 One Report.

General Teerawat Boonyawat
Chairman of
the Remuneration Committee

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Report of the Corporate Governance and Sustainability Committee



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Mr. Jatuporn Buruspat
Chairman of the Corporate Governance and Sustainability Committee

The Corporate Governance and Sustainability Committee is dedicated to transforming PTT into an organization that is transparent and auditable in the business world, managed with ethics and integrity, and zero tolerance for all fraud and corruption in order to foster fairness and confidence among all stakeholders. It does this by upholding the principles of corporate social responsibility (CSR), anti-fraud and corruption, governance, risk and compliance (GRC), and sustainability management (SM). PTT Group Way of Conduct drives these important rules for PTT Group companies, ensuring sustainable growth across the value chain.

The current Corporate Governance and Sustainability Committee is made up of three independent directors, namely Mr. Jatuporn Buruspat (Chairman), Associate Professor Dr. Chayodom Sabhasri (member), and Mrs. Phongsaward Neelayodhin (member). Senior Executive Vice President, Organization Effectiveness and Corporate Governance is serving as secretary. In 2023, the Committee held 4 meetings, of which details are as follows:

January 1, 2023 to November 30, 2023

- Mr. Jatuporn Buruspat
Chairman
Attended 3 meetings
- Associate Professor Dr. Narongdech Srukhsit
Member
Attended 3 meetings
- Mr. Payong Srivanich
Member
Attended 3 meetings

Remark: Mr. Payong Srivanich was appointed Corporate Governance and Sustainability Committee from April 8, 2022 to October 18, 2023.

December 1, 2023 to 31, 2023

- Mr. Jatuporn Buruspat
Chairman
Attended 1 meeting
- Associate Professor Dr. Chayodom Sabhasri
Member
Attended 1 meeting
- Mrs. Phongsaward Neelayodhin
Member
Attended 1 meeting

In 2023, the Corporate Governance and Sustainability Committee supervised, monitored, and evaluated the performance of the Company's operations, as highlighted below:

Information Disclosure and Transparency

- Prepared 56-1 One Report and disclosed PTT's quarterly performance and material information to shareholders, investors, and the public, complete with material, adequate, credible, and timely details through assorted channels, including SET's publicity channels and PTT Website (www.pttplc.com). The core

units taking charge of information distribution were Investor Relations Department and Corporate Communication and Branding Department.

- Disclosed 3-dimension sustainability performance information i.e. Environmental, Social and Governance (ESG) through 56-1 One Report under the topic of Driving Business towards Sustainability, Risk Management, Management's Discussion and Analysis, and Corporate Governance. The information was made public on PTT Website under the topic of Sustainability, by applying the Global Reporting Initiative (GRI) Sustainability Reporting Standard, GRI 11: Oil and Gas Sector 2021, International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards (S1 and S2) of International Sustainability Standards Board (ISSB) - IFRS S1 is linked with Integrated Reporting (IR) of The International Integrated Reporting Council (IIRC) and Sustainability Accounting Standards Board (SASB) while IFRS S2 is linked with Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) to report the performance and financial impact from climate change of business, the United Nations Global Compact (UNGC), and the Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation of the World Economic Forum (WEF). PTT's unwavering support for the UN Sustainable Development Goals (SDGs) was confirmed. In addition, information disclosure was reviewed by independent external agencies on a yearly basis for entrusted confidence for the 13th consecutive year. PTT encouraged and supported PTT Group companies to disclose their information in compliance with SEC's and SET's directions that aspire listed companies to disclose their sustainability performance on a par with international practices.

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Rights of Shareholders and Equitable Treatment of Shareholders

- Held the 2023 AGM in the electronic format (e-AGM) and provided in advance adequate and timely information, as well as all information relevant to matters needing decisions at the AGM. Informed the shareholders about meeting rules and meeting participation methods via electronic media. Such information was publicized on PTT Website before sending out meeting notices to give shareholders adequate time to study details. Facilitated their full exercising of meeting and voting rights. All rules, including vote counting in each agenda item according to PTT's Articles of Association, including the exercise of voting rights via electronic system (e-Voting) in each agenda were clarified. PTT thus achieved an "outstanding" score on the AGM Checklist assessment.
- Allowed shareholders to propose additional agenda items and nominate directors for election in advance from September 1 to December 1, 2023, under the criteria prescribed by PTT.
- Required all directors and executives to disclose vested interests of themselves and related parties for 2023 so that the Board might review PTT's transactions with potential conflicts of interest and decide in PTT's best interests. Required directors with potential vested interests in any meeting agenda items to abstain, refrain from commenting, and skip such agenda items.
- Required all directors, executives, and employees to report their conflicts of interest for 2023, which was fully implemented, and no significant conflicts were found.
- Required all directors and executives to report their securities portfolios as required by law and assigned the Company Secretary to compile and report these to the Board every quarter.
- Ensured enforcement of the Insider Trading Guidelines by asking the directors, management, and personnel with the privilege to inside information to refrain from PTT's and PTT Group companies' securities trading before and after the disclosure of the financial statements as required. If such trading is necessary, for transparency

they must notify the Company Secretary ahead of time, including providing a briefing on Insider Trading case studies to the Board by a consulting firm.

Strengthening the Effective Board of Directors

- Assessed Board performance using 5 types of forms: (1) overall, self-assessment, (2) cross-assessment, (3) specific committee assessment, (4) specific committee assessment, (5) Chairman's duty and performance assessment, satisfaction with the performance of specific committees and chairman of each specific committee. The 2023 results were "outstanding."
- Encouraged directors to attend training courses to develop directorship competencies, such as courses hosted by the Thai Institute of Directors Association (IOD) and other relevant institutes, as well as holding in-house courses and sessions by inviting experts to provide information related to the Board's work.
- Studied business management practices in PTT Group, including participating in activities related to energy and related businesses.
- Held three meetings among the independent directors.
- Held one non-executive meeting.

Corporate Governance, Operational Risk Management and Internal Control, Compliance (GRC), and Anti-Fraud and Corruption

- Endorsed Revision 5 of PTT's Corporate Governance, Ethical Standards and Code of Business Ethics Handbook, including the short-term (Annual Action Plan) and long-term GRC and anti-fraud and corruption action plans, as well as setting goals for further cascading for implementation, followed by continuous monitoring and recommendations to bring PTT's CG standards up to international par.
- Considered and approved the improvement of the Compliance Policy to keep it up to date accommodating PTT's new business operations and complying with relevant laws, regulations, and international standards.

- Considered and approved the application for the membership recertification of the Thai Private Sector Anti-Corruption Coalition (CAC), as well as advocated and urged PTT's business partners to declare their intention to join the CAC.
- Organized internal control assessments of operational processes of PTT and PTT Group by assessing risks, efficiency, and effectiveness of the control activities, including developing control activities to lower the risks to an acceptable level.
- Continuously supported and pushed PTT's legal and regulatory compliance processes and managed the non-compliance practices to prevent and reduce the likelihood of repeated non-compliance in the future. In 2023, no incidents of non-compliance with substantial impacts on the organization were found.
- Supervised and supported PTT's operations in accordance with the Personal Data Protection Act B.E. 2562 (2019) through the Data Protection Officer (DPO) structure.
- Supported the third-party screening program to establish standards for auditing the qualifications of those who enter into transactions with PTT to be rigorous and appropriate with efficient risk management and internal control system.
- Provided policies and recommendations to management to drive the implementation according to PTT Group Way of Conduct, which is a collection of guidelines, practices, and work processes in various dimensions for alignment and harmony within PTT Group, including supporting the development of Guidelines for New Company for newly set up companies with different business models.

Sustainability Management

- Determined strategic directions for sustainability management in 3 dimensions: Environmental, Social, and Governance, with 2 enablers in the sustainability management master plan to demonstrate the social and environmental responsibility of PTT in 2021 - 2025 (2nd Revision):

- **Environmental:** Sustainable Production and Consumption
- **Social:** People's Well-being
- **Governance:** Corporate Governance and Performance Excellence

Enablers for success are

- Innovation and Technology Promotion
- Stakeholder Management.
- Considered and approved the 2023 sustainability management plan and related action plans to support the Master Plan on Sustainability Management, Social Responsibility, and Environment 2021 - 2025. This encompasses an action plan that aligns with 3P Strategy (Pursuit of Lower Emissions, Portfolio Transformation, and Partnership with Nature and Society) to drive the Clean Growth targets by 2030 toward Carbon Neutrality by 2040 and Net Zero Emissions by 2050 with systematic monitoring and continuous recommendations.
- Considered and approved the reviews of PTT's sustainability management policy, Sustainability Management, Social Responsibility, and Environment Master Plan 2021 - 2025, Sustainability Management Practice Manual 2023, and Sustainability Management Plan 2024.

Corporate Social Responsibility and Sustainable Development

- Supported PTT's social contribution activities aiming for sustainable community development by applying PTT Group's potential and expertise along with building community engagement as a positive contribution to enhance livelihood to increase income and reducing expenses by more than 10%, as well as creating important skills for community self-reliance to achieve sustainability, promoting youth access to quality education to be an important force in driving the country, including raising awareness of environmental conservation for society. Key social projects implemented are as follows:



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1. PTT Group's Innovation for Community Project enhances the economic potential of communities, develops agricultural areas, upgrades community products, and further develops community-based tourism.
2. PTT Group School Model supports quality basic education for network schools through the STEEM+4E program, focusing on science and technology.
3. Enhancing the social outcomes of social enterprise projects through Sarn Palung Social Enterprise Co., Ltd.
4. Promoting environmental networks through the Green Globe Institute by raising the standard of the Green Globe Awards and increasing the criteria for urban communities to preserve and promote quality of life for communities around the country.
5. Vetiver Development and Campaign Project due to Royal Initiatives to preserve soil and water by promoting planting, training on vetiver cultivation and vetiver leaf handicraft, as well as vetiver leaf planting and handicraft contest.

Awards of Pride

Thanks to our firm commitment to operating businesses with CG, social responsibility, and sustainability management for continuous standard enhancement in 2023, PTT earned extensive acclaim from domestic and international entities, as highlighted below:

- Passed S&P Global Sustainability Performance Assessment and was selected as a member of DJSI for the 12th consecutive year in the World Index group, Emerging Market Index group, including the leader in the Oil & Gas Upstream & Integrated (OGX).
- Excellent ranking from the Corporate Governance Report of Thai Listed Companies 2023 for the 15th consecutive year.
- Integrity & Transparency Assessment (ITA) at the A level from the NACC according to the 2023 criteria.
- 11th NACC Integrity Awards at Honorable Mention from the NACC Office
- 2 SET Awards 2023 for 3 consecutive years: Sustainability Awards of Honor and Innovative Company Awards of Honor.
- Outstanding Climate Action Leading Organization (CALO) Award with the Gold level of assessment on measuring and reducing greenhouse gas from Thailand Greenhouse Gas Management Organization (Public Organization).

Mr. Jatuporn Buruspat
Chairman of the Corporate Governance and Sustainability Committee

Report of the Enterprise Risk Management Committee



Mr. Chatchai Phromlert
Chairman of the Enterprise Risk Management Committee

The Enterprise Risk Management Committee of PTT consists of 3 members: Mr. Chatchai Phromlert, Chairman, Mr. Chansin Treenuchagron, and Associate Professor Dr. Chayodom Sabhasri, Members, with Mr. Terdkiat Prommool, Senior Executive Vice President, Corporate Strategy and Sustainability, serving as secretary to the Committee. The tenure is as follows:

January 1, 2023 to January 24, 2023

- M.L. Chayotid Kridakon
Chairman
- Associate Professor Dr. Narongdech Srukhsosit
Member

January 25, 2023 to March 22, 2023

- M.L. Chayotid Kridakon
Chairman
- Associate Professor Dr. Narongdech Srukhsosit
Member
- Dr. Prasert Sinsukprasert
Member

March 23, 2023 to May 17, 2023

- Associate Professor Dr. Narongdech Srukhsosit
Member
- Dr. Prasert Sinsukprasert
Member

May 18, 2023 to November 16, 2023

- Mr. Phongsthorn Thavisin
Chairman
- Associate Professor Dr. Narongdech Srukhsosit
Member
- Dr. Prasert Sinsukprasert
Member

November 17, 2023 to November 30, 2023

- Mr. Phongsthorn Thavisin
Chairman
- Associate Professor Dr. Narongdech Srukhsosit
Member

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December 1, 2023 to December 14, 2023

- Mr. Chatchai Phromlert
Chairman
- Mr. Chansin Treenuchagron
Member

December 15, 2023 to December 22, 2023

- Mr. Chatchai Phromlert
Chairman
- Mr. Chansin Treenuchagron
Member
- Associate Professor Dr. Chayodom Sabhasri
Member

December 23, 2023 to December 31, 2023

- Mr. Chansin Treenuchagron
Member
- Associate Professor Dr. Chayodom Sabhasri
Member

The Enterprise Risk Management Committee (ERMC) has supported the Board's performance under corporate governance principles to keep risk management efficient and effective for goal achievement while aligning with corporate vision and direction as well as mitigating impacts of business uncertainties and emerging risks that are increasingly complex and severe from both internal and external factors, including volatile world economy. The key is to ensure shareholders and stakeholders that PTT's risk management system can indeed handle these risks in all dimensions and obtain projected business goals.

In 2023, ERMC held a total of 13 meetings as highlighted below:

January 1, 2023 to January 24, 2023: 1 meeting

- M.L. Chayotid Kridakon
Attended 1 meeting
- Associate Professor Dr. Narongdech Srukhosit
Attended 1 meeting

January 25, 2023 to March 22, 2023: 2 meetings

- M.L. Chayotid Kridakon
Attended 2 meetings
- Associate Professor Dr. Narongdech Srukhosit
Attended 2 meetings
- Dr. Prasert Sinsukprasert
Attended 2 meetings

March 23, 2023 to May 17, 2023: 2 meetings

- Associate Professor Dr. Narongdech Srukhosit
Attended 2 meetings
- Dr. Prasert Sinsukprasert
Attended 2 meetings

May 18, 2023 to November 16, 2023: 7 meetings

- Mr. Phongsthorn Thavisin
Attended 7 meetings
- Associate Professor Dr. Narongdech Srukhosit
Attended 7 meetings
- Dr. Prasert Sinsukprasert
Attended 7 meetings

November 17, 2023 to December 14, 2023: 1 meeting

- Mr. Chatchai Phromlert
Attended 1 meeting
- Mr. Chansin Treenuchagron
Attended 1 meeting

December 15, 2023 to December 31, 2023: No meeting held

Performance Highlights

1. Supervised Risk Management to Ease Business Impacts:

Key global situations that may affect PTT Group's business operations were monitored. PTT has proactive measures focusing on management to lower the likelihood of all risk incidents, with reactive measures if a risk event occurs to minimize the impact on organizational goals. It defined comprehensive risk management plans for all situations. In 2023, the "Risk Appetite Statement" was adjusted to be in line with the changing circumstances to ensure that PTT's risk management process is appropriate and effectively implemented.

2. Oversaw Corporate Stakeholder Management: This was designed to make such management complete and embrace comprehensive management of all stakeholders. Comments and suggestions were given as follows:

- 2.1 Summary of 2022 Stakeholder Relationship Management comprising a summary of stakeholder management and stakeholder survey results
- 2.2 Stakeholder Management Quarterly Report (2023)
- 2.3 Stakeholder Strategy and Direction (2024 - 2028) comprises stakeholder management direction, objectives, and scope, including corporate issues

This included the drive for implementation by all functions and monitoring of operations and outcomes of management assessment. ERMC also provided comments and advice for goal achievement.

3. Supervised the Management of Corporate Innovations:

To ensure a complete innovation management process with efficient and systematic innovation and technology management for increased innovation effectiveness that meets PTT's strategic objectives and core goals, as well as resource optimization, thereby contributing to sustainable growth, the following matters were endorsed by ERMC:

- 3.1 Innovation Management Quarterly Report (2023)
- 3.2 PTT innovation Management Policy
- 3.3 PTT innovation Management Master Plan (2024 - 2028)

This included driving, giving comments and suggestions for PTT's innovation management to achieve tangible results and leveraging business in line with the purpose.

4. Steered Customer and Market Management: To ensure the implementation of the customer and market management framework achieve the specified goals and align with the business direction by endorsing the following matters:

- 4.1 Customer and Market Management Quarterly Report (2023)
- 4.2 Customer and Market Management Strategy (2024 - 2028)
- 4.3 Customer Support and Complaint Management

ERMC pushed and provided feedbacks and recommendations on PTT's customer and market management to enhance efficiency and create long-term satisfaction and engagement for all customers, which will contribute to the sustainability of the business in the future.

5. Considered and Commented on Complex Business Contracts and Large-scale Investments:

ERMC rigorously considered risk issues and risk management practices, advised on the pros and cons of business

decisions to make the investment worth the opportunity cost and suitable for the business context, as well as carefully commented on current and new businesses PTT wants to grow in the future in line with its strategic business direction before submitting for Board's approval.

6. Closely Monitored Corporate Risk Management every Quarter in 2023:

ERMC advocated leading and lagging Key Risk Indicators (KRIs) and counseled management on the improvement of its management practices by revising risk management plans in line with prevailing business strategies and contexts. Finally, ERMC reported its performance results to the Board. This year, ERMC urged and closely monitored the outcomes of price hedging processes under highly volatile markets of PTT and PTT Group companies with continuous monitoring under highly volatile market conditions.

7. Screened the List of 2024 Corporate Risks and Sought Approval of the Board:

To this end, a list of corporate risk items and risk management plans was integrated with the preparation of the annual corporate plans. Risk management plans have thus become more explicit and aligned with corporate business directions, strategies, and objectives. Implementation was cascaded throughout the corporation to effectively address the risks.

On the whole, ERMC and PTT's risk management task force are committed to maintaining and developing the efficiency of risk management for effective and proper performance as well as keeping risks manageable. Ultimately, this would sustainably support long-term business goal achievement amid challenging circumstances.

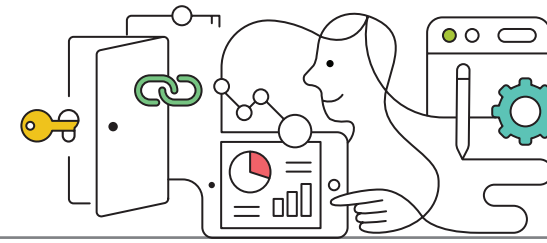
Mr. Chatchai Phromlert
Chairman of the Enterprise Risk Management Committee



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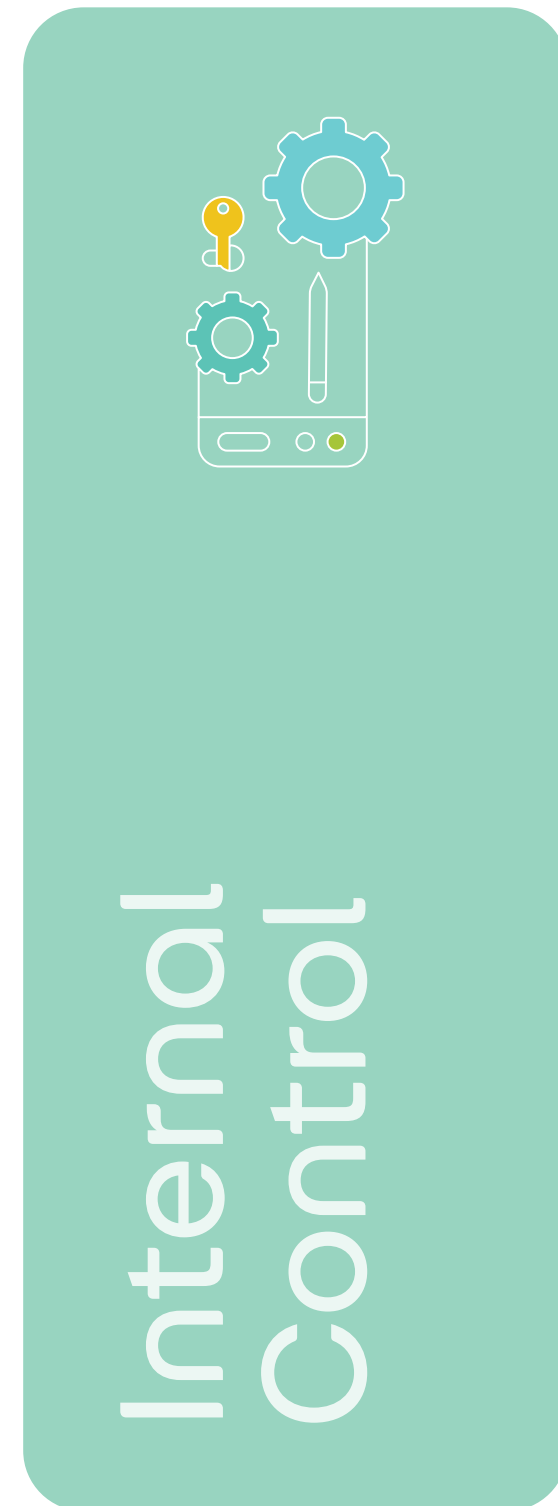
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9. Internal Control and Connected Transactions



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9.1 Internal Control

PTT emphasizes continuous improvement of internal control systems by adopting the international standard of the Committee of Sponsoring Organizations of the Treadway Commission (COSO) to achieve these objectives: Operation, Reporting, and Compliance.

In the Board Meeting No. 12/2023 on December 21, 2023, with all 14 directors (12 independent directors, 3 of whom were on the Audit Committee) in attendance, the Board assessed PTT's internal control system through screening and review of assessment results from the Corporate Governance and Sustainability Committee and the Audit Committee and concluded that 5 elements of PTT's internal control system, namely Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring and Evaluation Activities are adequate and suitable. The Company has provided sufficient personnel for efficient operation, reports are accurately and reliably prepared. Business operations comply with relevant laws and regulations, with a system to protect the company's assets and PTT Group from being wrongfully used by directors or executives or without authority, including transactions with persons who may have conflicts and connected persons.

PTT has further improved its procedures and systems to support internal control and ensure the efficient and speedier system's detection of problems or risks. PTT's internal control system can be summarized by COSO components as seen below:

(1) Control Environment

PTT commands a sound overall control environment that is adequate for business efficiency and effectiveness. Its executives have promoted a corporate culture focusing on integrity and ethics as role models with the following implementations:

- The Board and executives take the control environment and corporate culture seriously by defining policies for internal control, risk management, corporate governance (CG), anti-fraud and corruption, compliance, and giving and receiving of gifts, assets, or other benefits. These policies are announced for all to acknowledge, observe, and train with both internal and external public relations organized. Regular monitoring and assessment are in place. The Board, executives, and employees must acknowledge such guidelines in writing and conform to the Corporate Governance, Ethical Standards, and Code of Business Ethics Handbook (CG Handbook) and adapt for the better. Activities to raise awareness and enhance the CG atmosphere were organized such as PTT Group CG Day and GRC Forum in a hybrid format to support executives and employees who are interested in participating in activities across all regions. In addition, in 2023, GRC Knowledge Awareness Workshop was added to build GRC knowledge and understanding. Examples were also linked to the performance of different groups of employees.
- Emphasized integrity and ethics as a part of the SPIRIT corporate values to stress transparent business conduct and collaboration in the power of virtue, which explicitly embraced their everyday duties, decision-making, and treatment of all stakeholders, including suppliers and partners, customers, and third parties. PTT values equitable treatment based on fair competition, mutual respect of rights, and nurturing of relations and cooperation.
- Set good corporate governance as a part of the organization's vision, mission, and values by considering the 3 aspects of balance which include Environmental, Social, and business operation under Governance principles (ESG) and a balanced stakeholder management with the strategy of PTT Group Sustainability with Business Integrity as a part of the operation.

- Company structure is based on the "Three Lines Model" management approach focusing on ensuring everyone's understanding and strictly complying with regulations, duties, and responsibilities. To this end, it aims at prevention and solution by those on the job, systematic operation with total segregation of authority for approval, review of the inspection, and verification and stewardship of assets, which results in effective checks and balances. In addition, Office of Corporate Audit has a clear and independent reporting direct to the Audit Committee, which is marked by the decentralization of power to business units, thus giving due flexibility to communication for their duties and responsibilities.
- PTT defines a written policy and procedure for human resource (HR) evaluation and development, including procedures for planning and administering the overall workforce in both short and long terms. In place are an annual analysis and revision of manpower as well as analysis, planning, and definition of key succession processes by defining policies, regulations, tools, selection, assessment of potential and plans for developing those in the Potential Pool for key positions. In addition, PTT has adjusted the Core Competency to align with the new vision for the potential of the development plan and employee preparation in terms of necessary knowledge, skills, and experience to be able to drive the company to efficiently achieve the projected goals.

(2) Risk Assessment

PTT recognizes the importance of risk management to achieve business objectives as well as those of compliance and preparation of credible reports under changes that impact its businesses due to internal and external factors. It views risk management as a critical component of every business process that must be interconnected.

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- PTT defines corporate risk management policy for all to conform to. At every level, risks are to be assessed, including those of anti-fraud and corruption by applying risk management approaches according to international standards of COSO ERM - 2017. For corporate risks, management is systematically undertaken. The Enterprise Risk Management Committee (ERMC) is set up to steer and support corporate risk management in line with business strategies and goals as well as shifting circumstances and provides advice on guidelines for monitoring and assessment to the Corporate Plan and Risk Management Committee (CPRC) to manage overall risks for maximum efficiency. It is the responsibility of all units to manage and control risks to manageable levels (risk appetite), as clearly stated in the functional descriptions of all units. In 2023, the Risk Management Dashboard (RMD) was developed for corporate risk management.
- The Business Continuity Management (BCM) process is applied to crisis management to assess guidelines for business, workforce communication and preparation of resources and business processes for employees' uninterrupted and safe work without impacts on key goals. In addition, PTT holds annual crisis management and business continuity training to ensure the readiness of emergency management.

(3) Control Activities

PTT has set a variety of control activities to manage the Company's risks to an acceptable level. Control activities with technological systems are being developed. Expectations and procedures are defined for the implementation of established policies as follows:

- PTT Management Committee (PTTMC) reviews financial and non-financial reports of all business groups and regularly reviews performance to ensure conformance to regulations, protocols and job manuals. PTT defines written policies and procedures. Portions of businesses have been identified for key risks, and mechanisms have been defined to control and minimize errors. Regular performance reviewed by the management are in place, including financial, procurement and general administrative transactions.

- Systematic delegation of duties to personnel groups ensures proper checks and balances. Authority is duly and fully segregated for approval, information compilation, transaction recording, receipt and disbursement of cash, reviews of inspection and stewardship of properties. In place is an internal control system for finance and accounting, with complete, accurate and regular recording. Systematic and consistent storage of accounting documents both documents and information are in place to comply with the law. Should PTT engage in transactions with the major shareholder, directors, executives, or their related parties, it would apply strict measures to ensure that each such transaction secures required approval every time and every transaction. Parties with vested interests will not take part in the approval of such an item. PTT also closely monitors subsequent actions.
- PTT Group Way of Conduct serves as a mechanism and guidelines for steering the policies and business conduct of PTT Group. Multi-level Governance ensures a single implementation standard for all. The internal control policy is grouped under strategic alignment with a report submitted to PTT annually. Site visits to PTT Group companies are arranged to engage in sharing, counseling and recommending ideas on internal control development, including GRC and PTT Group Way of Conduct. Guidelines for operations are prepared to ensure adequacy and suitability in line with business operations for newly established companies.
- Policies, regulations and procedures are constantly reviewed to ensure their suitability, for example, PTT Corporate Governance Policy, PTT Anti-Fraud and Corruption Policy, Corporate Governance, Ethical Standards and Code of Business Ethics Handbook (CG Handbook), Fraud and Corruption Risk Assessment Manual, regulations for finance and accounting, procurement, etc. to comply with laws, rules, regulations, including risks and current situations. In 2023, PTT's Anti-Corruption Policy and CG Handbook were revised by adding details of guidelines on hiring or appointing government officials to prevent the risk of fraud and corruption related to conflicts of interest that may result in impartial performance of duties.

- A third-party screening manual and PTT's blacklist criteria were launched on March 1, 2023, to ensure that PTT's business operations are based on transparency, fairness, accountability and transparency measures in transactions with third parties. PTT's blacklist criteria are publicized to PTT's stakeholders through PTT Website, and supplier seminars, as well as stipulated in PTT's scope of work standards. In addition, in place is a database system for monitoring the transparency of third parties as a center for searching information according to blacklist criteria.
- PTT has implemented guidelines according to ISO/IEC 38500 standards by preparing digital policies, digital standards, and enterprise architecture governance guidelines covering the enterprise architecture management process under the framework of the Open Group Architecture Framework (TOGAF) and the Digital Government Development Agency (DGA). An Enterprise Architecture Working Group was set up to be responsible for overseeing the acquisition, development and maintenance of technological systems as appropriate. Regulations on information security in controlling, developing, or modifying computer systems (Change Management) were in place, with the practical guidelines embracing various work procedures, including requesting, testing, and migrating for actual applications and major system maintenance, e.g., data backup. Also in place is IT Security Policy compliance for controlling key infrastructure, including the security of network systems and operation centers and access control to wireless networks.
- Operations controlled by information technology systems in line with regulations and requirements through ERP system, procurement, PTT Bid Submission system and expense disbursement system are designed. Robotic Process Automation (RPA) has been introduced to enhance efficiency and reduce manual operation e.g. information verification before account closure and information review before billing.

- Aware of cyber threats, PTT organized a test activity to raise awareness among employees by sending phishing e-mails to convince users to open files or fill in username/ password information, which is considered a behavior that highly increases the risk for the organization. At present PTT conducts this test every two months and provides solutions to make employees aware and recognize cyber threats so that they do not fall victim easily. If an e-mail is suspected to be fraudulent, problems must be reported or questions can be raised via E-mail Servicedesk or PTT Digital Call Center or press the automatic report button from PTT's e-mail application immediately.
- PTT values the supervision of sustainability management together with security, safety, health, and environment (SSHE), all of which are likened to a vital shield against risks or impacts and efficiently as well as effectively lowering potential losses suffered by all stakeholders, assets, work processes, data and the surroundings. This would bring about business sustainability while extending performance in all aspects of excellence for vision and goal attainment. In 2023, tools and processes for sustainability management are defined in Section 9.2 Strategic Sustainable Development and Section 9.3 Sustainable Development Report in the "State Enterprise Assessment Mode: Core Business Enablers" required by the State Enterprise Policy Office. In the sustainability management governance structure, the Board supervises, monitors, and provides policies as well as recommendations on sustainability management and SSHE; the Corporate Governance and Sustainability Committee (CGSC) reviews, orders, and comments on the implementation outcomes of strategy, plan, key sustainability and SSHE goals and indicators every quarter. PTT Management Committee, led by the President & CEO, monthly screens, orders and comments, supported by subcommittees at the management level for specific matters and management practices at the strategic level and operating level for sustainability and SSHE, namely



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(4) Information & Communication

PTT has a framework in place to ensure that processes related to information system development are efficient and transparent, including ensuring compliance with laws and regulations, along with managing risks from cybersecurity threats continuously, as follows:

- Announced the Digital Policy, Information Security Management Policy, Cyber Security Policy, and Personal Data Protection Policy to enable organizations to use digital technology for enhanced efficiency and create added value in business operations for continuous growth, agility, promptness, transparency and safety according to good governance principles.
- Established information security requirements that cover website security and internet usage, security of work equipment, cyber threat management procedures, as well as vulnerability assessment (VA) for all work systems.
- Specified digital standards to serve as guidelines for PTT employees for the highest standard and efficiency in all aspects, including information equipment, software, machine standards, information systems, system development, infrastructure security, training as well as service level agreements, for PTT's maximum benefits and effectiveness.

- Set standards related to information security of PTT's information, communication network, and equipment, as well as management of abnormal incidents and technology problems. All these make for PTT's information system to be protected against threats with efficient cyber risk management.
- Internationally operated according to Information Security Management Systems (ISMS) or ISO/IEC 27001 and Privacy Information Management System (PIMS) or ISO/IEC 27701. The policy is formulated with systematic practices covering all important processes, both Information Technology (IT) and Operation Technology (OT).
- Supervised and administered information and cyber security systems in accordance with the Code of Practices and Standard Framework on Cyber Security for government agencies and critical information infrastructure agencies under the cybersecurity framework of the National Institute of Standards and Technology (NIST).
- Closely monitored, measured, and supervised the cybersecurity operations of the Cyber Security Operation Center (CSOC) operated by PTT Digital Solutions Co., Ltd., which provides cybersecurity services and operations to PTT Group companies on a monthly basis.
- Specified cyber resilience as a corporate strategy. The indicator is that PTT must have zero cybersecurity incident scenarios or be able to take action to contain damage from cyber security incidents within the specified Mean Time to Contain (MTTC) period as follows:
 - People: Establishing employee awareness plans and testing security awareness with phishing e-mails.
 - Process: Compliance with ISO 27001 Cyber Insurance Disaster IT recovery plan, Cyber drill, and Incident Management. Elevate the Cyber Attack drill from Table Top to Full Live to test the system and the ability of employees to respond.

- Technology: 24-hour surveillance of IT threats by the Cyber Security Operation Center (CSOC) and installation of a Data Loss Prevention (DLP) system to prevent the transmission of personal data outside the organization. Measures to lower the violence level include the preparation of work plans and forms of business continuity management plan drills to cover emergencies from cyber threats, preparation of threat response plans to threats and cyber anomalies to be able to respond, communicate, and report the incident to relevant parties in a timely manner.

The quality of information and communication is an important part of ensuring that internal control can be carried out effectively. Information is disclosed and communicated through various channels to executives, employees at all levels and external stakeholders. PTT has a channel to report information or clues about fraud or corruption to the Company safely. Information and communication management guidelines are as follows:

- Manage data by defining a layer of data confidentiality. Establish guidelines for storing important documents and control documents as well as internal and external operational information to ensure that important information related to the Company's business operations is accurate, complete, and sufficient for operation and timely use. Furthermore, there are an efficient data analysis and storage system to ensure that the information used is reliable and sufficient. This includes managing the use of personal data in accordance with the Personal Data Protection Act B.E. 2562 (2019).
- Establish multiple channels for internal communication, including communication from senior management to employees through activities, e.g. Town Hall, communication via the Company's intranet, e-mail, providing important information to new employees through orientation activities, and providing useful operational knowledge through the Learning Management System.

- Provide multiple channels for communication with external stakeholders through the Company's website and social media, as well as having directly responsible agencies to regularly disclose important information to stakeholders. PTT has a Call Center 1365 to serve as a comprehensive information center. Shareholders are allowed to propose agenda items for the AGM and nominate qualified persons to be considered for election as company directors in advance to strengthen good corporate governance regarding the rights and equitable treatment of shareholders.
- Establish the provision on complaints and whistleblowing of fraud and malpractice, misconduct and non-compliance with laws, rules, and organizational regulations B.E. 2565 (2022). This provision covers whistleblowing channels for informing malpractice, misconduct, and non-compliance with laws, rules, and organizational regulations through the Company's website, e-mail and letter, with clearly stated protection of whistleblowers. This is to ensure that employees and third parties can be confident that complaints will be considered transparently, honestly, fairly, and confidentially within a reasonable time. The Governance, Risk and Compliance Management Committee (GRCMC) is assigned to manage oversight, and operate PTT's Anti-Corruption Operation Center in State Enterprises, responsible for supervising and monitoring the progress of corruption complaints and reporting the results to PTT's President, Corporate Governance and Sustainability Committee and Audit Committee.



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(5) Monitoring & Evaluation Activities

PTT commands a process for monitoring and assessing the adequacy of internal control and defines guidelines for improvement to ensure system efficiency and effectiveness:

- Arranged for Conflict of Interest Report annually and when there is a case, and jointly analyzed with the Procure-to-Pay Process by using Continuous Control Monitoring and Auditing System (CCMS) to review items that may have significant conflicts.
- Regularly evaluated internal control efficiency and effectiveness at least once a year by requiring senior executives to conduct control self-assessment according to their roles and responsibilities assigned through the E-CSA form (Control Self-Assessment) and requiring all departments and direct-report divisions to conduct this self-assessment according to the GRC (Governance, Risk, and Compliance) guidelines as well as developing plans to improve internal controls in high-risk processes, and follow up on such improvements. Reports are to be regularly submitted to the Board.
- The Board and executives regularly monitor implementation reports of strategic plans, laws, rules, and regulations of PTT and PTT Group.

This year, the Office of Corporate Audit also reviewed internal control processes to ensure that they are adequate, suitable, and consistently practiced. If a given item needed improvement, procedures would be discussed with management to define implementation guidelines along with improvement plans to prevent or minimize risks and monitor execution to ensure that audit and review findings are promptly remedied. This is reported every quarter to the Audit Committee, indicating that PTT's internal control system for this year is adequate, efficient, and effective, a view shared by the external auditor.

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Internal Audit System

The Office of Corporate Audit is an independent unit that directly reports to the Audit Committee. It fosters assurance and provides advice to ensure that business processes are duly equipped with efficient good corporate governance risk management, and internal control practices in support of corporate objectives.

The Office commands an annual audit plan and three-year audit plans in line with PTT's business strategic direction and a risk-based approach to key corporate risks, encompassing PTT Group's domestic and oversea businesses. It reports to the Audit Committee for consideration and forwards them to the Board for acknowledgment every quarter. Regular monitoring is undertaken for actions in response to the office's recommendations. In its course of work, the office freely expresses its opinions. No conflicts have been arisen between audited units and the Office that cannot be resolved.

Head of the Office of Corporate Audit

In meeting No. 10/2022 on October 27, 2022, the Board appointed Mr. Chayagorn Leangruenrom, Executive Vice President, Office of Corporate Audit, with effect from November 1, 2022, citing his mastery of PTT's business. Equipped with knowledge, skills and experience in internal audit, he is familiar with the business undertaking, good governance, risk assessment, and internal control at the business and overall levels and was therefore regarded as suitable for the position. The Audit Committee approved the appointment, transfer, performance assessment, and annual merit pay increase of this position.

Biography of the Head of the Office of Corporate Audit



Mr. Chayagorn Leangruenrom

Age: 55

Education

- Bachelor of Engineering, King Mongkut's Institute of Technology Ladkrabang
- Master of Business Administration, Kasetsart University

Training

- Anti-Corruption for Executive Program (ACEP 7/2013), Corporate Governance for Executives Program (CGE 19/2022), Subsidiary Governance Program (SGP Online 1/2022), Thai Institute of Directors Association (IOD)
- Leadership Development Program II, PTT-Harvard Business School, PTT Leadership and Learning Institute (PLLI)

- Public-Private Partnerships for Executives Program (PEP) Class 8, Institute of Research and Development for Public Enterprises (IRDP)
- Corporate Governance for Directors and Senior Executives of Regulators, State Enterprises and Public Organizations (PDI) Class 24, King Prajadhipok's Institute
- Advanced Management Program (AMP) 3 - Business & People Management, PTT Leadership and Learning Institute (PLLI)
- Senior Executive Program, Capital Market Academy (CMA) Class 32
- New Chief Audit Executive Training Program for the Development of Internal Audit Practitioners for Government Agencies in the 2023 Fiscal Year, Class 2, The Comptroller General's Department

Working Experiences (Past 10 years)

- 2022 - Present
Executive Vice President, Office of Corporate Audit, PTT
- 2020 - 2022
Executive Vice President, Corporate Governance, PTT
- 2019 - 2020
Vice President, Natural Gas Marketing Department, PTT
- 2016 - 2019
Vice President, Project Director, Myanmar - Thailand LNG Receiving Terminal, PTT
- 2016 - 2016
Vice President, Internal Audit Department, PTT
- 2013 - 2016
Vice President, Subsidiary Audit Department, PTT
- 2011 - 2013
Vice President, Internal Audit Department, PTT

Key Related Directorship

- -None-

Relations with the Management

- -None-

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Compliance Unit

PTT has assigned “Compliance Department” to govern legal and regulatory compliance of PTT with detailed roles, duties, and responsibilities defined in the Compliance Charter. Currently, it is under Executive Vice President, Corporate Governance, and supervised by Senior Executive Vice President, Organization Effectiveness and Corporate Governance (biography shown in Information of Executives Section), and indirectly reporting to the Governance, Risk and Compliance Management Committee (GRCMC) and the Corporate Governance and Sustainability Committee (CGSC), respectively. PTT launched the “Compliance Policy” and “Compliance Framework” for directors, management, and employees to adhere to as their work principles in accordance with relevant laws and regulations.

Compliance Department centralizes corporate compliance and oversees all personnel and all business units under PTT to fully comply with laws, rules, regulations, directives, procedures and announcements controlling all facets of PTT businesses. Supervisory procedures e.g. monitoring, compiling, and communicating new laws, risk assessment, operational supervision and review, and consultation are defined. This is to ensure that PTT’s business operations comply with laws and regulations. PTT has integrated compliance work with regulatory units with specific laws and regulations within PTT (2nd Line).

Compliance Department also constantly develops and nurtures compliance culture by launching GRC Survey: Compliance to assess the compliance culture of PTT’s management and employees to analyze the scores and develop a plan to effectively promote and develop compliance culture, able to develop and improve on the spot in depth. Exchange of views and opinions on legal and regulatory problems and obstacles legal as well as consultation, support to units in complying with laws and related regulations, supporting the promotion of corporate compliance culture, especially promoting the role model of executives and supervisors. This includes guidelines for behaving and working in accordance with laws and regulations through various channels such as internal e-mail, preparation of learning materials in the form of online learning, preparation of a summary of important laws in the form of infographics, dissemination of Compliance Policy and Compliance Framework in handbook and cartoon infographics. PTT personnel has also been encouraged to adhere to laws and regulations, corporate governance, and business ethics through Tone from the top which communicated key messages from top management as food for thought, direction, or practices via video clips to promote compliance culture from top management. The working atmosphere is enhanced to bring employees closer to the management through internal publicity throughout the organization.

In addition, management of non-compliance incidents is also undertaken by collecting, analyzing, reviewing non-compliance cases (if any), and follow-up to improve the operational process and find ways to prevent and reduce the chance of non-compliance repeated in the future. PTT also sets a goal of becoming a Zero Non-Compliance organization by reviewing and setting indicators for measuring results. The annual performance of various departments must comply with laws and regulations by setting up the Corporate KPI: Non-Compliance, which measures the result by not finding any material errors from the complaints (both inside and outside PTT) that are considered fraudulent, malpractice, or misconduct, serious disciplinary action and unlawful acts with final punishment orders or written notices of illegal acts by legal regulators. In 2023, no non-compliance with a significant impact or legal liability to PTT in any way was found.

The aforementioned implementation of compliance supervision is aimed at fostering values and culture in compliance with laws and regulations, enhancing PTT personnel’s knowledge and understanding of key laws related to their responsibilities and awareness of potential impacts of non-compliance with laws and regulations, including being able to work properly and adhering to strict compliance with laws and regulations, and to ensure that PTT’s business operations will not be interrupted by legal compliance risks. The aim is to make PTT’s operations sustainably achieve the goal of “Zero Non-Compliance”.

In addition to conducting the aforementioned compliance supervision, the Compliance Department also acts as PTT’s DPO Office, with a personal data protection policy disclosed on the public disclosure page on PTT Website (<https://www.pttplc.com/>). Also in place are Personal Data Protection guidelines to provide PTT’s operations related to the personal data of various groups of stakeholders, including personal data of customers, business partners, and business related parties to have a regulatory process and appropriate operational guidelines. This is to ensure that PTT’s personnel know how to treat personal data and can correctly perform their work in accordance with such laws. In addition, relevant stakeholders can be assured that PTT will protect and treat personal data under PTT’s control under the Personal Data Protection Act B.E. 2562 (PDPA) as well as having a “Privacy Center” on PTT Website <https://pttpdpa.pttplc.com/> to provide a channel for various groups of stakeholders who own personal data to know the details of the processing of personal data and to manage the exercise of privacy rights.



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9.2 Connected Transactions

The connected transactions during 2021 - 2023 are summarized below:

9.2.1 Connected Transactions with Shareholders

The Company had no connected transactions with shareholders during 2021 - 2023.

9.2.2 Connected Transactions between PTT and Parties with the Common Major Shareholder

Connected Transactions between PTT and parties with the common major shareholder with potential conflicts are summarized below:

Connected Transactions	Unit: THB million		
	2021	2022	2023
Items from the Income Statement			
Sales and service income	67,980	116,664	111,292
Cost of goods purchased and services	1,215	1,328	1,681
Other income	41	85	149
Interest income	24	67	38
Other expenses	322	87	304
Items from Statement of Financial Position			
Trade accounts receivable	6,767	16,644	13,570
Other accounts receivable	-	134	-
Short-term advance payment	-	3	4
Trade accounts payable	27	16	27
Other accounts payable	387	283	62

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As of December 31, 2023, PTT was related to various parties by having a common major shareholder. Key relationships and related items are as follows:

Party with the Common Major Shareholder	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
Electricity Generating Authority of Thailand (EGAT)	Ministry of Finance, PTT's major shareholder, has control over EGAT.	Items from the Income Statement			
		Sales and service income	63,632	110,538	104,943
		Cost of goods purchased and services	-	-	1
		Other income	-	31	82
		Other expenses	319	5	-
		Items from Statement of Financial Position			
Provincial Electricity Authority (PEA)	Ministry of Finance, PTT's major shareholder, has control over PEA.	Items from the Income Statement			
		Sales and service income	223	331	458
		Cost of goods purchased and services	931	910	1,028
		Other income	14	21	33
		Other expenses	-	1	3
		Items from Statement of Financial Position			
Port Authority of Thailand (PAT)	Ministry of Finance, PTT's major shareholder, has control over PAT.	Items from the Income Statement			
		Sales and service income	852	979	983
		Cost of goods purchased and services	-	4	15
		Other income	2	2	2
		Other expenses	-	-	4
		Items from Statement of Financial Position			
		Trade accounts receivable	74	104	76

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Party with the Common Major Shareholder	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million				
			2021	2022	2023		
State Railway of Thailand (SRT)	Ministry of Finance, PTT's major shareholder, has control over SRT.	Items from the Income Statement					
		Sales and service income	1,519	2,491	2,618		
		Cost of goods purchased and services	3	38	168		
		Other income	15	21	23		
		Other expenses	-	-	3		
		Items from Statement of Financial Position					
		Trade accounts receivable	154	239	198		
Bangkok Mass Transit Authority (BMTA)	Ministry of Finance, PTT's major shareholder, has control over BMTA.	Items from the Income Statement					
		Sales and service income	1,395	1,755	1,729		
		Other income	5	5	5		
		Items from Statement of Financial Position					
		Trade accounts receivable	179	207	190		
		Metropolitan Electricity Authority (MEA)	Ministry of Finance, PTT's major shareholder, has control over MEA.	Items from the Income Statement			
				Sales and service income	32	40	40
Cost of goods purchased and services	261			306	347		
Other expenses	1			-	-		
Items from Statement of Financial Position							
Trade accounts receivable	3			1	1		
The Transport Co., Ltd.	Ministry of Finance, PTT's major shareholder, has control over The Transport Co., Ltd.			Items from the Income Statement			
		Sales and service income	169	320	362		
		Other income	1	1	1		
		Items from Statement of Financial Position					
		Trade accounts receivable	30	37	34		

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9.2.3 Connected Transactions among PTT and Subsidiaries, Joint Operations, Joint Ventures, Associates and Other Related Parties

Transactions among PTT and subsidiaries, joint operations, joint ventures, associates, and other related parties are summarized below:

Connected Transactions	Unit: THB million		
	2021	2022	2023
Items from the Income Statement			
Sales and service income	703,963	1,312,239	1,164,259
Cost of goods purchased and services	319,370	598,769	570,407
Other income	4,718	9,313	28,435
Interest income	1,278	1,852	1,657
Other expenses	3,807	4,331	4,108
Interest expenses	2,080	2,366	2,364
Items from Statement of Financial Position			
Trade accounts receivable	60,833	92,024	87,067
Other accounts receivable	1,958	2,139	2,776
Short-term advance payment	10	32	34
Current portion of finance lease receivable	-	-	67
Short-term lending	4,279	2,044	35,844
Long-term finance lease receivable	-	-	103
Long-term lending	119,596	56,067	21,020
Trade accounts payable	35,840	54,716	58,137
Other accounts payable	7,372	4,592	7,431
Current portion of lease liabilities	434	508	573
Short-term borrowings	7,217	9,447	18,297
Lease liabilities	2,697	2,531	2,406
Long-term borrowings	49,490	50,260	49,379

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As of December 31, 2023, PTT was related to companies by holding shares or having common shareholders or common directors. Key relationships and related items are as follows:

Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
PTT Exploration and Production Plc. (PTTEP)	<ul style="list-style-type: none"> A subsidiary (PTT Group owns 65.29% of PTTEP's shares) PTT's director/ executive, Mr. Auttapol Rerkpiboon, is PTTEP's directors. PTT's executive, Mr. Wuttikorn Stithit, is PTTEP's director. PTT's executive, Mr. Montri Rawanchaikul, is a director, & the Board's secretary, and Chief Executive Officer of PTTEP. 	Items from the Income Statement			
		Sales and service income	4	5	1
		Cost of goods purchased and services	99,569	125,870	79,617
		Other income	81	116	103
		Other expenses	41	63	44
		Items from Statement of Financial Position			
		Trade accounts receivable	1	-	-
		Other accounts receivable	25	35	60
		Trade accounts payable	10,269	12,960	11,193
		Other accounts payable	21	22	34
PTT Global Chemical Plc. (GC)	<ul style="list-style-type: none"> A subsidiary (PTT Group owns 48.18% of GC's shares) PTT's executives, namely Mr. Noppadol Pinsupa, Mr. Chadil Chavanalikhikorn, Mr. Cherdchai Boonchoochauy, are GC's directors. PTT's executive, Mr. Kongkrapan Intarajang, is a director & the Board's secretary, and President & CEO of GC. 	Items from the Income Statement			
		Sales and service income	271,569	376,062	341,818
		Cost of goods purchased and services	19,591	12,894	19,424
		Other income	541	1,010	1,042
		Interest income	-	1	-
		Other expenses	12	53	13
		Items from Statement of Financial Position			
		Trade accounts receivable	19,532	21,030	21,352
		Other accounts receivable	9	81	270
		Trade accounts payable	2,430	1,386	2,668
Other accounts payable	32	36	35		

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
IRPC Plc. (IRPC)	<ul style="list-style-type: none"> A subsidiary (PTT Group owns 48.05% of IRPC's shares) PTT's executives, namely Miss Peangpanor Boonklum, Mr. Chansak Chuenchom, Mr. Prasong Intaranongpai, are IRPC's directors. PTT's executive, Mr. Kris Imsang, is a director & the Board's secretary, and President & CEO of IRPC. 	Items from the Income Statement			
		Sales and service income	164,665	240,239	219,031
		Cost of goods purchased and services	177	1,439	3,009
		Other income	1,493	2,573	2,542
		Interest income	-	2	-
		Other expenses	20	24	30
		Items from Statement of Financial Position			
		Trade accounts receivable	10,201	14,907	13,270
		Other accounts receivable	108	285	344
		Trade accounts payable	19	1,442	939
Other accounts payable	2,797	3	3,204		
Thai Oil Plc. (TOP)	<ul style="list-style-type: none"> A subsidiary (PTT Group owns 48.00% of TOP's shares) PTT's executives, namely Mr. Buranin Rattanasombat, Miss Pannalin Mahawongtikul, Mr. Terdkiat Prommool, Mr. Suchat Ramarch, are TOP's directors. PTT's executive, Mr. Bandhit Thamprajamchit, is a director & the Board's secretary, and CEO & President of TOP. 	Items from the Income Statement			
		Sales and service income	114,454	382,479	324,037
		Cost of goods purchased and services	65	1,233	691
		Other income	265	2,377	3,137
		Other expenses	88	301	14
		Items from Statement of Financial Position			
		Trade accounts receivable	12,845	39,281	25,625
		Other accounts receivable	61	181	147
		Trade accounts payable	-	1,256	578
		Other accounts payable	3	121	6

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
PTT Oil and Retail Business Plc. (OR)	<ul style="list-style-type: none"> • A subsidiary (PTT Group owns 75.00% of OR's shares) • PTT's director/ executive, Mr. Auttapol Rerkpiboon, is OR's Chairman of the Board. • PTT's executives, namely Dr. Buranin Rattanasombat, Mr. Terdkiat Prommool, are OR's directors. 	Items from the Income Statement			
		Sales and service income	28,583	39,156	39,506
		Cost of goods purchased and services	16,305	18,789	17,156
		Other income	1,148	1,114	1,327
		Interest income	-	18	1
		Other expenses	784	671	790
		Items from Statement of Financial Position			
		Trade accounts receivable	3,114	2,452	2,671
		Other accounts receivable	736	239	283
		Current portion of finance lease receivable	-	-	68
		Long-term finance lease receivable	-	-	102
		Trade accounts payable	3,240	3,841	3,101
		Other accounts payable	2,117	1,581	1,419
Current portion of lease liabilities	-	-	1		
Lease liabilities	-	-	1		
Global Power Synergy Plc. (GPSC)	<ul style="list-style-type: none"> • A subsidiary (PTT Group owns 75.23% of GPSC's shares) • PTT's executives, namely Mr. Wuttikorn Stithit, Mr. Noppadol Pinsupa, Miss Pannalin Mahawongtikul, M.L. Peekthong Thongyai, Mr. Kongkrapan Intarajang, Mr. Bandhit Thamprajamchit are GPSC's directors. • PTT's executive, Mr. Worawat Pitayasiri, is a director & the Board's secretary, and President & CEO of GPSC. 	Items from the Income Statement			
		Sales and service income	12,372	19,489	15,387
		Other income	107	90	83
		Other expenses	-	4	5
		Items from Statement of Financial Position			
		Trade accounts receivable	1,373	1,724	1,237
		Other accounts receivable	32	22	24
		Other accounts payable	1	1	1

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
PTT LNG Co., Ltd. (PTT LNG)	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) • PTT's executive, Mr. Wuttikorn Stithit, is Chairman of the Board of PTT LNG. 	Items from the Income Statement			
		Sales and service income	274	1,300	582
		Cost of goods purchased and services	9,403	9,554	12,426
		Other income	59	292	84
		Other expenses	-	8	10
		Interest expenses	3	5	20
		Items from Statement of Financial Position			
		Trade accounts receivable	31	40	37
		Other accounts receivable	20	90	25
		Trade accounts payable	837	873	1,310
		Other accounts payable	-	1	24
		Current portion of lease liabilities	-	2	8
		Short-term borrowings	1,615	1,969	895
Lease liabilities	-	31	238		
PTT Natural Gas Distribution Co., Ltd. (PTTNGD)	<ul style="list-style-type: none"> • A subsidiary (PTT Group owns 58.00% of PTTNGD's shares) • PTT's executive, M.L. Peekthong Thongyai, is Chairman of the Board of PTTNGD. 	Items from the Income Statement			
		Sales and service income	5,625	10,195	7,556
		Cost of goods purchased and services	9	16	17
		Other income	25	25	34
		Other expenses	8	3	-
		Items from Statement of Financial Position			
		Trade accounts receivable	1,358	1,538	1,160
		Other accounts receivable	9	7	28
		Trade accounts payable	-	1	1
		Other accounts payable	5	1	1



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Section 2 Corporate Governance		9. Internal Control and Connected Transactions			
Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
PTT International Trading Pte. Ltd. (PTTT)	<ul style="list-style-type: none"> A subsidiary (Wholly owned by PTT Group) PTT's executive, Mr. Pongpun Amornvivat, is Chairman of the Board of PTTT. PTT's executive, Miss Jaroonsri Wankertphon, is a director of PTTT. 	Items from the Income Statement			
		Sales and service income	24,052	58,665	81,902
		Cost of goods purchased and services	77,740	262,536	240,139
		Other income	211	381	730
		Other expenses	61	145	139
		Items from Statement of Financial Position			
		Trade accounts receivable	2,807	3,887	9,942
		Other accounts receivable	139	123	327
		Trade accounts payable	5,356	15,618	13,513
		Other accounts payable	4	54	8
PTT International Trading London Ltd. (PTTT LDN)	<ul style="list-style-type: none"> A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Sales and service income	12,948	27,636	14,849
		Cost of goods purchased and services	19,682	11,722	14,256
		Other income	8	224	80
		Other expenses	37	34	18
		Items from Statement of Financial Position			
		Trade accounts receivable	770	1	-
		Other accounts receivable	360	182	661
		Trade accounts payable	2,789	-	2,801
		Other accounts payable	6	32	3
PTT International Trading USA Inc. (PTTT USA)	<ul style="list-style-type: none"> A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Sales and service income	7,025	31,807	25,332
		Cost of goods purchased and services	-	-	1,664
		Other income	-	126	78
		Other expenses	-	-	76
		Items from Statement of Financial Position			
		Trade accounts receivable	-	-	8
		Other accounts receivable	6	6	32
		Other accounts payable	1	119	24

Section 2 Corporate Governance		9. Internal Control and Connected Transactions					
Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million				
			2021	2022	2023		
PTT Tank Terminal Co., Ltd. (PTT TANK)	<ul style="list-style-type: none"> A subsidiary (Wholly owned by PTT Group) PTT's executive, Mr. Noppadol Pinsupa, is Chairman of the Board of PTT TANK. PTT's executive, Mr. Prasong Intaranongpai, is a director of PTT TANK. 	Items from the Income Statement					
		Cost of goods purchased and services	119	176	176		
		Other income	55	57	68		
		Other expenses	(3)	-	31		
		Interest expenses	6	5	16		
		Items from Statement of Financial Position					
		Other accounts receivable	16	22	22		
		Trade accounts payable	6	8	8		
		Other accounts payable	1	1	13		
		Short-term borrowings	990	1,425	1,915		
PTT Global Management Co., Ltd. (PTTGGM)	<ul style="list-style-type: none"> A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement					
		Other income	4	3	16,482		
		Interest expenses	3	-	2		
		Items from Statement of Financial Position					
		Other accounts receivable	1	1	1		
		Other accounts payable	-	-	1		
		Short-term borrowings	56	50	8,736		
		PTT Digital Solutions Co., Ltd. (PTT DIGITAL)	<ul style="list-style-type: none"> A subsidiary (Wholly owned by PTT Group) PTT's executive, Mr. Terdkiat Prommool, is Chairman of the Board of PTT DIGITAL. 	Items from the Income Statement			
				Cost of goods purchased and services	39	36	36
				Other income	138	173	155
Other expenses	1,068			1,282	1,396		
Interest expenses	-			3	4		
Items from Statement of Financial Position							
Other accounts receivable	51			63	66		
Short-term advance payment	10			32	24		
Other accounts payable	832			1,017	911		
Current portion of lease liabilities	2			42	56		
Lease liabilities	-	140	137				

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
PTT Treasury Center Co., Ltd. (PTT TCC)	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) • PTT's executive, Mrs. Chanamas Sasnanand, is Chairperson of the Board of PTT TCC. 	Items from the Income Statement			
		Other income	166	185	178
		Interest income	1,272	1,830	1,656
		Other expenses	1	1	-
		Interest expenses	2,016	2,268	2,218
		Items from Statement of Financial Position			
		Other accounts receivable	255	265	252
		Short-term lending	4,279	2,044	35,844
		Long-term lending	119,596	56,067	21,020
		Other accounts payable	848	877	868
Long-term borrowings	49,490	50,260	49,379		
PTTEP International Ltd.	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Cost of goods purchased and services	15,573	22,590	21,858
		Items from Statement of Financial Position			
		Trade accounts payable	2,597	3,876	3,265
		Other accounts payable	32	25	41
		Items from the Income Statement			
PTTEP Siam Ltd.	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Cost of goods purchased and services	16,807	24,895	19,850
		Other income	1	1	2
		Items from Statement of Financial Position			
		Trade accounts payable	1,416	1,682	3,264
PTTEP SP Limited	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Cost of goods purchased and services	7,538	9,649	9,638
		Items from Statement of Financial Position			
		Trade accounts payable	852	862	1,751

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
PTTEP Energy Development Co., Ltd.	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Sales and service income	-	2	10
		Cost of goods purchased and services	-	30,257	91,002
		Other expenses	-	14	25
		Items from Statement of Financial Position			
Trade accounts payable	-	3,356	8,685		
Other accounts payable	-	27	54		
PTTEP MENA Limited	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Cost of goods purchased and services	2,847	5,285	-
		Items from Statement of Financial Position			
		Trade accounts payable	703	-	-
PTTEP Oman E&P Corporation	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Cost of goods purchased and services	-	7,534	-
		Items from the Income Statement			
TOP SPP Co., Ltd.	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Sales and service income	4,635	8,033	8,532
		Items from Statement of Financial Position			
		Trade accounts receivable	546	613	1,661
Other accounts receivable	-	135	-		
IRPC Clean Power Co., Ltd.	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement			
		Sales and service income	3,949	7,034	5,887
		Other income	23	23	23
		Items from Statement of Financial Position			
		Trade accounts receivable	475	523	1,032
Other accounts payable	23	23	23		

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million				
			2021	2022	2023		
Glow Energy Plc.	<ul style="list-style-type: none"> • A subsidiary (PTT Group owns 99.83% of shares) • PTT's executive, Mr. Worawat Pitayasiri, is a director of Glow Energy Plc. 	Items from the Income Statement					
		Sales and service income	9,288	19,312	17,600		
		Cost of goods purchased and services	576	684	475		
		Other income	1	5	1		
		Items from Statement of Financial Position					
		Trade accounts receivable	961	1,260	2,231		
		Other accounts receivable	-	2	-		
		Other accounts payable	64	48	33		
		Glow SPP 2 Co., Ltd.	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) • PTT's executive, Mr. Worawat Pitayasiri, is a director of Glow SPP 2 Co., Ltd. 	Items from the Income Statement			
				Sales and service income	5,480	7,914	5,919
Other income	-			2	-		
Items from Statement of Financial Position							
Trade accounts receivable	687			754	882		
Other accounts receivable	-			2	-		
Glow SPP 11 Co., Ltd.	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) • PTT's executive, Mr. Worawat Pitayasiri, is a director of Glow SPP 11 Co., Ltd. 			Items from the Income Statement			
				Sales and service income	3,469	6,113	5,076
				Other income	1	1	1
				Items from Statement of Financial Position			
		Trade accounts receivable	323	474	845		
		Other accounts payable	1	1	1		
		Amata Natural Gas Distribution Co., Ltd.	<ul style="list-style-type: none"> • A subsidiary (PTT Group owns 80.00% of shares) Amata Natural Gas Distribution Co., Ltd's 	Items from the Income Statement			
				Sales and service income	3,062	5,208	4,574
				Other income	2	1	-
				Items from Statement of Financial Position			
Trade accounts receivable	699			791	727		
Other accounts receivable	-			1	10		

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million				
			2021	2022	2023		
PTT MEA Ltd.	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 	Items from the Income Statement					
		Sales and service income	2,415	36,092	20,680		
		Cost of goods purchased and services	-	5,871	-		
		Other income	-	-	9		
		Other expenses	23	25	24		
		Items from Statement of Financial Position					
		Trade accounts receivable	1,376	136	1,482		
		Other accounts receivable	1	2	3		
		Other accounts payable	-	1	13		
		PTT Global LNG Co., Ltd. (PTTGL)	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) • PTT's executive, M.L. Peekthong Thongyai, is Chairman of the Board of PTTGL. • PTT's executive, Mr. Pongpun Amornvivat, is a director of PTT GL. 	Items from the Income Statement			
Cost of goods purchased and services	-			67	4,054		
Other income	31			40	59		
Interest expenses	-			-	1		
Items from Statement of Financial Position							
Other accounts receivable	9			15	23		
Trade accounts payable	-			24	34		
Short-term borrowings	-			56	33		
Siam Management Holding Co., Ltd. (SMH)	<ul style="list-style-type: none"> • A subsidiary (Wholly owned by PTT Group) 			Items from the Income Statement			
				Other income	1	1	1
		Interest expenses	2	10	16		
		Items from Statement of Financial Position					
		Other accounts payable	-	1	2		
		Short-term borrowings	893	1,962	1,656		

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million				
			2021	2022	2023		
Arun Plus Co., Ltd. (ARUN PLUS)	<ul style="list-style-type: none"> A subsidiary (Wholly owned by PTT Group) PTT's director, Professor Dr. Thosaporn Sirisumphand, is Chairman of the Board of ARUN PLUS. PTT's executive, Mr. Cherdchai Boonchoochauy, is a director of ARUN PLUS. 	Items from the Income Statement					
		Other income	20	51	41		
		Other expenses	2	5	-		
		Interest income	-	2	-		
		Interest expenses	5	21	28		
		Items from Statement of Financial Position					
		Other accounts receivable	5	32	5		
		Other accounts payable	1	1	4		
		Short-term borrowings	2,729	1,957	3,195		
		Andaman Transportation Limited (ATL)	<ul style="list-style-type: none"> A joint operation (PTT Group owns 80.00% of ATL's shares) 	Items from the Income Statement			
Cost of goods purchased and services	9,214			14,037	14,159		
Other income	1			1	1		
Items from Statement of Financial Position							
Trade accounts payable	1,713			2,736	2,238		
Items from the Income Statement							
Cost of goods purchased and services	14,185			21,174	13,948		
Items from Statement of Financial Position							
Trade accounts payable	2,801			3,380	2,084		
Orange Energy Co., Ltd. (Orange)	<ul style="list-style-type: none"> A joint operation (PTT Group owns 53.95% of Orange's shares) 			Items from the Income Statement			
		Cost of goods purchased and services	3,872	5,056	2,375		
		Items from Statement of Financial Position					
		Trade accounts payable	250	564	164		
		B 8/32 Partners Ltd. (B8/32 Partners)	<ul style="list-style-type: none"> A joint operation (PTT Group owns 25.00% of B8/32 Partners' shares) 	Items from the Income Statement			
				Cost of goods purchased and services	3,872	5,056	2,375
				Items from Statement of Financial Position			
				Trade accounts payable	250	564	164

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
Trans Thai-Malaysia Co., Ltd. (TTM(T))	<ul style="list-style-type: none"> A joint venture (PTT Group owns 50.00% of TTM(T)'s shares) 	Items from the Income Statement			
		Cost of goods purchased and services	1,443	1,598	1,621
		Other income	26	30	14
		Other expenses	-	-	1
		Interest expenses	43	38	33
		Items from Statement of Financial Position			
		Other accounts receivable	4	7	5
		Trade accounts payable	273	281	290
		Current portion of lease liabilities	431	451	453
		Lease liabilities	2,696	2,336	1,860
District Cooling System and Power Plant Co., Ltd. (DCAP)	<ul style="list-style-type: none"> A joint venture (PTT Group owns 35.00% of DCAP's shares) 	Items from the Income Statement			
		Sales and service income	1,776	3,279	2,693
		Other income	5	7	7
		Items from Statement of Financial Position			
		Trade accounts receivable	218	256	314
		Other accounts receivable	2	37	3
		Other accounts payable	1	1	1
		Items from the Income Statement			
		Sales and service income	4,847	5,337	4,518
		Other income	5	5	6
Items from Statement of Financial Position					
Trade accounts receivable	397	383	422		
Other accounts payable	2	2	3		

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Related Party	Relationship (As of December 31, 2023)	Connected Transactions	Unit: THB million		
			2021	2022	2023
HMC Polymers Co., Ltd. (HMC)	• A joint venture (PTT Group owns 41.44% of HMC's shares)	Items from the Income Statement			
		Sales and service income	6,768	7,993	3,501
		Other income	7	7	3
		Items from Statement of Financial Position			
		Trade accounts receivable	765	132	225
		Other accounts receivable	5	-	-
		Other accounts payable	1	1	1
Nava Nakorn Electricity Generating Co., Ltd. (NNEG)	• A joint venture (PTT Group owns 30.00% of NNEG's shares)	Items from the Income Statement			
		Sales and service income	2,512	4,236	3,582
		Other income	3	3	3
		Items from Statement of Financial Position			
		Trade accounts receivable	280	308	644
		Other accounts receivable	-	199	-
		Other accounts payable	3	3	3
Bangpa-in Cogeneration Co., Ltd. (BIC)	• An associated company (PTT Group owns 25.00% of BIC's shares)	Items from the Income Statement			
		Sales and service income	3,222	5,720	4,764
		Other income	7	7	7
		Items from Statement of Financial Position			
		Trade accounts receivable	367	412	530
		Other accounts payable	7	7	7
		Ratchaburi Power Co., Ltd. (RPCL)	• Other related party (PTT Group owns 15.00% of RPCL's shares) • PTT's executive, Mr. Worawat Pitayasiri, is a director of RPCL.	Items from the Income Statement	
Sales and service income	6,784			4,671	2,595
Other income	33			33	33
Items from Statement of Financial Position					
Trade accounts receivable	1,259			719	240
Other accounts payable	32			32	32

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9.2.4 PTT's Connected Transactions Resulted from the Following Agreements with Key Conditions Being Summarized below:

(1) Transactions between PTT and State Enterprises

Transactions

- **Sales of natural gas**

PTT signed gas sales agreements (GSAs) with a state enterprise, the Electricity Generating of Thailand (EGAT).

There were 2 GSAs as follows:

1. GSA between PTT and EGAT, dated June 19, 2020.
2. GSA for Nam Phong Power Plant between PTT and EGAT, dated September 20, 2021.

Remark:

PTT has a liquefied natural gas purchase agreement with EGAT dated October 1, 2021, according to the ERC's resolution, which is applicable from October 2021 until the conclusion of EGAT's liquefied natural gas imports by 2021.

- **Sales of fuels and petroleum products**

The ministerial regulation prescribing state-promoted or state-supported supply and procurement procedures through the selection and specific procurement methods B.E. 2560 (2017), Division 7, required central and provincial government agencies and state enterprises (excluding EGAT) to purchase state-supported energy and natural resource supply of 10,000 liters or more by specific procurement methods from PTT, or otherwise, they can buy such supply through selection or invitation to bid. Currently, PTT sells fuels to the following state enterprises that still intend to buy fuels from PTT: Bangkok Mass Transit Authority (BMTA), State Railway of Thailand (SRT), EGAT, and The Transport Co., Ltd. As for state enterprises having outstanding payments, PTT could charge interest at the rate according to the contractual terms.

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(2) Transactions between PTT and PTT Exploration and Production Plc. (PTTEP) which is PTT's Subsidiary

Transactions

PTTEP and its subsidiaries produce and sell crude oil, natural gas, condensate, and liquefied petroleum gas (LPG). PTT was the major buyer of these in 2023 (69% by volume). PTT had a 15 - 30-year long-term natural gas purchase agreement with PTTEP, including annual minimum contractual volume. PTT also engaged in crude oil and condensate supply agreements with PTTEP, while selling natural gas to PTTEP. PTT's petroleum product pricing to PTTEP is consistent with global market prices and identical to the project partners' selling prices to PTT. PTT obtains fuel from PTTEP at competitive standard reference prices and under sensible conditions.

Normal Business Transactions or Those Supporting Normal Business Transactions

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Item	Amount as of December 31, 2023	Justification and Sensibility
1.1 Sale of petroleum products	THB 194,090 million	Pricing of petroleum products aligns with global market prices and is identical to the project partners' selling prices sold to PTT.
Natural gas 777,388.95 million cubic feet		
Crude oil 14.12 million barrels		
Condensate 19.33 million barrels		
Liquefied petroleum gas 59,485.01 metric tons		
1.2 Natural gas as fuels	THB 10.10 million	PTTEP's Board of Directors approved a 5-year (2019 - 2023) fuel supply agreement with PTT. The prices under the agreement were based on competitive standard reference market prices and sensible terms.
Natural gas 26.73 million cubic feet		

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(3) Transactions between PTT and Petrochemical and Refining Affiliates

Transactions

PTT signed crude oil, condensate, and feedstock supply agreements, refined and petrochemical product purchase agreements, and gas sales agreements for process feedstock with its petrochemical and refining affiliates. PTT also signed a LPG sales agreement, and service agreement for storage and distribution of refined products, leases and subleases of oil terminals for its subsidiaries in the oil and retail business. The purchase price is the market price.

(4) Transactions between PTT and its Affiliates of the New Business and Infrastructure Business Group: Transactions and Contracts with Global Power Synergy Plc. (GPSC)

Transactions

PTT signed a Gas Sales Agreement with GPSC to feed gas for power generation, which is considered a normal business transaction, with prices and conditions based on competitive standard referenced market prices.

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9.2.5 Sensibility of Connected Transactions

Procurement of goods, raw materials, or services from related entities aims to maximize mutual benefits in business operations within PTT Group and endorse national energy security. Such transactions are regarded as normal business practices. The volume of goods or raw materials bought or sold by PTT or services provided or received by related parties are in accordance with PTT's needs and business operations. Such prices and services are as agreed in contracts, leading to commercial benefits to both PTT and related parties without any benefits transferring or irregular transactions.

9.2.6 Policy Relating to Future Connected Transactions

PTT's future connected transactions will be conducted as part of its normal businesses without special favors or transfers of benefit between PTT, subsidiaries, associated companies, related companies, and shareholders. Pricing policy will continue to be at arm's length, and the prices of products supplied by PTT's subsidiaries will be at the market-based. Disclosure of connected transactions are according to SEC's and SET's regulations and the accounting standard for related parties/ entities disclosures announced by the Federation of Accounting Professions.

9.2.7 Appraisal Price for Related Transactions

-None-

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Financial Report

Details of Financial Report, are in
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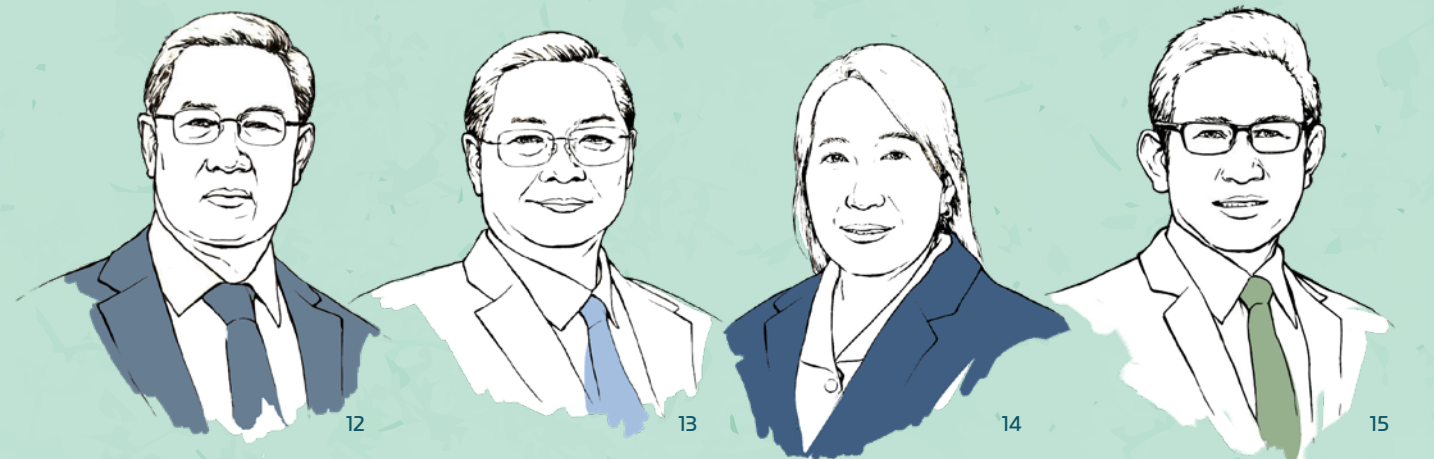
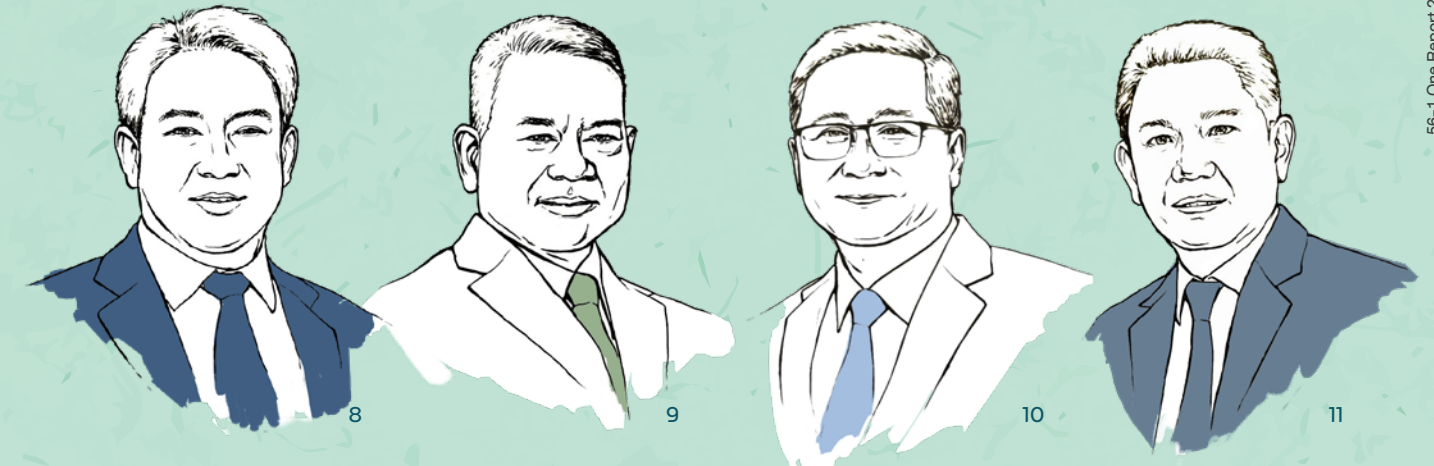
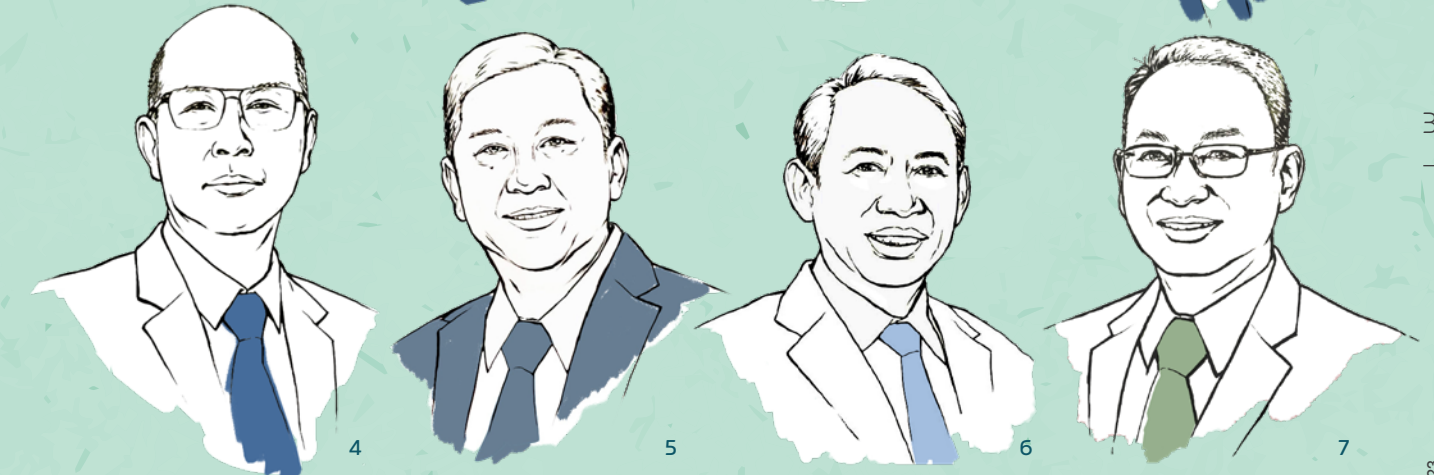
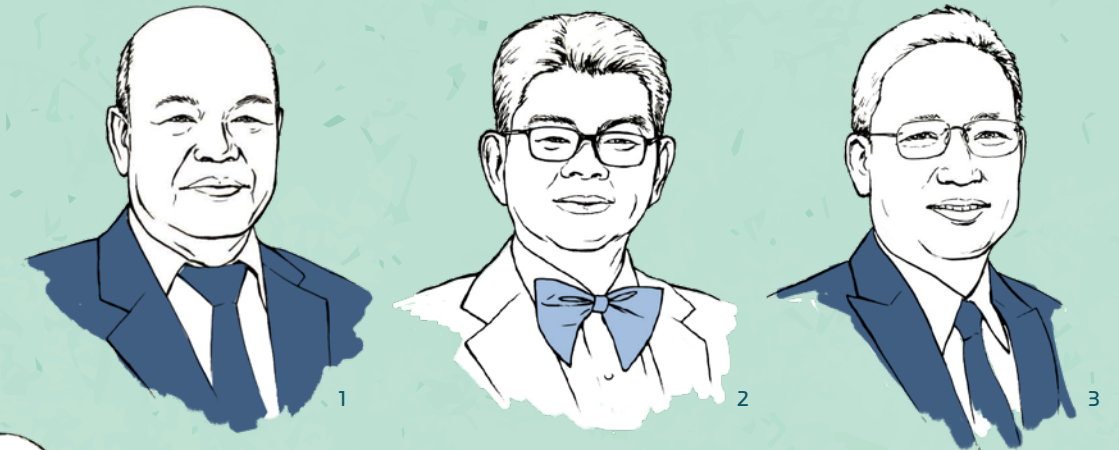
PTT's Board of Directors

As of December 31, 2023

- | | |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Mr. Chatchai Phromlert | Independent Director/ Chairman |
| 2. Mr. Krishna Boonyachai | Independent Director/ Chairman of the Audit Committee |
| 3. Mr. Payong Srivanich | Independent Director/
Chairman of the Nominating Committee |
| 4. GEN. Teerawat Boonyawat | Independent Director/
Chairman of the Remuneration Committee |
| 5. Mr. Jatuporn Buruspat | Independent Director/ Chairman of the Corporate Governance and Sustainability Committee/
Authorized Director |
| 6. Dr. Prasert Sinsukprasert | Director |
| 7. Professor Dr. Thosaporn Sirisumphand | Independent Director |
| 8. Associate Professor Dr. Narongdech Srukhsosit | Independent Director/ Member of the Audit Committee |
| 9. Air Chief Marshal Chanon Mungthanya | Independent Director/ Member of the Audit Committee |
| 10. Mr. Chansin Treenuchagron | Independent Director/
Member of the Nominating Committee/
Member of the Enterprise Risk Management Committee |
| 11. Mr. Lavaron Sangsrit | Director/ Member of the Nominating Committee/
Member of the Remuneration Committee |
| 12. Mr. Phongsthorn Thavisin | Independent Director/ Member of the Remuneration Committee/
Authorized Director |
| 13. Associate Professor Dr. Chayodom Sabhasri | Independent Director/ Member of the Corporate Governance and Sustainability Committee/
Member of the Enterprise Risk Management Committee |
| 14. Mrs. Phongsaward Neelayodhin | Independent Director/ Member of the Corporate Governance and Sustainability Committee |
| 15. Mr. Auttapol Rerkpiboon | Director/ Secretary to the Board/ Authorized Director/
President and Chief Executive Officer |

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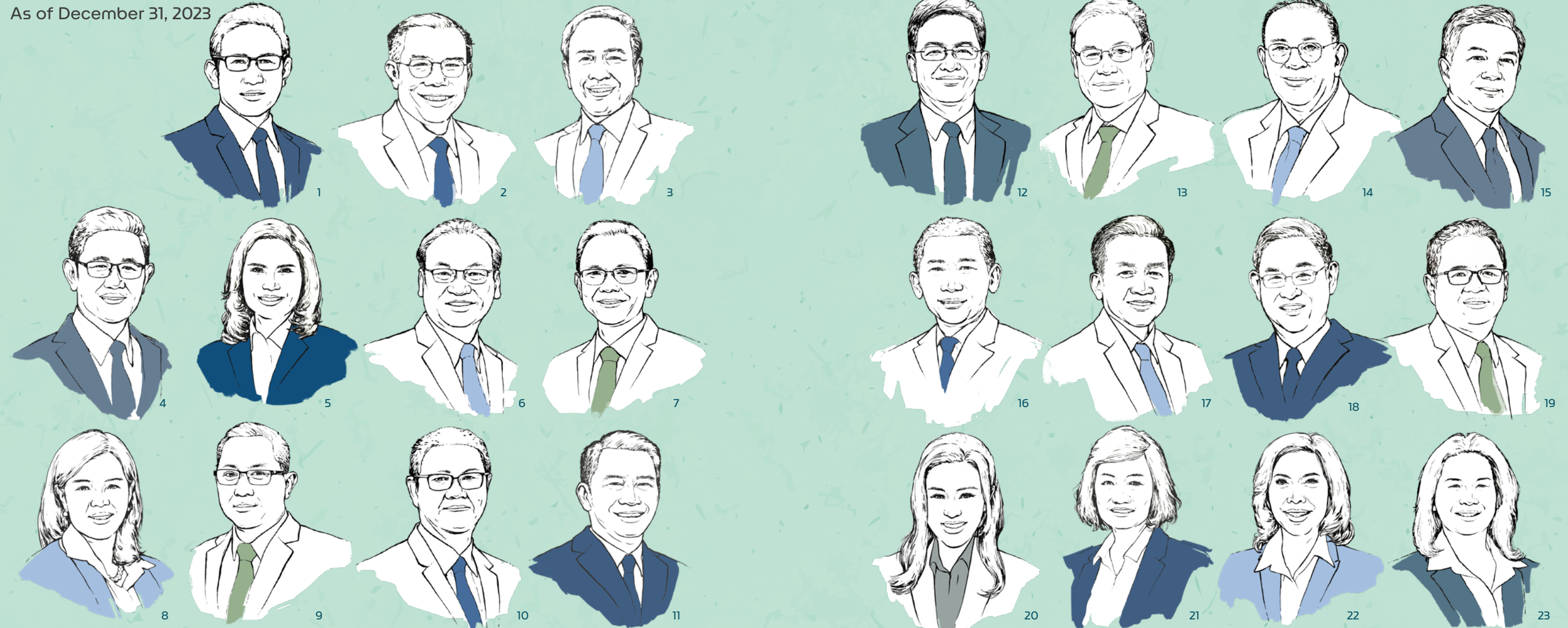
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- | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Mr. Auttapol Rerkpiboon
President and Chief Executive Officer</p> <p>2. Mr. Wuttikorn Stithit
Chief Operating Officer,
Upstream Petroleum and Gas Business Group</p> <p>3. Mr. Noppadol Pinsupa
Chief Operating Officer,
Downstream Petroleum Business Group</p> <p>4. Dr. Buranin Rattanasombat
Chief New Business and Infrastructure Officer</p> | <p>5. Miss Pannalin Mahawongtikul
Chief Financial Officer</p> <p>6. Mr. Terdkiat Prommool
Senior Executive Vice President, Corporate Strategy and Sustainability</p> <p>7. Mr. Chadil Chavanalikhikorn
Senior Executive Vice President,
Organization Effectiveness and Corporate Governance</p> <p>8. Miss Peangpanor Boonklum
Senior Executive Vice President, Office of General Counsel</p> <p>9. M.L. Peekthong Thongyai
Senior Executive Vice President, Gas Business Unit</p> <p>10. Mr. Prasong Intaranongpai
Senior Executive Vice President,
Downstream Business Group Alignment</p> <p>11. Mr. Pongpun Amornvivat
Senior Executive Vice President, International Trading Business Unit</p> | <p>12. Mr. Cherdchai Boonchoochauy
Senior Executive Vice President, Innovation and New Ventures</p> <p>13. Mr. Chansak Chuenchom
Senior Executive Vice President, Engineering and Infrastructure</p> <p>14. Mr. Montri Rawanchaikul
Chief Executive Officer,
PTT Exploration and Production Public Company Limited</p> <p>15. Dr. Kongkrapan Intarajang
Chief Executive Officer and President,
PTT Global Chemical Public Company Limited</p> <p>16. Mr. Bandhit Thamprajamchit
Chief Executive Officer and President,
Thai Oil Public Company Limited</p> <p>17. Mr. Kris Imsang
President and Chief Executive Officer,
IRPC Public Company Limited</p> | <p>18. Mr. Worawat Pitayasiri
President and Chief Executive Officer,
Global Power Synergy Public Company Limited</p> <p>19. Mr. Suchat Ramarch
President, PTT Oil and Retail Business
Public Company Limited</p> <p>20. Mrs. Nivadee Jaroensitipun
Executive Vice President Acting Senior Executive
Vice President, Government Relations</p> <p>21. Mrs. Wanida Boonpiraks
Executive Vice President,
Group Corporate Finance and Strategy</p> <p>22. Miss Jaroonsri Wankertphon
Executive Vice President, Group Accounting and Tax Policy</p> <p>23. Miss Numpetch Supharatanasit
Executive Vice President, Global Business Services</p> |
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	<p>Mr. Chatchai Phromlert Independent Director/ Chairman Age (Year) 62</p> <ul style="list-style-type: none"> • Independent Director <i>(Appointed on December 1, 2023)</i> • Chairman <i>(Appointed on December 23, 2023)</i> 	<p>(%) of Share Possession -None-</p> <p>Family Relationship among Directors and Executives -None-</p>
--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Arts (Political Science), Chulalongkorn University • Master of Public Administration, Chulalongkorn University 	October 28, 2020 - September 30, 2021	Chairman	Provincial Electricity Authority
	September 17, 2019 - October 28, 2020	Chairman	Provincial Waterworks Authority
	June 5, 2018 - June 4, 2021	Chairman	Metropolitan Electricity Authority
	October 1, 2017 - September 2021	Permanent Secretary	Ministry of Interior
	May 8, 2015 - October 1, 2021	Director	The Government Lottery Office

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 176/2013), Thai Institute of Directors Association (IOD) • Chief of District Program (Class 38) • Senior Administrator Program (Class 41) • The Civil Service Executive Development Program (Class 42), Office of the Civil Service Commission (OCSC) • Advanced Certificate Course in Public Economics Management for Executives (Class 3), King Prajadhipok's Institute • Diploma, The National Defence Course (Class 49), National Defence College • Certificate in Anti-Corruption Strategic Management for Senior Executives (Class 1), Office of the National Anti-Corruption Commission (NACC) • Advanced Certificate Course in Politics and Governance in Democratic Systems for Executives (Class 16), King Prajadhipok's Institute • Executive Program in Urban Development Management (Mahanakhon, Class 2), Bangkok • ASEAN Executive Management Program (Class 2), Office of the Civil Service Commission • Executive Program in Capital Market Leader (Class 17), Capital Market Academy (CMA) • The Program for Senior Executives on Justice Administration (Class 19), Judicial Training Institute, National Justice Academy • Advanced Political and Electoral Development Program (Class 7), Political and Electoral Development Institute • Rule of Law for Democracy (Class 5), College of the Constitutional Court • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 13), Thailand Energy Academy (TEA) 	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	December 23, 2023 - Present	Chairman, PTT Public Company Limited	
	December 1, 2023 - December 22, 2023	Chairman of the Enterprise Risk Management Committee, PTT Public Company Limited	
	December 1, 2023 - Present	Independent Director, PTT Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
-			
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
March 22, 2023 - Present	Expert Commission Member, The Police Commission		
March 9, 2023 - Present	Chairman, Anti-Money Laundering Office (AMLO)		
November 1, 2022 - Present	Executive Chairman, Management of the administrative and capital management unit on Area Based Development, Office of the Ministry of Higher Education, Science, Research and Innovation		

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Mr. Krishna Boonyachai
Independent Director/ Chairman of the Audit Committee
Age (Year) 59

- Independent Director
(Appointed on July 3, 2020, April 12, 2023 (Re-elected))
- Chairman of the Audit Committee
(Appointed on April 12, 2023)

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Economics, Faculty of Economics, Kasetsart University Graduate Diploma Program of Management Project Management, Muban Chombueng Rajabhat University Certification <ul style="list-style-type: none"> Director Certification Program (DCP 288/2020), Advanced Audit Committee Program (AAP 38/2020), Role of the Chairman Program (RCP 46/2020), Risk Management Program for Corporate Leaders (RCL 22/2021), Ethical Leadership Program (ELP 23/2021), Successful Formulation & Execution of Strategy (SFE 36/2021), and Director Leadership Certification Program (DLCP 3/2021), Thai Institute of Directors Association (IOD) Executive Program in Capital Market Leader (Class 24), Capital Market Academy (CMA) Top Executive Program in Commerce and Trade (TEPCoT) (Class 11), Commerce Academy, The University of the Thai Chamber of Commerce Super Series Batch 3: Leadership & Effective Corporate Culture, Institute of Research and Development for Public Enterprises (IRDP) & Judge Business School, University of Cambridge, UK Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 17), Thailand Energy Academy (TEA) 	2020 - March 2, 2021	Independent Director/ Member of the Audit Committee	Primo Service Solutions Company Limited
	2020 - July 2020	Sub-Committee on Corporate Governance and Corporate Social Responsibility	Metropolitan Waterworks Authority
	2010 - 2020	Chief Relationship Officer	Thai Management Association (TMA)
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	April 12, 2023 - Present	Chairman of the Audit Committee, PTT Public Company Limited	
	December 14, 2022 - Present	Independent Director/ Chairman of the Audit Committee/ Member of the Nomination and Remuneration Committee, T.R.V. Rubber Products Public Company Limited	
	July 3, 2020 - April 12, 2023	Member of the Audit Committee, PTT Public Company Limited	
	July 3, 2020 - Present	Independent Director, PTT Public Company Limited	
	December 12, 2019 - Present	Independent Director/ Chairman/ Member of the Audit Committee, TQR Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
May 9, 2022 - Present	Chairman of the Corporate Governance and Sustainability Committee, Euroasia Total Logistics Public Company Limited		
May 1, 2021 - Present	Independent Director/ Chairman/ Member of the Audit Committee, Euroasia Total Logistics Public Company Limited		
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
April 28, 2023 - Present	Director, the Anti-Corruption and Ethics Promotion Committee (2023 - 2024), The Thai Chamber of Commerce		
2020 - Present	Chief Consulting Officer, Nuttabhum Foundation		
2020 - Present	Chief Consulting Officer, TKI Perpetual Company Limited		
2020 - Present	Sub-Committee on Monitoring National Reform on Economics, Committee on Monitoring National Reform on Economics, Monetary and Finance, Senate		
2019 - Present	Advisor of Sub-Committee on Supporting the Affairs of Commerce, Committee of Commerce and Industry, Senate		

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Mr. Payong Srivanich
Independent Director/ Chairman of the Nominating Committee
Age (Year) 55

- Independent Director
(Appointed on April 9, 2021)
- Chairman of the Nominating Committee
(Appointed on October 19, 2023)

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> BS in Industrial Engineering, University of Arizona, Tucson, Arizona, USA MBA, University of Pittsburgh, Pennsylvania, USA Certification <ul style="list-style-type: none"> Director Certification Program (DCP 223/2016), Thai Institute of Director Association (IOD) Cybersecurity, Cyber Resilience & Privacy Risk in the Era of Digital Transformation 2018, ACIS Professional Center Training and Development for High Executive Project, Royal Thai Police TIJ Executive Program on the Rule of Law and Development: RoLD 2019, Thailand Institute of Justice (TIJ) Security Awareness 2021, Krung Thai Bank Public Company Limited Cyber Security Awareness 2022, Krung Thai Bank Public Company Limited Cyber Security Awareness 2023, Krung Thai Bank Public Company Limited 	November 8, 2016 - Present	President	Krung Thai Bank Public Company Limited
	April 9, 2021 - April 8, 2022	Member of the Remuneration Committee	PTT Public Company Limited
	July 8, 2020 - March 9, 2021	Corporate Secretary	Krung Thai Bank Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	October 19, 2023 - Present	Chairman of the Nominating Committee, PTT Public Company Limited	
	April 8, 2022 - October 18, 2023	Member of the Corporate Governance and Sustainability Committee, PTT Public Company Limited	
	April 9, 2021 - October 18, 2023	Member of the Nominating Committee, PTT Public Company Limited	
	April 9, 2021 - Present	Independent Director, PTT Public Company Limited	
	November 8, 2016 - Present	Executive Director/ Member of the Risk Oversight Committee/ President, Krung Thai Bank Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
2021 - Present	Director, KTB Advisory Company Limited		
2020 - Present	Chairman, National Digital ID Company Limited		
2017 - Present	Chairman, National ITMX Company Limited		
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
2023 - Present	Committee, Policy Committee to Support Sports Association from State Enterprises and the Private Sector		
2023 - Present	Committee, The 10,000-baht Digital Wallet Scheme Committee		
2023 - Present	Sub-Committee, The 10,000-baht Digital Wallet Driven Scheme Sub-Committee		

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	2021 - Present	Director, Board of Special Economic Development Policy	
	2021 - Present	Director, Supervisory Board of Minor Population Debt Relief	
	2021 - Present	Executive Director of Global Compact Network Thailand Association	
	2021 - Present	Member, Steering Committee of "Friends in need of ("PA") Fair 2021"	
	2020 - Present	Chairman, Thai Bankers' Association	
	2020 - Present	Private Sector Committee, Board of the Office of SMEs Promotion, The Office of SMEs Promotion	
	2020 - Present	Director, National Strategic Committee, Office of the National Economic and Social Development Council	
	2020 - Present	Director, Eastern Economic Corridor (EEC) Policy Committee, Eastern Economic Corridor (EEC)	
	2020 - Present	Director, Commission Policy on Private Participation in State Affairs, State Enterprise Policy Office	
	2020 - Present	Committee, The Board of Anti-Corruption Organization of Thailand Foundation, Anti-Corruption Organization of Thailand Foundation	
	2020 - Present	Advisor, Bureaucracy System Development Subcommittee about Studying and Setting Guidelines the Thailand National Digital Trade Platform, Office of the Public Sector Development Commission	
	2020 - Present	Committee, Capital Market Development Commission, Fiscal Policy Office	
	2020 - Present	Director, Payment Systems Committee (PSC), Bank of Thailand	
	2020 - Present	Board Member, Thailand Board of Investment (BOI)	
	2020 - Present	Co-Chairman, The Joint Standing Committee on Commerce, Industry and Banking (JSCCIB)	
	2020 - Present	Chairman, Development of Database Systems and Information Technology in Public Financial Institutions Subcommittee	
	2020 - Present	Director, The ASEAN Bankers Association (ABA)	
	2019 - Present	Senior Expert Committee, The National Financial Institution Development Board	

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GEN. Teerawat Boonyawat
Independent Director/
Chairman of the Remuneration Committee
Age (Year) 63

- Independent Director
(Appointed on April 11, 2019,
April 8, 2022 (Re-elected))
- Chairman of the Remuneration Committee
(Appointed on April 11, 2019)

(%) of Share Possession
-None-

Family Relationship among
Directors and Executives
-None-

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PTT Public Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education • Bachelor of Science Program, Chulachomkiao Royal Military Academy • Master of Business Administration, Kasetsart University	October 2020 - September 2021	Deputy Commander-in-Chief	Royal Thai Army
	October 2018 - September 2020	Member of Board of Directors	Defence Technology Institute
Certification • Director Accreditation Program (DAP 169/2020), Director Certification Program (DCP 303/2021), Board Nomination and Compensation Program (BNCP 13/2022), Role of the Chairman Program (RCP 49/2022) and Director Leadership Certification Program (DLCP 4/2022), Thai Institute of Directors Association (IOD) • Diploma, The National Defense Course (Class 58), National Defence College • Joint War College (Class 41) • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 17), Thailand Energy Academy (TEA)	October 2018 - September 2020	Secretary General	Internal Security Operations Command (ISOC)
	October 2018 - September 2020	Chief of Staff	Royal Thai Army
	December 2012 - September 2021	Royal Guard	
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	April 11, 2019 - Present	Independent Director/ Chairman of the Remuneration Committee, PTT Public Company Limited	
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
-	-		
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
-	-		

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Mr. Jatuporn Buruspat
Independent Director/ Chairman of the Corporate Governance and Sustainability Committee/
Authorized Director
Age (Year) 59

- Independent Director
(Appointed on April 9, 2021)
- Chairman of the Corporate Governance and Sustainability Committee
(Appointed on April 8, 2022)
(Restructured to be the Corporate Governance and Sustainability Committee on October 27, 2022)

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)			
	Time Period	Position	Organization/ Company	
Education <ul style="list-style-type: none"> Bachelor of Arts in Political Science, Chulalongkorn University Master of Arts in Political Science, Chulalongkorn University Master of Science (Forest Resource and Environment Administration), Kasetsart University Honorary Doctorate Degree of Philosophy in Environmental Technology and Management, Kasetsart University Honorary Doctorate Degree of Philosophy in Political Science, Mahachulalongkornrajavidyalaya University Certification <ul style="list-style-type: none"> Director Certification Program (DCP 129/2010), Thai Institute of Directors Association (IOD) Diploma, The National Defence Course (Class 55), National Defence College Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 15), Thailand Energy Academy (TEA) 	2019 - Present	Permanent Secretary	Ministry of Natural Resources and Environment	
	May 1, 2021 - April 8, 2022	Member of the Enterprise Risk Management Committee	PTT Public Company Limited	
	April 9, 2021 - April 8, 2022	Member of the Corporate Governance Committee	PTT Public Company Limited	
	2017 - 2019	Director-General	Department of Marine and Coastal Resources	
	August 11, 2015 - January 7, 2021	Director	TOT Public Company Limited	
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	April 8, 2022 - Present	Chairman of the Corporate Governance and Sustainability Committee,	PTT Public Company Limited	
	April 9, 2021 - Present	Independent Director,	PTT Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)			
	-	-	-	
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)				
2022 - Present	Vice Chairman, Anti-Money Laundering Committee			
2019 - Present	Chairman of the Board, Forest Industry Organization			
2019 - Present	Director, Highland Research and Development Institute			
2019 - Present	Director, Biodiversity-Based Economy Development Office			
2019 - Present	Director, Thailand Greenhouse Gas Management Organization			

Dr. Prasert Sinsukprasert
Director
Age (Year) 57

- Director
(Appointed on December 26, 2022, April 12, 2023 (Re-elected))

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)			
	Time Period	Position	Organization/ Company	
Education <ul style="list-style-type: none"> Bachelor of Engineering (Electrical Engineering), Chulalongkorn University Master of Science in Energy Conversion, Power and Transmission, George Washington University, USA Doctor of Philosophy in Energy Management and Policy, University of Pennsylvania, USA Certification <ul style="list-style-type: none"> Director Certification Program (DCP 229/2016), Thai Institute of Directors Association (IOD) Executive Program in Capital Market Leader (Class 29), Capital Market Academy (CMA) Senior Executive Fellows 2016, Harvard University, Boston, Massachusetts, USA Diploma, The National Defence Course (Class 58), National Defence College Top Executive Program in Commerce and Trade (TEPCoT), Commerce Academy, University of the Thai Chamber of Commerce IOD National Director Conference 2021: "Leadership Behind Closed Door" 	October 2023 - Present	Permanent Secretary	Ministry of Energy	
	April 23, 2021 - November 30, 2022	Member of the Corporate Governance and Sustainability Committee	Thai Oil Public Company Limited	
	April 7, 2021 - November 30, 2022	Director	Thai Oil Public Company Limited	
	October 2020 - October 2023	Director General, Department of Alternative Energy Development and Efficiency	Ministry of Energy	
	June 2020 - September 2020	Deputy Permanent Secretary	Ministry of Energy	
	2017 - 2020	Inspector General	Ministry of Energy	
	April 5, 2016 - February 2020	Director	Bangchak Corporation Public Company Limited	
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	November 16, 2023 - December 22, 2023	Chairman, PTT Public Company Limited		
	January 25, 2023 - November 15, 2023	Member of the Enterprise Risk Management Committee, PTT Public Company Limited		
December 26, 2022 - Present	Director, PTT Public Company Limited			
Relevant Important Positions in Non-Listed Company (In the Previous Year)				
-	-	-		



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> STS Expert Session: "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Public Company Limited 2021 PTIT Special Lecture "Thailand's Destiny in the Next 30 Years: Must Have A "New Think Through" to Propel the Country's Economy Forward" 	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	October 2020 - Present	Member of Board of Directors, Thailand Greenhouse Gas Management Organization (Public Organization)	



Professor Dr. Thosaporn Sirisumphand
Independent Director
Age (Year) 63

- Independent Director
(Appointed on November 6, 2020, April 8, 2022 (Re-elected))

(%) of Share Possession
0.000063
(Own 0;
Spouse 0.000063)

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> Bachelor of Public Administration (Honors), Chulalongkorn University Master of Public Administration, Pi Alpha Alpha (National Honor Society for Public Affairs and Administration), Northern Illinois University, USA Ph.D. in Policy Analysis, Public Administration and Comparative Politics, Northern Illinois University, USA <p>Certification</p> <ul style="list-style-type: none"> Director Certification Program (DCP 80/2006), Finance for Non-Finance Directors (FND 30/2006), Director Certification Program Update (DCPU 4/2015), Thai Institute of Directors Association (IOD) Executive Program in Capital Market Leader (Class 10), Capital Market Academy (CMA) The Program for Senior Executives on Justice Administration (Class 15), Judicial Training Institute, National Justice Academy Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 4), Thailand Energy Academy (TEA) 	March 12, 2019 - December 29, 2022	Chairman of the Board	Tourism Authority of Thailand
	August 23, 2018 - November 30, 2020	Director and Chairman	Thai Oil Public Company Limited
	July 1, 2018 - September 30, 2020	Director and Chairman	Bank of Thailand (Corporate Governance Committee)
	June 29, 2018 - September 30, 2020	Secretary General	Office of the National Economic and Social Development Council (NESDC)
	October 2016 - June 28, 2018	Secretary General	Office of the Public Sector Development Commission (OPDC)
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	November 18, 2020 - November 15, 2023	Chairman, PTT Public Company Limited	
	November 6, 2020 - Present	Independent Director, PTT Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	January 28, 2022 - Present	Chairman and Independent Director, Bangkok Genomics Innovation Public Company Limited	
July 5, 2021 - Present	Chairman, ARUN PLUS Company Limited		
June 28, 2021 - Present	Director, ARUN PLUS Company Limited		



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> • Corporate Governance: Effectiveness and Accountability in the Boardroom 2014, Kellogg School of Management, Northwestern University, USA • IOD Chairman Forum: "The Role of Chairman in Leading Strategic Risk Oversight" • Global Anti-corruption and Integrity Forum 2018, OECD, Paris, France • Seminar: "How to Transform Your Business to Become an Exponential Company in a Digital Era", Faculty of Commerce and Accountancy, Chulalongkorn University • IOD Chairman Forum: "Leading Boardroom Through Disruption: What Directors Should Know?" • Seminar "Geopolitics, Energy Transition & Energy Crisis: How do oil & Gas market fit into this complicated triangle?", Petroleum Institute of Thailand (PTIT). 	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	16 December 2022 - Present	Expert Member,	Vidyasirimedhi Institute of Science and Technology
	December 1, 2020 - Present	Expert Member,	National Strategy Committee
	November 17, 2020 - October 2023	Expert Member,	National Science and Technology Development Board
	July 29, 2020 - Present	Expert Member,	Office of the Public Sector Development Commission (OPDC)
	January 29, 2016 - 2023	Expert Member,	Chulalongkorn University Council
	November 24, 2015 - Present	Member of Council of State	

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Associate Professor Dr. Narongdech Sruckhosit
Independent Director/ Member of the Audit Committee
Age (Year) 46

- Independent Director
(Appointed on October 8, 2021, April 12, 2023, (Re-elected))
- Member of the Audit Committee
(Appointed on December 1, 2023)

(%) of Share Possession
0.000005
(Own 0;
Spouse 0.000005)

Family Relationship among Directors and Executives
-None-

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PTT Public Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> • Bachelor of Law (First Class Honors), Chulalongkorn University • LL.M., University of Cambridge, UK • Ph.D. (Law), University of Edinburgh, UK <p>Certification</p> <ul style="list-style-type: none"> • Director Certification Program (DCP 315/2022) and Financial Statements for Directors (FSD 45/2022), Thai Institute of Directors Association (IOD) • M&A in Practice, Chulalongkorn Law School Alumni Association • The Cullinan: The Making of the Digital Board (Class 2), Thailand Management Association, in collaboration with the Digital Economy Promotion Agency 	2001 - Present	Tenured Lecturer (Chair of Public Law)	Faculty of Law, Chulalongkorn University
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	December 1, 2023 - Present	Member of the Audit Committee,	PTT Public Company Limited
	June 27, 2023 - Present	Independent Director/ Member of the Audit Committee,	Quality Houses Public Company Limited
	April 8, 2022 - November 30, 2023	Member of the Enterprise Risk Management Committee,	PTT Public Company Limited
	October 8, 2021 - November 30, 2023	Member of the Corporate Governance and Sustainability Committee,	PTT Public Company Limited
	October 8, 2021 - Present	Independent Director,	PTT Public Company Limited
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	2016 - Present	Director, C & C International Venture Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
2022 - Present	Expert Committee Member on Legal Affairs, Grievance Management Committee attached to the Prime Minister's Office		
2022 - Present	Expert Committee Member on Legal Affairs, Digital Promotion and Development for Economy and Society Committee		

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	2020 - Present	Director, Board of Student Development Policy, Chulalongkorn University Council	
	2019 - Present	Counsel (Administrative Law), The Stock Exchange of Thailand	
	2019 - Present	Director, Committee of Evaluation of University Executive Performance, Suan Dusit University Council	
	2019 - Present	Subcommittee of Law, Neighboring Countries Economic Development Cooperation Agency	
	2018 - Present	Subcommittee of the Regulatory Screening Relating to Political Parties, The Election Commission of Thailand	
	2018 - Present	Subcommittee of Appeal Screening, Accounting Professions Governance Committee, Department of Business Development	
	2017 - Present	Director, Committee of Student Complaint and Appeal, Chulalongkorn University	

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Air Chief Marshal Chanon Mungthanya
Independent Director/ Member of the Audit Committee
Age (Year) 59

- Independent Director
(Appointed on April 12, 2023)
- Member of the Audit Committee
(Appointed on April 12, 2023)

(%) of Share Possession
-None-

Family Relationship among
Directors and Executives
-None-

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Science, Royal Thai Air Force Academy (Class of 30/1986), Royal Thai Air Force Academy • Squadron Officer School (Class 79), Royal Thai Air Force Academy • Air Command and Staff College (Class 41), Royal Thai Air Force Academy Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 338/2023), Thai Institute of Directors Association (IOD) • Diploma, The National Defence Course (Class 60), National Defence College • Budget Management Program For Executive (Class 4), Budget Bureau • Executive Program in Capital Market Leader (Class 33), Capital Market Academy (CMA) 	October 1, 2023 - Present	Deputy Chief of Defence Forces	Royal Thai Armed Forces Headquarters
	October 2022 - September 2023	Deputy Commander-in-Chief	Royal Thai Air Force
	October 2021 - September 30, 2022	Assistant Commander-in-Chief	Royal Thai Air Force
	October 2020 - September 30, 2021	Chief of the Air Staff	Royal Thai Air Force
	April 2020 - September 30, 2020	Deputy Chief of the Air Staff	Royal Thai Air Force
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	April 12, 2023 - Present	Independent Director/ Member of the Audit Committee PTT Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	October 1, 2022 - September 30, 2023	Director, Thai Aviation Industries Co., Ltd.	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
December 16, 2022 - Present	Director, The War Veterans Organization of Thailand under the Royal Patronage of His Majesty the King		

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	<p>Mr. Chansin Treenuchagron Independent Director/ Member of the Nominating Committee/ Member of the Enterprise Risk Management Committee Age (Year) 63</p>	<p>(%) of Share Possession -None-</p>
	<ul style="list-style-type: none"> • Independent Director (Appointed on May 14, 2022) • Member of the Nominating Committee (Appointed on October 19, 2023) • Member of the Enterprise Risk Management Committee (Appointed on December 1, 2023) 	<p>Family Relationship among Directors and Executives -None-</p>

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> • Bachelor of Economics, Thammasat University • Master of Economics, Chulalongkorn University • Honorary Doctorate of Science (Technology Management), Thammasat University <p>Certification</p> <ul style="list-style-type: none"> • Director Certification Program (DCP 85/2007), Financial Statements for Directors (FSD12/2011), Director Accreditation Program (DAP 93/2011), Chartered Director Class (CDC 10/2015), The Role of the Board in IT Governance (2020), IT Governance and Cyber Resilience Program (ITG 18/2021), Role of the Chairman Program (RCP 49/2022), Director Leadership Certification Program (DLCP 4/2022), Successful Formulation & Execution of Strategy (SFE 42/2023), Strategic Board Master Class (SBM 12/2023), Thai Institute of Directors Association (IOD) • Law of Democracy Course, (Class 8) Office of The Constitutional Court Certificate • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 7), Thailand Energy Academy (TEA) 	May 25, 2021 - August 1, 2022	Honorary Member of the University Council	Thaksin University
	2020 - May 13, 2022	Independent Director and Member of the Corporate Governance	PTT Global Chemical Public Company Limited
	July 2, 2020 - July 1, 2021	Acting President	Thai Airways International Public Company Limited
	June 4, 2020 - June 15, 2021	Director and Plan Administrator	Thai Airways International Public Company Limited
	August 31, 2018 - May 12, 2020	President and Chief Executive Officer	PTT Public Company Limited
	2018 - 2020	Chairman	IRPC Public Company Limited
	2018 - 2020	Director	PTT Exploration and Production Public Company Limited
	2018	Chief Technology and Innovation Officer	PTT Public Company Limited
	2017 - 2018	Chairman	PTT Digital Solutions Company Limited
	2017 - 2018	Director/ Member of the Risk Management Committee/ Member of the Nomination and Remuneration Committee	Global Power Synergy Public Company Limited
2016 - 2018	Member of the Risk Management Committee	IRPC Public Company Limited	

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> • Diploma, The National Defence Course (Class 57), National Defence College • Leadership Development Program 3 (LDP 3) (Class 1/2014), PTT Leadership and Learning Institute (PLLI) • Advance Senior Executive Program (ASEP-5) (Class 5/2010), KELLOGG & SASIN, Chicago, USA • Senior Executive Program (SEP) (Class 20), Sasin Graduate Institute of Business Administration of Chulalongkorn University • Advanced Certificate Course in Public Economics Management for Executives (Class 10), King Prajadhipok's Institute • Leadership Excellence through Awareness and Practice (LEAP), INSEAD, Singapore and France • Air War College (Class 35) • Executive Relationship Development Course (ERDC) (Class 1), Directorate of Civil Affairs • PTT Executive Leadership, General Electric, GE, New York, USA 	<p>Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)</p>		
	December 1, 2023 - Present	Member of the Enterprise Risk Management Committee,	PTT Public Company Limited
	October 19, 2023 - Present	Member of the Nominating Committee,	PTT Public Company Limited
	May 14, 2022 - November 30, 2023	Member of the Remuneration Committee,	PTT Public Company Limited
	May 14, 2022 - Present	Independent Director,	PTT Public Company Limited
	June 15, 2021 - Present	Director and Director of the Plan Administrator,	Thai Airways International Public Company Limited
	<p>Relevant Important Positions in Non-Listed Company (In the Previous Year)</p>		
	July 22, 2020 - Present	Chairman, Y.S.S. (THAILAND) Company Limited	
	<p>Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)</p>		
	2019 - Present	President, Thammasat Association under the Royal Patronage	
2018 - Present	Honorary Member of the University Council,	Thammasat University	



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Mr. Lavaron Sangsrit
Director/ Member of the Nominating Committee/
Member of the Remuneration Committee
Age (Year) 56

- Director
(Appointed on April 12, 2023)
- Member of the Nominating Committee
(Appointed on April 12, 2023)
- Member of the Remuneration Committee
(Appointed on December 1, 2023)

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Economics, Chulalongkorn University M.S. (Economic Policy and Planning), Northeastern University, USA Certification <ul style="list-style-type: none"> Director Certification Program (DCP 205/2015), Thai Institute of Directors Association (IOD) Diploma, The National Defence Course (Class 58), National Defence College Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 12), Thailand Energy Academy (TEA) Executive Program in Capital Market Leader (Class 25), Capital Market Academy (CMA) Executive Program in Public Administration (Class 7), Office of the Civil Service Commission (OCSC) Rule of Law for Democracy (Class 10), College of the Constitutional Court Security Awareness 2021, Krung Thai Bank Public Company Limited Cyber Security Awareness 2022, Krung Thai Bank Public Company Limited 	October 2023 - Present	Permanent Secretary	Ministry of Finance
	2022 - September 2023	Director General	The Revenue Department
	2020 - 2022	Director General	The Excise Department
	2018 - 2020	Director General, Fiscal Policy Office	Ministry of Finance
	2018 - 2020	Chairman	Deposit Protection Agency
	2018 - 2020	Board Member, Capital Market Supervisory Board	The Securities and Exchange Commission
	2018 - 2020	Director	Bank of Thailand
	2018 - 2020	Member of the Financial Institutions Policy Committee	Bank of Thailand
	2016 - 2018	Director and Chairman of the Risk Management Committee	Krungthai Asset Management Public Company Limited
	2016 - 2018	Inspector General	Ministry of Finance
Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	December 1, 2023 - Present	Member of the Remuneration Committee,	PTT Public Company Limited
	October 2023 - Present	Chairman, Krungthai Bank Public Company Limited	
	April 12, 2023 - Present	Director/ Member of the Nominating Committee, PTT Public Company Limited	
	September 2021 - March 2023	Director/ Member of the Corporate Governance and Sustainability Committee, Global Power Synergy Public Company Limited	
	2020 - October 2023	Director/ Executive Director/ Member of the Nomination and Remuneration Committee, Krungthai Bank Public Company Limited	
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
	-	-	
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
	January 5, 2021 - Present	Chairman, The Board of the Government Lottery	

Mr. Phongsthorn Thavisin
Independent Director/
Member of the Remuneration Committee/
Authorized Director
Age (Year) 64

- Director
(Appointed on May 9, 2023)
- Change from Director to Independent Director
(October 19, 2023)
- Member of the Remuneration Committee
(Appointed on December 1, 2023)

(%) of Share Possession
0.000035
(Own 0.000035;
Spouse 0)

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Science (Petroleum and Natural Gas Engineering), The Pennsylvania State University, USA Certification <ul style="list-style-type: none"> Director Certification Program (DCP 223/2016), Director Leadership Certification Program (DLCP 3/2021), Board Nomination and Compensation Program (BNCP 16/2023), Thai Institute of Directors Association (IOD) Executive Program in Capital Market Leader (Class 27), Capital Market Academy (CMA) Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 7), Thailand Energy Academy (TEA) Senior Executive Program (SEP-19) (Class 19), Sasin Graduate Institute of Business Administration of Chulalongkorn University Advanced Naval Studies Program (Class 40), Institute of Advanced Naval Studies PTT Group EVP Leadership Development, PTT PTT Executive Leadership, General Electric, GE, New York, USA Breakthrough Program for Senior Executive, IMD Diploma, The National Defence Course (Class 56), National Defence College Director's Briefing - Corporate Strategy beyond the Crisis, a Chairman/ Board Perspective, Bain & Company, Inc. 	October 1, 2020 - September 30, 2021	Chief Executive Officer	PTT Exploration and Production Public Company Limited
	January 1, 2019 - September 30, 2020	Senior Executive Vice President, PTT, Reporting to Chief Operating Officer, Upstream Petroleum and Gas Business Group working on a secondment as President and Chief Executive Officer	PTT Exploration and Production Public Company Limited
	October 1, 2018 - September 30, 2021	Director	PTT Exploration and Production Public Company Limited
	October 1, 2018 - December 31, 2018	Senior Executive Vice President, PTT, working on a secondment as Chief Executive Officer	PTT Exploration and Production Public Company Limited
	November 1, 2017 - September 30, 2018	President, Exploration and Production/ Acting Executive Vice President, Business Transformation and Organization Group	PTT Exploration and Production Public Company Limited



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> • International Seminar on Energy, CERAWEEK 2019, Houston, Texas, USA • In-house CG PTTEP/2017 	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	December 1, 2023 - Present	Member of the Remuneration Committee,	PTT Public Company Limited
	October 19, 2023 - Present	Independent Director,	PTT Public Company Limited
	May 18, 2023 - November 30, 2023	Chairman of the Enterprise Risk Management Committee,	PTT Public Company Limited
	May 9, 2023 - October 18, 2023	Director,	PTT Public Company Limited
	October 8, 2021 - April 12, 2023	Director/ Member of the Nominating Committee,	PTT Public Company Limited
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
-	-	-	
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
-	-	-	

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	<p>Associate Professor Dr. Chayodom Sabhasri Independent Director/ Member of the Corporate Governance and Sustainability Committee/ Member of the Enterprise Risk Management Committee Age (Year) 59</p>	<p>(%) of Share Possession -None-</p>
	<ul style="list-style-type: none"> • Independent Director (Appointed on April 9, 2021) • Member of the Corporate Governance and Sustainability Committee (Appointed on December 1, 2023) • Member of the Enterprise Risk Management Committee (Appointed on December 15, 2023) 	<p>Family Relationship among Directors and Executives -None-</p>

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> • Bachelor of Economics (Second Class Honor), Chulalongkorn University • Diploma in Economics, The London School of Economics and Political Science, University of London, UK • M.Sc. Economics, The London School of Economics and Political Science, University of London, UK • Ph.D. Economics, University of Wisconsin-Madison, USA 	1994 - Present	Professor in the Faculty of Economics	Chulalongkorn University
	April 9, 2021 - May 20, 2021	Member of the Nominating Committee	PTT Public Company Limited
	2019 - 2020	Sub-Performance Agreement Committee (Sub-PAC for SFIs)	State Enterprise Policy Office (SEPO), Ministry of Finance
	2016 - 2018	Sub-Performance Agreement Committee (Sub-PAC for SFIs)	State Enterprise Policy Office (SEPO), Ministry of Finance

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Certification</p> <ul style="list-style-type: none"> • Director Accreditation Program (DAP 155/2018), Advanced Audit Committee Program (AACP 33/2019), Board Nomination and Compensation Program (BNCP 7/2019), Director Certification Program (DCP 271/2019), Driving Company Success with IT Governance (ITG 16/2021) and Ethical Leadership Program (ELP 23/2021), Thai Institute of Directors Association (IOD) • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 14), Thailand Energy Academy (TEA) • Diploma, The National Defence Course (Class 57), National Defence College • Executive Program in Capital Market Leader (Class 17), Capital Market Academy (CMA) • Corporate Governance for Directors and Senior Executives of State Enterprises and Public Organizations Program (Class 6), King Prajadhipok's Institute, State Enterprise Policy Office and Office of the Public Sector Development Commission • The Cullinan: The Making of the Digital Board, Thailand Management Association, in collaboration with the Digital Economy Promotion Agency 	2015 - 2020	Investment Sub-Committee, Government Pension Fund (GPF)	Office of Government Pension Fund, Ministry of Finance
	2012 - 2018	Performance Agreement Committee for State Owned Enterprises (PAC)	State Enterprise Policy Office (SEPO), Ministry of Finance
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	December 15, 2023 - Present	Member of the Enterprise Risk Management Committee,	PTT Public Company Limited
	December 1, 2023 - Present	Member of the Corporate Governance and Sustainability Committee,	PTT Public Company Limited
	January 26, 2023 - Present	Chairman of the Nomination and Remuneration Committee,	Kiatnakin Phatra Bank Public Company Limited
	January 26, 2023 - Present	Member of the Audit Committee,	Kiatnakin Phatra Bank Public Company Limited
	May 20, 2021 - November 30, 2023	Member of the Audit Committee,	PTT Public Company Limited
	April 22, 2021 - Present	Independent Director,	Kiatnakin Phatra Bank Public Company Limited
	April 9, 2021 - Present	Independent Director,	PTT Public Company Limited
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	1999 - Present	Director,	Meyer Industries Limited
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	2020 - Present	Member of the Risk Oversight Committee, Academic Committee on Economic and Monetary Affairs, The Securities and Exchange Commission (SEC)	
2019 - Present	Academic Committee on Economic and Monetary Affairs, Parliament (Senate)		
2018 - Present	Honorary Committee, Member of the Public Debt Management Policy and Supervision Committee (MPO), Ministry of Finance		
2017 - Present	Evaluation Committee, Thai Health Promotion Foundation		
2016 - Present	Member of Chulalongkorn University Council,	Chulalongkorn University	

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Mrs. Phongsaward Neelayodhin
Independent Director/ Member of the Corporate Governance and Sustainability Committee
Age (Year) 56

- Independent Director
(Appointed on December 1, 2023)
- Member of the Corporate Governance and Sustainability Committee
(Appointed on December 1, 2023)

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Laws Program, Thammasat University Certification <ul style="list-style-type: none"> Director Accreditation Program (DAP 189/2022), Thai Institute of Directors Association (IOD) Diploma, The National Defence Course (Class 63), National Defence College Executive Development Program (Class 82), Office of the Civil Service Commission Executive Program in Budgeting (Class 6), Budget Bureau Executive Program in Legal Literacy (Class 5), Office of the Council of State Spokesman Program, Office of the Prime Minister 	2022 - Present	Permanent Secretary for Justice	Ministry of Justice
	2020 - 2022	Acting Director	Strategic Transformation Office (STO)
	2018 - 2022	Deputy Secretary-General	Office of the Council of State
	2015 - 2017	Permanent Law Councilor	Office of the Council of State
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	December 1, 2023 - Present	Independent Director/ Member of the Corporate Governance and Sustainability Committee, PTT Public Company Limited	
	February 17, 2021 - November 28, 2023	Director, Airports of Thailand Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	November 28, 2022 - November 15, 2023	Director, Aeronautical Radio of Thailand Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
September 15, 2020 - October 26, 2023	Director, The Expressway Authority of Thailand		
2019 - Present	Honorary Member of the Buddhist Scripture Education Committee		
2018 - Present	Council of State Committee No.2		

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Mr. Auttapol Rerkpiboon
Director/ Secretary to the Board/ Authorized Director/ President and Chief Executive Officer
Age (Year) 58

- Director and Secretary to the Board
(Appointed on May 13, 2020, April 9, 2021 (Re-elected))
- Authorized Director
(Appointed on May 13, 2020)
- President and Chief Executive Officer
(Appointed on May 13, 2020)

(%) of Share Possession
0.000939
(Own 0.000788;
Spouse 0.000151)

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Engineering (Civil Engineering), Chulalongkorn University Master of Economics Program, National Institute of Development Administration Diploma of Petroleum Management, College of Petroleum Studies, Oxford University, UK (British Council Scholarship) Certification <ul style="list-style-type: none"> Director Certification Program (DCP 173/2013), Company Secretary Program (CSP 14/2005), Thai Institute of Directors Association (IOD) Executive Development Program (EDP), (Class 1), Thai Listed Companies Association (TLCA) Diploma, The National Defence Course (Class 58), National Defence College Advanced Certificate Course in Politics and Governance in Democratic System for Executives, (Class 14), King Prajadhipok's Institute Executive Program in Capital Market Leader (Class 20), Capital Market Academy (CMA) Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 12), Thailand Energy Academy (TEA) 	May 13, 2020 - Present	President and Chief Executive Officer	PTT Public Company Limited
	November 8, 2022 - December 27, 2022	Advisory Board, Fund Raising Committee for Contribution to a Charity Fund Started by the King, Thai Red Cross Society 2022	Chulalongkorn University
	October 31, 2022 - December 31, 2022	Advisory Board	Steering Committee of Red Cross Charity Lottery Tickets Supporting the Thai Red Cross Society 2022
	October 17, 2022 - December 11, 2022	Member of the Steering Committee of Friends in need (of "PA") 2022	Friend in Need (of "PA") Volunteers Foundation
	October 10, 2022 - October 23, 2022	Chairman, Steering Committee of King Chulalongkorn Day 2022	Chulalongkorn University Alumni Association under the Royal Patronage
	November 12, 2021 - December 27, 2021	Advisory Board, Fund Raising Committee for Contribution to a Charity Fund Started by the King, Thai Red Cross Society 2021	Chulalongkorn University
	June 30, 2021 - December 31, 2021	Steering Committee of 2021 Red Cross Fair	Thai Red Cross Society
	June 28, 2021 - February 15, 2022	Director	ARUN PLUS Company Limited

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> • Executive Program on Rule of Law and Development: RoLD (Class 2), Thailand Institute of Justice (TIJ) • NIDA-Wharton Executive Leadership Program 2009, The Wharton School of the University of Pennsylvania, USA • PTT Executive Leadership, General Electric, GE, New York, USA • Rule of Law for Democracy (Class 8), College of the Constitutional Court 	October 2, 2020 - July 19, 2022	Advisory Committee	The Institute of Energy for Industry
	September 29, 2020 - December 22, 2020	Advisor Director	Committee of Red Cross Lottery Tickets Supporting the Thai Red Cross Society 2020
	June 8, 2020 - July 20, 2021	Chairman	Power of Learning Foundation
	December 12, 2018 - May 12, 2020	Chairman	PTT Tank Terminal Company Limited
	May 1, 2018 - July 16, 2020	President	Marketing Association of Thailand
	April 11, 2018 - July 31, 2020	Director/ Chairman of the Risk Management Committee/ Member of the Nomination and Remuneration Committee	Thai Oil Public Company Limited
	October 6, 2017 - September 29, 2020	Executive Director	The Royal Automobile Association of Thailand under the Royal Patronage
	October 1, 2017 - May 12, 2020	Chief Operating Officer, Downstream Petroleum Business Group (October 1, 2017 - September 30, 2018) Acting Senior Executive Vice President, Downstream Business Group Alignment, (PTT)	PTT Public Company Limited
	October 1, 2015 - October 1, 2018	Director/ Director to the Corporate Governance Committee/ Director to the Risk Management Committee	PTT Global Chemical Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	May 13, 2020 - Present	Director/ Secretary to the Board/ President and Chief Executive Officer, PTT Public Company Limited	
	August 1, 2020 - Present	Director, PTT Exploration and Production Public Company Limited	
	December 22, 2015 - Present	Chairman, PTT Oil and Retail Business Public Company Limited	
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
-	-		

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	November 27, 2023 - Present	Subcommittee of the Science and Technology Development Fund	
	November 7, 2023 - Present	Expert Committee Member, National Science and Technology Development Governing Board	
	October 24, 2023 - December 18, 2023	Advisory Board, Fund Raising Committee for Contribution to a Charity Fund Started by the King, Thai Red Cross Society 2023, Chulalongkorn University	
	October 16, 2023 - Present	Member of the Policy Committee of State Enterprises and Private Sector Support for Sports Associations	
	September 13, 2023 - December 10, 2023	Member of the Steering Committee of Friends in need (of "PA") 2023	
	September 12, 2023 - Present	Advisor, Steering Committee of King Chulalongkorn Day 2023, Chulalongkorn University Alumni Association under the Royal Patronage of his Majesty the King	
	June 2023 - Present	President, Chulalongkorn University Alumni Association under the Royal Patronage of his Majesty the King	
	June 2023 - Present	Member of Chulalongkorn University Council, Chulalongkorn University	
	May 16, 2023 - December 31, 2023	Member of the Steering Committee, Red Cross Fair 2023, Thai Red Cross Society	
	November 25, 2022 - Present	Honorary Advisor, The S.E.A. Write Award Organizing Committee	
	November 19, 2022 - Present	Chairman of the Council Board, Thailand Carbon Neutral Network and Chairman of the Executive Committee, Thailand Carbon Neutral Network	
	September 20, 2022 - Present	Member of the Fund Raising Committee for Building and Construction Maintenance, Suan Luang Rama 9 Foundation	
	June 16, 2022 - Present	Committee Member, The General Prem Tinsulanonda Historical Park	
	May 30, 2022 - Present	Advisor, IEEE Power & Energy Society	
	May 6, 2022 - Present	Director, Steering Committee of Vetiver Development and Campaign according to Royal Initiative Project	
	April 25, 2022 - August 15, 2023	Advisory Board, Sirinart Rajini Mangrove Ecosystem Learning Center	
	April 19, 2022 - Present	Honorary Advisor, The Economic Reporters Association	
	January 18, 2022 - Present	Expert Committee Members, Government Pension Fund (GPF) Board	
	November 9, 2021 - Present	Social Cooperation Promotion Committee, Princess Maha Chakri Award Foundation	



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	March 25, 2021 - Present	Director, Thai Foundation	
	October 9, 2020 - Present	Committee Member, Suan Luang Rama 9 Foundation	
	August 31, 2020 - Present	Expert Committee of Vidyasirimedhi Institute Council, Vidyasirimedhi Institute of Science and Technology (VISTEC)	
	August 24, 2020 - Present	Chairman, Power for Sustainable Future Foundation	
	June 2020 - Present	Committee Member, Ruamchit Normkiao Foundation for Thai Youth under the Patronage of Her Majesty the Queen	
	June 8, 2020 - Present	Chairman, Power of Innovation Foundation	
	May 29, 2020 - Present	Member of Trustees, Petroleum Institute of Thailand	
	May 22, 2020 - Present	President, PTT Group Employee Association	
	May 13, 2020 -Present	Committee Member, Thailand Business Council for Sustainable Development	
	May 13, 2020 - Present	Advisory Board, PTT Natural Gas Business Saving Co-Operative Limited	
	May 13, 2020 - Present	Committee Member, Green Globe Institute	
	May 13, 2020 -Present	Vice Chairman, Thailand Energy Academy	
	May 2020 - Present	Committee Member, OUR Khung BangKachao	
	March 2020 - August 10, 2023	Expert Committee of NIDA Council, The National Institute of Development Administration (NIDA)	
	2019 - Present	Honorary Advisor, The National Institute of Development Administration Alumni Association under the Royal Patronage (NIDA)	
	July 27, 2018 - Present	Expert Committee Member, Payment Systems Committee (PSC), Bank of Thailand	
	2018 - Present	Honorary Advisor, Thai-Laos Business Council	
	November 6, 2016 - Present	Vice President, Swimming Association Thailand	

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Mr. Wuttikorn Stithit
Chief Operating Officer,
Upstream Petroleum and Gas Business Group
Age (Year) 59

- Chief Operating Officer,
Upstream Petroleum and Gas Business Group
(Appointed on October 1, 2022)

(%) of Share Possession
0.000812
(Own 0.000494;
Spouse 0.000318)

**Family Relationship among
Directors and Executives**
-None-

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Engineering (Electrical Engineering), King Mongkut's Institute of Technology Ladkrabang • Master of Science (Industrial and System Engineering), Ohio University, USA • Master of Business Administration (Finance and Banking), Kasetsart University Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 158/2012), Thai Institute of Directors Association (IOD) • Leadership Development Program 3 (LDP 3), PTT Leadership and Learning Institute (PLLI) • Leadership Succession Program (LSP), (Class 9), Institute of Research and Development for Public Enterprises (IRDP) • Senior Executive Education Program, SIBA 2017, College of Management, Mahidol University • Power of the Kingdom (Bhumipalung Phandin) (Class 4), Chulalongkorn University • Leadership Development Program 2 (LDP 2), PTT Leadership and Learning Institute (PLLI) • Senior Executive Program (SEP) 2011, Sasin Graduate Institute of Business Administration of Chulalongkorn University 	October 1, 2022 - Present	Chief Operating Officer, Upstream Petroleum and Gas Business Group	PTT Public Company Limited
	September 30, 2019 - December 31, 2022	Chairman	PTT Natural Gas Distribution Company Limited
	April 24, 2019 - December 31, 2022	Chairman	PTT Global LNG Company Limited
	February 1, 2019 - September 30, 2022	Senior Executive Vice President, Gas Business Unit	PTT Public Company Limited
	November 1, 2015 - January 31, 2019	Executive Vice President, Natural Gas Supply and Trading	PTT Public Company Limited
	March 30, 2015 - 2019	Chairman	Trans Thai-Malaysia (Thailand) Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	February 1, 2023 - Present	Member of the Nomination and Remuneration Committee, Global Power Synergy Public Company Limited	
	January 1, 2023 - Present	Director/ Member of the Risk Management Committee, PTT Exploration and Production Public Company Limited	
	April 1, 2019 - Present	Global Power Synergy Public Company Limited	

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 16), Thailand Energy Academy (TEA) Diploma, The National Defence Course (Class 62), National Defence College 	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	January 11, 2023 - Present	Chairman, PTT LNG Company Limited	
	July 20, 2021 - December 31, 2022	Chairman, B.GRIMM Power LNG JV Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	October 1, 2022 - Present	Executive Director, Thailand Energy Academy	



Mr. Noppadol Pinsupa
Chief Operating Officer,
Downstream Petroleum Business Group
Age (Year) 59

- Chief Operating Officer,
Downstream Petroleum Business Group
(Appointed on October 1, 2022)

(%) of Share Possession

0.001519
(Own 0.000476;
Spouse 0.001043)

Family Relationship among Directors and Executives

-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> Bachelor of Engineering (Electrical Engineering), Chulalongkorn University Master of Engineering (Electrical Engineering), Chulalongkorn University <p>Certification</p> <ul style="list-style-type: none"> Director Certification Program (DCP 146/2011), Financial Statements for Directors (FSD 12/2011), Thai Institute of Directors Association (IOD) Leadership Development Program 3 (LDP 3), PTT Leadership and Learning Institute (PLLI) Breakthrough Program for Senior Executives International Leading Business School (IMD), Lausanne, Switzerland 	October 1, 2022 - Present	Chief Operating Officer, Downstream Petroleum Business Group	PTT Public Company Limited
	September 30, 2022 - December 31, 2022	Director/ Member of the Risk Management Committee/ Secretary to the Board	Thai Oil Public Company Limited
	September 30, 2022 - December 31, 2022	Acting Chief Executive Officer and President	Thai Oil Public Company Limited
	November 22, 2021 - September 29, 2022	Director to the Corporate Governance and Sustainability Committee (Changed from the Corporate Governance with effect from April 4, 2022)	PTT Global Chemical Public Company Limited
	October 1, 2021 - November 22, 2021	Director to the Nomination and Remuneration Committee	PTT Global Chemical Public Company Limited

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	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> Assessor Training Program, Thailand Quality Award (TQA) Seminar "Briefing on International Anti-Corruption...International Cases and Practices" (October 14, 2015), Thai Institute of Director Association (IOD) Mitsui-Harvard Business School Global Management Academy 2015, Japan - USA G-20Y Summit 2015, France Program for Senior Executive on Justice Administration (Class 19), Judicial Training Institute Executive Program in Capital Market Academy Leader Program (Class 22), Capital Market Academy (CMA) Diploma, The National Defence Course (Class 60), National Defence College Executive Program on Rule of Law and Development (RoLD), Thailand Institute of Justice (TIJ) Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 14), Thailand Energy Academy (TEA) 	October 1, 2021 - September 29, 2022	Director	PTT Global Chemical Public Company Limited
	October 1, 2021 - September 30, 2022	Chief New Business and Infrastructure Officer (Changed the position name from Chief Technology and Engineering Officer with effect from October 1, 2021)	PTT Public Company Limited
	June 28, 2021 - 1 December 2022	Director	ARUN PLUS Company Limited
	April 7, 2021 - September 30, 2021	Director/ Member of the Corporate Governance Committee	PTT Oil and Retail Business Public Company Limited
	March 3, 2021 - November 17, 2021	Member of the Executive Committee	Vidyasirimedhi Institute of Science and Technology
	January 20, 2021 - September 30, 2021	Director/ Member of the Nomination and Remuneration Committee	IRPC Public Company Limited
	January 4, 2021 - October 18, 2021	Chairman	Global Renewable Power Company Limited
	December 4, 2020 - October 18, 2021	Director	Alpha Com Company Limited
	December 2, 2020 - January 30, 2021	Chairman	PTT Digital Solutions Company Limited
	December 1, 2020 - January 19, 2021	Director/ Member of the Corporate Governance Committee	IRPC Public Company Limited
December 1, 2020 - September 30, 2021	Senior Executive Vice President, Innovation and Digital	PTT Public Company Limited	
July 3, 2020 - November 30, 2020	Senior Executive Vice President, PTT, reporting to Chief Operating Officer, Downstream Petroleum Business Group working on a secondment as President and Chief Executive Officer	IRPC Public Company Limited	

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56-1 One Report 2023
PTT Public Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	March 2019 - December 2020	Chairman	IRPC A&L Company Limited
	March 2019 - December 2020	Chairman	iPolymer Company Limited
	March 2019 - November 2020	Chairman	IRPC Technology Company Limited
	February 1, 2019 - November 30, 2020	Executive Director	Thailand Energy Academy
	February 2019 - August 2019	Chairman	PTT Energy Solutions Company Limited
	January 2019 - November 2020	Director	UBE Chemicals (Asia) Public Company Limited
	2019 - 2021	Advisor	Chulalongkorn University Alumni Association under the Royal Patronage
	October 2017 - January 2019	Chairman	PTT Global LNG Company Limited
	October 1, 2015 - January 31, 2019	Senior Executive Vice President, Gas Business Unit	PTT Public Company Limited
	2015 - January 30, 2019	Director/ Member of the Risk Management Committee	Thai Oil Public Company Limited
	2014 - 2018	Chairman	PTT Natural Gas Distribution Company Limited

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PTT Public Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	January 23, 2023 - Present	Director/ Director to the Risk Management Committee,	PTT Global Chemical Public Company Limited
	November 1, 2021 - Present	Director/ Member of the Nomination and Remuneration Committee/ Chairman of the Risk Management Committee,	Global Power Synergy Public Company Limited
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	March 28, 2023 - Present	Chairman,	PTT Tank Terminal Company Limited
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	April 12, 2022 - Present	Vice President/ Member of the Board,	The Federation of Thai Industries
	June 13, 2022 - Present	Chairman, The Institute of Industrial Energy,	The Federation of Thai Industries
	April 2022 - Present	Executive Board Member,	The Federation of Thai Industries
	2022 - Present	Director, National Energy Technology Center,	National Science and Technology Development Agency (NSTDA)
	2022 - Present	Director, Chulalongkorn University Engineering Alumni,	Chulalongkorn University
	June 1, 2020 - Present	The Energy Working Group, The Joint Standing Committee on Commerce, Industry, and Banking	
	November 1, 2019 - Present	Member of Vidyasirimedhi Institute of Science and Technology Council (Member of VISTEC Council)	




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Dr. Buranin Rattanasombat
Chief New Business and Infrastructure Officer
Age (Year) 56

- Chief New Business and Infrastructure Officer
(Appointed on October 1, 2022)

(%) of Share Possession

0.00075
(Own 0.00075;
Spouse 0)

**Family Relationship among
Directors and Executives**

-None-

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PTT Public Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Science, Faculty of Agro-Industry, Prince of Songkhla University Master of Business Administration (MBA), Chulalongkorn University Ph.D. (Management), Silpakorn University Certification <ul style="list-style-type: none"> Director Certification Program (DCP 174/2013), Director Leadership Certification Program (DLCP 4/2022), Thai Institute of Directors Association (IOD) Executive Program in Capital Market Leader (Class 30), Capital Market Academy (CMA) Advanced Security Management Program (Class 10), The National Defence College Association of Thailand (NDCAT) PTT Leadership Development Program (IMD Business School), PTT Leadership and Learning Institute (PLLI) Foreign Affairs Executive Program (Class 7), Devawongse Varopakarn Institute of Foreign Affairs, Ministry of Foreign Affairs PTT Leadership Development Program, Harvard Business School, USA Diploma, The National Defence Course (Class 64), National Defence College Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 17), Thailand Energy Academy (TEA) 	October 1, 2022 - Present	Chief New Business and Infrastructure Officer	PTT Public Company Limited
	October 1, 2021 - September 30, 2022	Senior Executive Vice President, Innovation and New Ventures (Changed the position name from Senior Executive Vice President, Innovation and Digital with effect from October 1, 2021)	PTT Public Company Limited
	August 25, 2021 - October 8, 2021	Chairman	Nutra Regenerative Protein Company Limited
	May 19, 2021 - April 7, 2022	Chairman of the Risk Management Committee	Thai Oil Public Company Limited
	April 23, 2021 - May 19, 2021	Member of the Risk Management Committee	Thai Oil Public Company Limited
	September 18, 2020 - April 23, 2021	Member of the Nomination and Remuneration Committee	Thai Oil Public Company Limited
	June 1, 2020 - September 30, 2021	Senior Executive Vice President, Downstream Business Group Alignment	PTT Public Company Limited
	2019 - May 2020	Senior Executive Vice President, Corporate Strategy, Innovation and Sustainability and Chief Transformation Officer (CTO)	PTT Oil and Retail Business Public Company Limited

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PTT Public Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	November 2019 - October 2020	Chairman	Thai Petroleum Pipeline Company Limited
	July 2019 - May 2020	Chairman	PTT (Cambodia) Limited
	2018 - 2020	Secretary General	Marketing Association of Thailand
	August 2018 - June 1, 2019	Chairman	PTTOR China (Shanghai) Company Limited
	2018 - 2019	Senior Executive Vice President, Lubricant Business	PTT Oil and Retail Business Public Company Limited
	April 2017 - October 1, 2021	Director	Thai Petroleum Pipeline Company Limited
	October 2015 - March 2019	Chairman	Thai Lube Blending Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	April 29, 2022 - Present	Member of the Risk Management Committee, Thai Oil Public Company Limited	
	October 27, 2021 - Present	Member of the Enterprise Risk Management Committee, PTT Oil and Retail Business Public Company Limited	
October 8, 2021 - Present	Director, PTT Oil and Retail Business Public Company Limited		
September 18, 2020 - Present	Director, Thai Oil Public Company Limited		
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
January 2022 - Present	Chairman, HORIZON PLUS Company Limited		
January 2022 - Present	Chairman, NUOVO PLUS Company Limited		
December 2020 - Present	Chairman, Innobic (Asia) Company Limited		
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
December 2023 - Present	Expert Committee Member, Board of the Office of SMEs Promotion, The Office of SMEs Promotion		
October 2022 - Present	Executive Director, Thailand Energy Academy		
April 2022 - Present	President, Marketing Association of Thailand		
April 2022 - Present	Director, Federation of Thai Industries		
April 2022 - Present	Board Member, National Metal and Materials Technology Center		
December 2021 - Present	Advisor, Synchrotron Light Research Institute		



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	<p>Miss Pannalin Mahawongtikul Chief Financial Officer Age (Year) 59</p> <ul style="list-style-type: none"> Chief Financial Officer <i>(Appointed on October 1, 2018)</i> The person supervising Finance and Accounting 	<p>(%) of Share Possession 0.001009 (Own 0.001009)</p> <p>Family Relationship among Directors and Executives -None-</p>
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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)			
	Time Period	Position	Organization/ Company	
<p>Education</p> <ul style="list-style-type: none"> Bachelor of Accounting, Thammasat University Master of Business Administration (Business Administration), Thammasat University <p>Certification</p> <ul style="list-style-type: none"> Director Certification Program (DCP 279/2019), Strategic Board Master Class (SBM 9/2020), Risk Management Program for Corporate Leaders (RCL 28/2022), Thai Institute of Directors Association (IOD) Executive Program in Capital Market Leader (Class 24), Capital Market Academy (CMA) Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 15), Thailand Energy Academy (TEA) Leadership Succession Program (LSP) (Class 6), Institute of Research and Development for Public Enterprises CMA-Greater Mekong Subregion (CMA-GMS) Executive Education Program (Class 1), Capital Market Academy (CMA) PTT-HBS Leadership Development Program 2, Harvard Business School NIDA-Wharton Executive Leadership Program (ELP), The Wharton School, University of Pennsylvania Executive Program for Senior Management (EX-PSM) (Class 3), Fiscal Policy Research Institute Foundation Executive Development Program (EDP) (Class 2), Thai Listed Companies Association 	October 1, 2018 - Present	Chief Financial Officer	PTT Public Company Limited	
	May 8, 2018 - September 30, 2018	Director	PTTEP Energy Holding (Thailand) Company Limited	
	January 1, 2016 - September 30, 2018	Executive Vice President, PTT, working on a secondment as Executive Vice President, Finance and Accounting Group	PTT Exploration and Production Public Company Limited	
	January 1, 2016 - September 30, 2018	Director	Energy Complex Company Limited	
	January 1, 2016 - September 30, 2018	Director	PTTEP Canada International Finance Limited	
	January 1, 2016 - March 19, 2018	Director	PTTEP Australia International Finance Pty Ltd.	
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	May 15, 2023 - Present	Chairman of the Risk Management Committee, Thai Oil Public Company Limited		
	December 1, 2022 - Present	Director, Global Power Synergy Public Company Limited		
	June 30, 2022 - Present	Director, Lotus Pharmaceutical Company Limited (A listed company on Taiwan Stock Exchange)		
October 1, 2018 - Present	Director/ Member of the Risk Management Committee, Thai Oil Public Company Limited			
Relevant Important Positions in Non-Listed Company (In the Previous Year)				
-	-			

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> Leadership Development Program 3 (LDP 3), PTT Leadership and Learning Institute (PLLI) E-learning CFO's Refresher Course 2020, The Stock Exchange of Thailand (SET) The Resilient Leader (TIJ Executive Program on the Rule of Law and Development), RoLD 2020 TLCA CFO Professional Development Program (TLCA CFO CPD) 2023 	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	March 3, 2021 - Present	Member of VISTEC Executive Committee	
	March 3, 2021 - Present	Chairman of VISTEC Finance and Budget Sub-Committee	
	April 27, 2021 - Present	Director/ Member of the Audit Committee, Thai Listed Companies Association (TLCA)	
	November 1, 2019 - Present	Member of Vidyasirimedhi Institute of Science and Technology Council (VISTEC)	
	January 2019 - Present	Club President, Thai Investor Relations Club	
	October 2018 - Present	Executive Director, Thailand Energy Academy	

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	<p>Mr. Terdkiat Prommool Senior Executive Vice President, Corporate Strategy and Sustainability Age (Year) 58</p> <ul style="list-style-type: none"> Senior Executive Vice President, Corporate Strategy and Sustainability <i>(Appointed on October 1, 2021)</i> 	<p>(%) of Share Possession -None-</p> <p>Family Relationship among Directors and Executives -None-</p>
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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> Bachelor of Engineering (Chemical Engineering), Chulalongkorn University Master of Engineering (Industrial & Manufacturing Systems Engineering), The University of Missouri, Columbia, USA 	October 1, 2021 - Present	Senior Executive Vice President, Corporate Strategy and Sustainability (Changed the name of the position from Senior Executive Vice President, Corporate Strategy with effect from October 1, 2021)	PTT Public Company Limited
	August 10, 2022 - November 30, 2022	Director	Inter Pharma Public Company Limited
	November 3, 2021 - July 31, 2022	Chairman	Alpha Com Company Limited



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 223/2016), Thai Institute of Directors Association (IOD) • Leadership Succession Program (LSP), (Class 10), Institute of Research and Development for Public Enterprises (IRDP) 	March 3, 2021 - November 17, 2021	Member of the Human Resource Committee	Vidyasirimedhi Institute of Science and Technology
	October 1, 2020 - January 31, 2022	Chairman	Business Services Alliance Company Limited
	October 1, 2020 - January 31, 2021	Chairman	Business Professional Recruitment Solutions Company Limited
	October 1, 2020 - September 30, 2021	Senior Executive Vice President, Organization Management and Sustainability	PTT Public Company Limited
	October 1, 2018 - September 30, 2020	Executive Vice President, PTT, working on a secondment as Managing Director	PTT Digital Solutions Company Limited
Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
December 26, 2022 - Present	Director/ Member of the Nomination and Remuneration Committee, PTT Oil and Retail Business Public Company Limited		
April 23, 2021 - Present	Member of the Nomination and Remuneration Committee, Thai Oil Public Company Limited		
October 1, 2020 - Present	Director, Thai Oil Public Company Limited		
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
April 1, 2021 - Present	Chairman, PTT Digital Solutions Company Limited		
October 1, 2018 - September 30, 2020 and February 1, 2018 - Present	Director, PTT Digital Solutions Company Limited		
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
June 2023 - Present	Secretary-General, Chulalongkorn University Alumni Association under the Royal Patronage		
November 23, 2021 - Present	Member of the Executive Committee, Vidyasirimedhi Institute of Science and Technology		
October 1, 2021 - Present	Executive Director, Thailand Energy Academy		
August 10, 2021 - Present	Director, Thai Renewable Energy Association		
October 1, 2020 - Present	Executive Director, Global Compact Network Association of Thailand (GCNT)		



Mr. Chadil Chavanalikhorn
Senior Executive Vice President,
Organization Effectiveness and Corporate Governance
Age (Year) 57

(%) of Share Possession

-None-

Family Relationship among Directors and Executives

-None-

- Senior Executive Vice President, Organization Effectiveness and Corporate Governance (Appointed on October 1, 2022)
- The person supervising Compliance Unit

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Engineering, Kasetsart University • Master of Business Administration, Kasetsart University • Certified Internal Auditor (CIA), The Institute of Internal Auditors Certification <ul style="list-style-type: none"> • Successful Formulation & Execution of Strategy (SFE 17/2013), Anti-Corruption: the Practical Guide (ACPG 2/2013), Company Secretary Program (CSP 65/2015), Independent Observer Program (IOP 1/2016), Director Certification Program (DCP 340/2023), Thai Institute of Directors Association (IOD) • Senior Energy Executive, Thailand Energy Academy, Ministry of Energy • Administrative Psychological Operation: Institute of Security Psychology, National Defence Studies Institute • High-Level Anti-Corruption Strategy Executives, office of the National Anti-Corruption Commission (NACC) • Senior Executive Program (SEP): SASIN Graduate Institute of Business Administration • Leadership Development Program 2, PTT-Harvard Business School, PTT Leadership and Learning Institute (PLLI) • Leadership Development Program 3, PTT-IMD, PTT Leadership and Learning Institute (PLLI) • Leadership Succession Program (LSP): IRDP • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 18), Thailand Energy Academy (TEA) 	October 1, 2022 - Present	Senior Executive Vice President, Organization Effectiveness and Corporate Governance	PTT Public Company Limited
	2019 - September 30, 2022	Executive Vice President, Office of Corporate Audit	PTT Public Company Limited
	2018 - 2019	Executive Vice President, Corporate Governance	PTT Public Company Limited
	2017 - 2018	Executive Vice President, Sustainability Management	PTT Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
December 19, 2022 - Present	Director/ Director to the Corporate Governance and Sustainability Committee, PTT Global Chemical Public Company Limited		
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
October 26, 2023 - Present	Director, Energy Complex Company Limited		
December 13, 2022 - Present	Director, Business Services Alliance Company Limited		
November 4, 2022 - Present	Chairman, Business Professional Recruitment Solutions Company Limited		
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
February 23, 2023 - Present	Member of the Human Resource Committee, Vidyasirimedhi Institute of Science and Technology		
January 23, 2023 - Present	Advisor, PTT Savings Cooperative Limited Management Committee		




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Miss Peangpanor Boonklum
Senior Executive Vice President, Office of General Counsel
Age (Year) 57

- Senior Executive Vice President, Office of General Counsel (Appointed on October 1, 2017)

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Laws (Second Class Honor), Chulalongkorn University • Master of Laws (Business Law), Chulalongkorn University • Master of Laws (LL.M.), Columbia University School of Law, New York, USA Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 7/2001), Anti-Corruption: The Practical Guide (ACPG 38/2017), Ethical Leadership Program (ELP 15/2019), Risk Management Program for Corporate Leaders (RCL 18/2019), Board Nomination and Compensation Program (BNCP 7/2019), Thai Institute of Directors Association (IOD) • The Cullinan: The Making of the Digital Board (Class 2), Thailand Management Association • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 15), Thailand Energy Academy (TEA) • Leadership Development Program 3 (LDP3) (Class 4/2019), PTT Leadership and Learning Institute (PLLI) • TIJ Executive Program on The Rule of Law and Development (RoLD) (Class 3), Thailand Institute of Justice (TIJ) • TIJ Workshop for Emerging Leaders on the Rule of Law and Policy (Class 3), Thailand Institute of Justice (TIJ) • Certificate in Anti-Corruption Strategic Management for Senior Executives (Class 9/2018), Office of the National Anti-Corruption Commission 	October 1, 2017 - Present	Senior Executive Vice President, Office of General Counsel	PTT Public Company Limited
	October 28, 2021 - February 22, 2023	Chairman (first term)	PTT Savings and Credit Cooperative Limited
	January 20, 2021 - March 31, 2021	Member of the Corporate Governance Committee	IRPC Public Company Limited
	December 4, 2019 - November 23, 2021	Chairman	Energy Complex Company Limited
	May 14, 2019 - December 31, 2020	Member of the Enterprise Risk Management Committee	PTT Oil and Retail Business Public Company Limited
	October 24, 2018 - December 31, 2020	Member of the Nomination and Remuneration Committee	PTT Oil and Retail Business Public Company Limited
	March 9, 2018 - December 31, 2020	Director	PTT Oil and Retail Business Public Company Limited
	April 27, 2019 - December 31, 2019	Member of the Corporate Governance Committee	Global Power Synergy Public Company Limited
	April 3, 2017 - December 31, 2019	Director	Global Power Synergy Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	April 1, 2021 - Present	Member of the Risk Management Committee, IRPC Public Company Limited	
	January 20, 2021 - Present	Director, IRPC Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
November 8, 2021 - Present	Director, CU Engineering Enterprise Company Limited*		
November 8, 2021 - Present	Director, Primates Enterprise Company Limited**		

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> • TLCA Executive Development Program (Class 1/2008), Thai Listed Companies Association (TLCA) 	October 21, 2021 - Present	Chairman, Global Renewable Power Company Limited	
	December 4, 2019 - January 9, 2023	Director, Energy Complex Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	October 15, 2023 - Present	Member, Regulatory Reform Committee for Ease of Doing Business, Office of the Public Sector Development Commission, Office of the Prime Minister	
	June 1, 2023 - Present	Member of the Nomination and Compensation Committee, Thai Institute of Directors Association (IOD)	
	May 31, 2023 - Present	Director, Thai Institute of Directors Association (IOD)	
	February 23, 2023 - Present	Chairman, PTT Savings and Credit Cooperative Limited (second term)	
	August 8, 2022 - Present	Vice President, Chulalongkorn Law School Alumni Association	
	2022 - Present	Lecturer, "Legal Liabilities", University Holding Company Directorship Certification Program, Chulalongkorn University	
	2022 - Present	Facilitator, "Subsidiary Governance Program" Thai Institute of Directors Association (IOD)	
2019 - Present	Panelist, Anti-Corruption Strategic Management for Senior Executives, Office of The National Anti-Corruption Commission (NACC)		

Remarks:

- * 99.97% owned by CU Enterprise Co., Ltd., and CU Enterprise Co., Ltd. is 99.99% owned by Chulalongkorn University.
- ** Owned by CU Enterprise Co., Ltd., and CU Enterprise Co., Ltd. is 99.99% owned by Chulalongkorn University.

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M.L. Peekthong Thongyai
Senior Executive Vice President, Gas Business Unit
Age (Year) 56

- Senior Executive Vice President, Gas Business Unit
(Appointed on October 1, 2022)

(%) of Share Possession
-None-

**Family Relationship among
Directors and Executives**
-None-

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Science (Petroleum Engineering), The University of Texas at Austin, USA Master of Business Administration (Finance), SASIN Graduate Institute of Business Administration of Chulalongkorn University Certification <ul style="list-style-type: none"> Director Certification Program (DCP 15/2002), Thai Institute of Directors Association (IOD) Leadership Development Program 2 (LDP 2), PTT Leadership and Learning Institute (PLLI) Leadership Development Program 3 (LDP 3) PTT Group Leadership and Learning Institute (PLLI) APAC Energy Transition Leadership Program (A-ETLP/2022), GE Crotonville, USA Diploma, The National Defence Course (Class 64), National Defence College Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 18), Thailand Energy Academy (TEA) 	October 1, 2022 - Present	Senior Executive Vice President, Gas Business Unit	PTT Public Company Limited
	October 1, 2021 - September 30, 2022	Senior Executive Vice President, Downstream Business Group Alignment	PTT Public Company Limited
	October 1, 2021 - October 31, 2022	Director/ Director to the Risk Management Committee	PTT Global Chemical Public Company Limited
	September 17, 2021 - November 30, 2022	Director	GPC International Terminal Company Limited
	October 1, 2019 - September 30, 2021	Director	Gulf MTP LNG Terminal Company Limited
	November 1, 2016 - December 31, 2022	Director	PTT Tank Terminal Company Limited
	November 1, 2016 - September 30, 2021	Executive Vice President, Downstream Business Group Alignment, PTT, working on a secondment as Acting Managing Director	PTT Tank Terminal Company Limited
	January 28, 2016 - April 26, 2019	Director	PTT Energy Resources Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	December 1, 2022 - Present	Director, Global Power Synergy Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	January 12, 2023 - Present	Chairman, PTT Global LNG Company Limited	
	January 9, 2023 - Present	Chairman, PTT Natural Gas Distribution Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
April 2022 - Present	Director, The Federation of Thai Industries/ Vice President of Economic and Academic Affairs, The Federation of Thai Industries/ Chairman of the Fiscal Policy Subcommittee, The Federation of Thai Industries		

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Mr. Prasong Intaranongpai
Senior Executive Vice President,
Downstream Business Group Alignment
Age (Year) 55

- Senior Executive Vice President,
Downstream Business Group Alignment
(Appointed on October 1, 2023)

(%) of Share Possession
0.000073
(Own 0.000073;
Spouse 0)

**Family Relationship among
Directors and Executives**
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)			
	Time Period	Position	Organization/ Company	
Education <ul style="list-style-type: none"> Bachelor of Engineering (Industrial Engineering), Chiang Mai University Bachelor of Laws, Sukhothai Thammathirat Open University Master of Business Administration (General Management), Kasetsart University Certification <ul style="list-style-type: none"> Director Certification Program (DCP 287/2019) and Financial Statement for Directors (FSD 38/2019), Thai Institute of Directors Association (IOD) Advanced Strategic Management (ASM) - Advanced SMCP (Class 1/2018), PTT Leadership and Learning Institute (PLLI) Advanced Management Program (AMP) (Class 3/2018), PTT Leadership and Learning Institute (PLLI) Leadership Development Program 3 (LDP 3), (Class 4/2019), PTT Leadership and Learning Institute (PLLI) Director Development Program (DDP) (2021), PTT Leadership and Learning Institute (PLLI) 	October 1, 2023 - Present	Senior Executive Vice President, Downstream Business Group Alignment	PTT Public Company Limited	
	January 1, 2023 - September 30, 2023	Executive Vice President, Acting Senior Executive Vice President, Downstream Business Group Alignment	PTT Public Company Limited	
	October 1, 2022 - December 31, 2022	Executive Vice President, Acting Senior Executive Vice President, Downstream Business Group Alignment (and assigned to work for ARUN PLUS Company Limited until December 31, 2022)	PTT Public Company Limited	
	April 1, 2022 - November 30, 2022	Chairman	Sport Services Alliance Company Limited	
	January 6, 2022 - December 13, 2022	Director	NUOVO PLUS Company Limited	
	2021 - September 30, 2022	Executive Vice President, New Venture Development (Assigned to work for ARUN PLUS Company Limited)	PTT Public Company Limited	
	October 26, 2021 - November 30, 2022	Director	Alpha Com Company Limited	
	October 25, 2021 - November 30, 2022	Chairman	PTT Raise Company Limited	

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	October 21, 2021 - November 30, 2022	Director	Global Renewable Power Company Limited
	July 22, 2021 - November 30, 2022	Chairman	EVME PLUS Company Limited
	October 12, 2020 - October 1, 2021	Director	PTT Energy Resources Company Limited
	May 2020 - October 2021	Chairman	PTT Global Management Company Limited
	September 27, 2019 - November 30, 2022	Director	Sport Services Alliance Company Limited
	2017 - 2021	Executive Vice President, Strategy & Portfolio Management	PTT Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	December 1, 2022 - Present	Director/ Member of the Risk Management Committee, IRPC Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	February 24, 2023 - Present	Director, PTT Tank Terminal Company Limited	
	December 21, 2022 - Present	Director, GPC International Terminal Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
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Mr. Pongpun Amornvivat
Senior Executive Vice President,
International Trading Business Unit
Age (Year) 52

- Senior Executive Vice President,
International Trading Business Unit
(Appointed on January 1, 2023)

(%) of Share Possession
0.000028
(Own 0.000028;
Spouse 0)

**Family Relationship among
Directors and Executives**
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Engineering (Civil Engineering), Carnegie Mellon University, USA • Master of Engineering (Civil and Environmental Engineering), Massachusetts Institute of Technology (MIT), USA • Master of Arts, Economic Law, Chulalongkorn University • Master of Business Administration, Sloan School of Management, Massachusetts Institute of Technology (MIT), USA Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 225/2016), Thai Institute of Directors Association (IOD) • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 16), Thailand Energy Academy (TEA) • Executive Program in Capital Market Academy Leader Program (Class 29), Capital Market Academy (CMA) • Young Executive Program in Energy Literacy for a Sustainable Future (YTEA) (Class 1), Thailand Energy Academy • PTT Harvard Business School Leadership Development Program 2 • Executive Program in Good Governance for Sustainable Development (Class 1), Office of the Public Sector Development Commission 	January 1, 2023 - Present	Senior Executive Vice President, International Trading Business Unit	PTT Public Company Limited
	October 1, 2021 - December 31, 2022	Executive Vice President, Thai Oil Public Company Limited, working on a secondment as Executive Vice President, International Trading Business Unit	PTT Public Company Limited
	April 28, 2021 - September 30, 2021	Member of the Corporate Governance Committee	Global Power Synergy Public Company Limited
	April 2, 2021 - September 30, 2021	Director	Global Power Synergy Public Company Limited
	2020 - 2021	Director	Thai Oil Power Company Limited
	2020 - 2021	Director	TOP SPP Company Limited
	2019 - 2021	Director	Thaioil Treasury Center Company Limited
	2019 - 2021	Director	TOP Ventures Hong Kong Limited
	2019 - 2021	Director	TOP Ventures America Limited
	2018 - 2020	Acting Executive Vice President, Innovation and Digitalization	Thai Oil Public Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	2018 - 2021	Director	PTT Digital Solutions Company Limited
	2017 - 2021	Executive Vice President, Strategy	Thai Oil Public Company Limited
	2017 - 2021	Director	Ubon Bio Ethanol Public Company Limited
	2017 - 2021	Director	Sapthip Company Limited
	2017 - 2020	Director	Sak Chaisidhi Company Limited
	2017 - 2020	Director	TOP Solvent Company Limited
	2016 - 2020	Director/ Executive Director	Thai Petroleum Pipeline Company Limited
	2015 - 2021	Director	Thaioil Ethanol Company Limited
	2011 - 2020	Director	Thaioil Marine International Pte. Ltd.
Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	-	-	
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
	June 2023 - Present	Chairman, PTT International Trading Pte. Ltd.	
	June 2022 - Present	Director, PTT Global LNG Company Limited	
	December 2021 - May 2023	Director, PTT International Trading Pte. Ltd.	
	December 2021 - May 2023	Director, PTT International Trading London Ltd.	
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
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Mr. Cherdchai Boonchoocha
Senior Executive Vice President,
Innovation and New Ventures
Age (Year) 56

- Senior Executive Vice President,
Innovation and New Ventures
(Appointed on October 1, 2022)

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Science (Chemical Technology), Chulalongkorn University Master of Engineering (Chemical Engineering), Chulalongkorn University Master of Business Administration, Chulalongkorn University Certification <ul style="list-style-type: none"> Director Certificate Program (DCP 320/2022), Thai Institute of Directors Association (IOD) 	October 1, 2022 - Present	Senior Executive Vice President, Innovation and New Ventures	PTT Public Company Limited
	August 1, 2021 - September 30, 2022	Executive Vice President, Strategy & Portfolio Management	PTT Public Company Limited
	October 1, 2019 - July 31, 2021	Executive Vice President, Natural Gas Supply & Trading	PTT Public Company Limited
	September 12, 2019 - September 27, 2021	Director	Trans Thai-Malaysia (Thailand) Limited
	September 12, 2019 - September 27, 2021	Director	Trans Thai-Malaysia (Malaysia) Limited
	August 13, 2019 - September 27, 2021	Director	TTM Sukuk Berhad
	April 29, 2019 - October 1, 2021	Director	PTT Natural Gas Distribution Company Limited
	October 1, 2018 - September 30, 2019	Executive Vice President, Strategic Planning, Gas Business Unit	PTT Public Company Limited
	May 1, 2017 - September 30, 2018	Vice President, Business Development, Gas Business Unit	PTT Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
December 19, 2022 - Present	Director/ Director to the Risk Management Committee	PTT Global Chemical Public Company Limited	

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	November 2, 2023 - Present	Chairman, Aionex Company Limited	
	February 1, 2023 - Present	Chairman, Mekha V Company Limited	
	December 22, 2022 - Present	Director, ARUN PLUS Company Limited	
	November 2, 2022 - Present	Chairman, Alpha Com Company Limited	
	September 21, 2022 - March 1, 2023	Chairman, PTT Energy Resources Company Limited	
	November 1, 2021 - March 7, 2023	Chairman, Sakari Resources Ltd.	
	October 11, 2021 - February 10, 2023	Chairman, PTT Global Management Company Limited	
	October 8, 2021 - March 1, 2023	Director, PTT Energy Resources Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
-	-		



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	<p>Mr. Chansak Chuenchom Senior Executive Vice President, Engineering and Infrastructure Age (Year) 56</p> <ul style="list-style-type: none"> • Senior Executive Vice President, Engineering and Infrastructure (Appointed on October 1, 2021) 	<p>(%) of Share Possession -None-</p> <p>Family Relationship among Directors and Executives -None-</p>
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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)			
	Time Period	Position	Organization/ Company	
<p>Education</p> <ul style="list-style-type: none"> • Bachelor of Engineering (Mechanical Engineering), Khon Kaen University • Master of Business Administration, Kasetsart University <p>Certification</p> <ul style="list-style-type: none"> • Director Certification Program (DCP 211/2015), Thai Institute of Directors Association (IOD) • Strategy and Innovation for Businesses in Asia (SIBA) (Class 9), The College of Management, Mahidol University, in collaboration with Sloan School of Management, Massachusetts Institute of Technology (MIT) • Training course for senior anti-corruption strategists (NYPD 10), Office of the National Anti-Corruption Commission (NACC) • Leadership Development Program, (MDP 3) Business Management, (MDP 3) People Management, Advanced Management Program 3 - (AMP 3) Business and People Management, PTT Leadership and Learning Institute (PLLI) • Leadership Development Program 2 (LDP 2), China • Diploma, The National Defence Course (Class 65), National Defence College 	October 1, 2021 - Present	Senior Executive Vice President, Engineering and Infrastructure (New position, Senior Executive Vice President, Engineering and Infrastructure with effect from October 1, 2021)	PTT Public Company Limited	
	April 5, 2022 - November 30, 2022	Member of the Risk Management Committee	IRPC Public Company Limited	
	October 1, 2021 - April 5, 2022	Member of the Nomination and Remuneration Committee	IRPC Public Company Limited	
	December 21, 2020 - November 30, 2021	Director	Veolia Sustainable Solutions (Thailand) Company Limited (Former company name: "Suez Environmental Services Company Limited", changed to the current name on June 6, 2022)	
	April 23, 2018 - October 14, 2021	Director	Combined Heat and Power Producing Company Limited	
	March 14, 2016 - February 25, 2021	Director	Thai Oil Power Company Limited (Liquidation on February 25, 2021)	
	October 1, 2015 - September 30, 2021	Executive Vice President, Engineering and Project Management	PTT Public Company Limited	
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	December 1, 2022 - Present	Chairman of the Nomination and Remuneration Committee,	IRPC Public Company Limited	
	October 1, 2021 - Present	Director,	IRPC Public Company Limited	

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	September 29, 2022 - Present	Chairman,	Global Multimodal Logistics Company Limited
	November 23, 2021 - Present	Chairman,	Energy Complex Company Limited
	April 23, 2019 - Present	Director,	Energy Complex Company Limited
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	June 14, 2023 - Present	Director,	Anti Corruption Foundation
	November 23, 2021 - Present	Member of the Executive Committee,	Vidyasirimedhi Institute of Science and Technology

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	<p>Mr. Montri Rawanchaikul Chief Executive Officer, PTT Exploration and Production Public Company Limited Age (Year) 59</p> <ul style="list-style-type: none"> • Chief Executive Officer, PTT Exploration and Production Public Company Limited (Appointed on October 1, 2021) 	<p>(%) of Share Possession -None-</p> <p>Family Relationship among Directors and Executives -None-</p>
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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> • Bachelor of Science (Physics), Chiang Mai University • Master of Applied Science (Exploration Geophysics), University of New South Wales, Australia • Honorary Doctorate degree in, Applied Geophysics, Chiang Mai University 	October 1, 2021 - Present	Senior Executive Vice President, PTT, Reporting to Chief Operating Officer, Upstream Petroleum and Gas Business Group working on a secondment as Chief Executive Officer	PTT Exploration and Production Public Company Limited
	February 1, 2021 - September 30, 2021	Senior Executive Vice President, PTT, Reporting to Chief Operating Officer, Upstream Petroleum and Gas Business Group working on a secondment as President	PTT Exploration and Production Public Company Limited



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 337/2023), Strategic Board Master Class (SBM 12/2023), The Corporate Governance: Regulation and Disclosure Training, Thai Institute of Directors Association (IOD) • Leadership Development Program 3 (LDP 3), PTT Leadership and Learning Institute (PLLI) • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 11), Thailand Energy Academy (TEA) • Leadership Development Program 2 (LDP 2), PTT Group Leadership and Learning Institute (PLLI) • EP LEAD 3 Leadership Development Program, IMD • Executive Program in Capital Market Leader (Class 31), Capital Market Academy (CMA) 	October 1, 2020 - January 31, 2021	Senior Executive Vice President, PTT, Reporting to Chief Operating Officer, Upstream Petroleum and Gas Business Group working on a secondment as President and acting as Executive Vice President, Production Asset Group	PTT Exploration and Production Public Company Limited
	January 1, 2020 - September 30, 2020	Executive Vice President, Production Asset Group	PTT Exploration and Production Public Company Limited
	September 13, 2019 - March 1, 2021	Director	PTTEP HK Holding Limited
	November 1, 2017 - September 30, 2018	Executive Vice President, Strategy and Business Development Group and Acting Senior Vice President, New Business Unit, and additional assigned as Project Champion, Spend Smart	PTT Exploration and Production Public Company Limited
	October 1, 2017 - December 31, 2019	Executive Vice President, Strategy and Business Development Group	PTT Exploration and Production Public Company Limited
	June 22, 2017 - September 30, 2021	Director	PTT Global LNG Company Limited
	October 16, 2016 - September 30, 2017	Acting Executive Vice President, Strategy and Business Development Group	PTT Exploration and Production Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	October 1, 2021 - Present	Director/ Secretary to the Board/ Chief Executive Officer,	PTT Exploration and Production Public Company Limited

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	Time Period	Position	Organization/ Company
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	July 13, 2023 - Present	Director, AI and Robotics Ventures Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	December 6, 2023 - Present	Director,	Thailand Business Council for Sustainable Development
	January 1, 2022 - Present	Member of Council of Trustees,	Petroleum Institute of Thailand
October 1, 2021 - Present	Executive Director,	Thailand Energy Academy	

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	Dr. Kongkrapan Intarajang Chief Executive Officer and President, PTT Global Chemical Public Company Limited Age (Year) 56	(%) of Share Possession -None-
	<ul style="list-style-type: none"> • Chief Executive Officer and President, PTT Global Chemical Public Company Limited <i>(Appointed on October 1, 2019)</i> 	Family Relationship among Directors and Executives -None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Engineering (Chemical Engineering) (Second Class Honor), Chulalongkorn University • Ph.D. Chemical Engineering, University of Houston, USA Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 119/2009), Role of the Chairman Program (RCP 21/2009), Thai Institute of Directors Association (IOD) • Breakthrough Program for Senior Executives, IMD Business School • Diploma, The National Defence Course (Class 60), National Defence College 	October 1, 2019 - Present	Senior Executive Vice President, PTT, reporting to Chief Operating Officer, Downstream Petroleum Business Group working on a secondment as Chief Executive Officer and President (Changed the name of the position from Chief Executive Officer, PTT Global Chemical Public Company Limited effective from January 1, 2022)	PTT Global Chemical Public Company Limited
	October 1, 2020 - March 31, 2022	Advisor of the Member Relations	The Federation of Thai Industries



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<ul style="list-style-type: none"> • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 14), Thailand Energy Academy (TEA) • Leadership Development Program 3 (LDP 3) (Class 4), PTT Leadership and Learning Institute (PLLI) • Executive Program in Capital Market Leader (Class 30), Capital Market Academy (CMA) • Executive Development Training Program, The Royal Thai Police 	September 1, 2020 - February 15, 2022	Chairman	GC International Corporation
	August 24, 2020 - March 25, 2021	Director	Power for Sustainable Future Foundation
	November 6, 2019 - October 20, 2020	Director	Global Green Chemicals Public Company Limited
	November 2019 - September 2020	Director	Power of Innovation Foundation
	October 31, 2019 - August 31, 2020	Director	GC International Corporation
	October 2019 - September 2020	Director	Power of Learning Foundation
	May 2017 - January 2020	Director	Thai Tank Terminal Company Limited
	April 2017 - September 30, 2019	Chief Operating Officer - Upstream Petrochemical Business	PTT Global Chemical Public Company Limited
	July 1, 2015 - February 15, 2022	Chairman	PTTGC America Corporation
	July 1, 2015 - February 15, 2022	Chairman	PTTGC America LLC
	July 2015 - September 2019	Director/ President & CEO	PTTGC America Corporation
	April 2015 - September 2019	Director	PTTGC Innovation America Corporation
	February 2015 - September 2019	Director	PTTGC International (Netherlands) B.V.
	January 2015 - September 2019	Director	Vencorex Holding
	September 2014 - December 2018	Director	NatureWorks LLC
	September 2014 - December 2018	Director/ Vice President	GC International Corporation (Formerly, PTTGC International (USA) Inc.)
	November 2008 - September 2019	Director	Emery Oleochemical (M) Sdn. Bhd.
November 2008 - September 2019	Director	Emery Specialty Chemicals Sdn. Bhd.	
September 9, 2008 - August 31, 2020	Director	PTTGC International Private Limited	

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	October 21, 2020 - Present	Chairman, Global Green Chemicals Public Company Limited	
	October 1, 2019 - Present	Director/ Secretary to the Board of Directors/ Director to the Risk Management Committee/ Chief Executive Officer and President, PTT Global Chemical Public Company Limited (Changed the position name from Chief Executive Officer effective from January 1, 2022)	
	August 15, 2017 - Present	Director/ Member of the Risk Management Committee, Global Power Synergy Public Company Limited	
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	December 8, 2021 - Present	Chairman, PTTGC International (Netherlands) B.V	
	September 1, 2020 - Present	Chairman, PTTGC International Private Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	May 8, 2023 - Present	Executive Committee, Chulalongkorn University Alumni Association under the Royal Patronage	
	January 23, 2023 - Present	Executive Committee, National Energy Technology Center, The National Science and Technology Development Agency (NSTDA)	
	July 25, 2022 - Present	Advisor of Small and Medium Industrial Institute (SMI), The Federation of Thai Industries	
	May 2022 - Present	Council Committee, Thailand Carbon Neutral Network (TCNN)	
	December 29, 2021 - Present	Chairperson of Advisory Committee in relation to its investment in Allnex, PTTGC International (Netherlands) B.V	
	June 14, 2021 - Present	Director/ Member of the Nomination and Remuneration Committee, Thai Institute of Directors Association (IOD)	
	October 22, 2020 - Present	Director, Association of Capital Market Academy Alumni	
	September 30, 2020 - Present	Director, The Federation of Thai Industries	
	March 11, 2020 - Present	Vice President (Supporting), Thailand Swimming Association	
	January 30, 2020 - Present	Member of Vidyasirimedhi Institute of Science and Technology Council (VISTEC)	



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	October 30, 2019 - Present	Member of Council of Trustees, Petroleum Institute of Thailand (PTIT)	
	October 3, 2019 - Present	Council of Trustees, Thailand Business Council of Sustainable Development (TBCSD)	
	October 1, 2019 - Present	Executive Director, Thailand Energy Academy	
	August 15, 2019 - Present	Director, Kamnoetvidya Science Academy (KVIS)	
	July 2017 - Present	Co-Chairman, France-Thailand Business Forum	

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	<p>Mr. Bandhit Thamprajamchit Chief Executive Officer and President, Thai Oil Public Company Limited Age (Year) 53</p> <ul style="list-style-type: none"> • Chief Executive Officer and President, Thai Oil Public Company Limited (Appointed on January 1, 2023) 	<p>(%) of Share Possession</p> <p>0.000424 (Own 0; Spouse 0.000424)</p> <p>Family Relationship among Directors and Executives</p> <p>-None-</p>
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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> • Bachelor of Engineering (Chemical Engineering) (First Class Honors, Gold Medal), Chulalongkorn University • M.Sc. in Advanced Chemical Engineering (Distinction), Imperial College, University of London, UK • Master of Business Administration (Executive), SASIN Graduate Institute of Business Administration of Chulalongkorn University 	January 2023 - Present	Senior Executive Vice President, PTT, reporting to Chief Operating Officer, Downstream Petroleum Business Group working on a secondment as Chief Executive Officer and President (Acting Senior Executive Vice President - Hydrocarbon and Acting Executive Vice President - Manufacturing January 1, 2023 - September 2023)	Thai Oil Public Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Certification</p> <ul style="list-style-type: none"> • Director Certification Program (DCP 187/2014), Ethical Leadership Program (ELP 27/2022) Role of the Chairman Program (RCP 52/2022), Thai Institute of Directors Association (IOD) • Diploma, The National Defence Course (Class 63), National Defence College • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 14), Thailand Energy Academy (TEA) • Executive Program in Capital Market Leader (Class 27), Capital Market Academy (CMA) • Leadership Development Program 3 (LDP 3) (Class 4), PTT Leadership and Learning Institute (PLLI) • Leadership Development Program 2 (LDP 2) (with INSEAD) Thailand & Singapore, PTT Leadership and Learning Institute (PLLI) • Young Executive Program in Energy Literacy for a Sustainable Future (YTEA) (Class 2), Thailand Energy Academy (TEA) • Executive Development Program (EDP), Thai Listed Companies Association • Executive Development Program, Fiscal Policy Research Institute Foundation, Thailand • NIDA - Wharton Executive Development Program, Thailand & USA • Lectures and experience sharing for 2023 corporate strategy plan <ul style="list-style-type: none"> - "Global Trends in Energy" by Boston Consulting Group (BCG) - "Global & Thailand Economic Outlook" by Bangkok Bank Public Company Limited 	January 2021 - December 2022	Senior Executive Vice President - Hydrocarbon and Acting Executive Vice President - Manufacturing	Thai Oil Public Company Limited
	February 2020 - December 2020	Senior Executive Vice President - Petroleum & Petrochemical	Thai Oil Public Company Limited
	October 2018 - January 2020	Senior Executive Vice President - Petroleum & Petrochemical and Acting Executive Vice President - Operation Excellence	Thai Oil Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	February 2023 - Present	Director, Global Power Synergy Public Company Limited	
	January 2023 - Present	Director/ Member of the Risk Management Committee/ Chief Executive Officer and President/ Secretary to the Board of Directors, Thai Oil Public Company Limited	
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
	June 2023 - Present	Chairman, TOPNEXT International Company Limited	
	April 2023 - Present	Director, TOPNEXT International Company Limited	
	March 2023 - Present	Chairman, Thai Paraxylene Company Limited	
	March 2023 - Present	Chairman, LABIX Company Limited	
	March 2023 - Present	Director, Saphip Company Limited	
	January 2023 - March 2023	Acting Managing Director, LABIX Company Limited	
	May 2020 - January 2023	Chairman, Thai Lube Base Public Company Limited	
	March 2020 - Present	Director, LABIX Company Limited	
	November 2018 - March 2023	Chairman, Thailoil Energy Services Company Limited	
	January 2017 - March 2023	Director, Thailoil Energy Services Company Limited	

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	January 2017 - January 2023	Director, Thai Lube Base Public Company Limited	
	December 2015 - Present	Director, Thai Paraxylene Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	May 2023 - Present	Vice President, Thailand Swimming Association	
	May 2023 - Present	Committee, Chulalongkorn University Alumni Association under the Royal Patronage	
	April 2023 - Present	Director, Thai Listed Companies Association	
	January 2023 - Present	Executive Committee, Thailand Energy Academy	
	January 2023 - Present	Member of Council of Trustees, Petroleum Institute of Thailand	
	January 2023 - Present	Director, Thailand Business Council for Sustainable Development	
	March 2022 - Present	Director, The Federation of Thai Industries	
	April 2021 - Present	Subcommittee on Petroleum Fuel and Greenhouse Gases Impact Assessment from EV Promotion Measures, The National EV Policy Committee, Ministry of Energy	
	February 2019 - Present	Chairman, Petroleum Refining Industry Club, The Federation of Thai Industries	
	February 2019 - Present	Vice Chairman, Petrochemical Cluster, The Federation of Thai Industries	
	February 2019 - Present	Committee, Industrial Promotion and Support Function, The Federation of Thai Industries	
	February 2019 - Present	Committee, The Institute of Energy for Industries, The Federation of Thai Industries	

	Mr. Kris Imsang President and Chief Executive Officer, IRPC Public Company Limited Age (Year) 58	(%) of Share Possession 0.000350 (Own 0.000350; Spouse 0)
	<ul style="list-style-type: none"> President and Chief Executive Officer, IRPC Public Company Limited <i>(Appointed on October 1, 2022)</i> 	Family Relationship among Directors and Executives -None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Engineering (Civil Engineering), Chulalongkorn University Certification <ul style="list-style-type: none"> The Role of the Board in IT Governance, Year 2020 and Director Certification Program (DCP 139/2010), Director Refreshment Training Program (REP 1/2021), Thai Institute of Directors Association (IOD) Leadership Development Program 3 (LDP3) (Class 2), PTT Leadership and Learning Institute (PLLI) Certificate, Top Executives in the Bhumipalung Phandin Program, (Class 3), Chulalongkorn University Executive Program in Capital Market Leader (Class 23), Capital Market Academy (CMA) Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 9), Thailand Energy Academy (TEA) Diploma, The National Defence Course (Class 62), National Defence College Certificate, Good Governance for Medical Executives (Class 9), King Prajadhipok's Institute and the Medical Council of Thailand 	October 1, 2022 - Present	Chief Operating Officer reporting to Chief Operating Officer, Downstream Petroleum Business Group, PTT, working on a secondment as President and Chief Executive Officer	IRPC Public Company Limited
	October 4, 2022 - December 31, 2022	Director	IRPC A&L Company Limited
	October 1, 2022 - December 29, 2022	Chairman	PTT Energy Solutions Company Limited
	April 5, 2022 - September 8, 2022	Chairman of the Nomination and Remuneration Committee	IRPC Public Company Limited
	January 27, 2021 - September 29, 2022	Member of the Nomination and Remuneration Committee	PTT Oil and Retail Business Public Company Limited
	January 21, 2021 - September 29, 2022	Director	PTT Oil and Retail Business Public Company Limited
	January 19, 2021 - April 5, 2022	Chairman	IRPC Public Company Limited
	September 11, 2020 - September 29, 2022	Chairman	PTT Tank Terminal Company Limited
	August 20, 2020 - April 22, 2022	Vice President	FTI Academy Board Jobs, The Federation of Thai Industries (Term 2020 - 2022)
	June 1, 2020 - September 30, 2022	Chief Operating Officer, Downstream Petroleum Business Group	PTT Public Company Limited
	November 1, 2019 - May 31, 2020	Senior Executive Vice President, Downstream Business Group Alignment	PTT Public Company Limited



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	August 9, 2019 - October 31, 2019	Executive Board	Green Globe Institute
	August 9, 2019 - October 31, 2019	Board Member	Green Globe Institute
	July 18, 2019 - October 31, 2019	Sustainable OUR Khung BangKaChao Working Team (Green Area Development)	OUR Khung BangKachao
	July 3, 2019 - October 31, 2019	Sustainable OUR Khung BangKaChao Advisory Board	OUR Khung BangKachao
	July 2, 2019 - October 31, 2019	Director	Board of Anti-Corruption and Good Governance Enhancement, Thai Chamber of Commerce (Term 2019 - 2020)
	March 1, 2019 - January 18, 2021	Member of the Nomination and Remuneration Committee	IRPC Public Company Limited
	February 28, 2019 - July 13, 2020	Executive Board	Vidyasirimedhi Institute of Science and Technology
	January 23, 2019 - February 5, 2020	First Vice Chairman	Power For Sustainable Future Foundation
	December 2018 - October 31, 2019	Director	Sport Services Alliance Company Limited
	November 8, 2018 - October 31, 2020	Chairman	State Enterprise for Community Club
	October 1, 2018 - October 31, 2019	Senior Executive Vice President, Corporate Governance and Regulatory Affairs	PTT Public Company Limited
	March 1, 2018 - October 31, 2019	Chairman	Water Resource Management Committee, Thailand Business Council for Sustainable Development (TBCSD)
	January 1, 2018 - September 30, 2018	Senior Executive Vice President, Organization Management and Sustainability	PTT Public Company Limited
	December 2, 2017 - February 28, 2019	Member of the Corporate Governance Committee	IRPC Public Company Limited
	September 8, 2017 - October 31, 2019	Chairman	Sarn Palung Social Enterprise Company Limited

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	2017 - 2019	Member of the Central Committee	Chulalongkorn University Alumni Association under the Royal Patronage
	March 30, 2016 - August 31, 2019	Member of the Executive Committee	Kamnoetvidya Science Academy
	February 23, 2015 - November 30, 2019	Chairman	Energy Complex Company Limited
Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	October 19, 2022 - Present	Member of the Risk Management Committee,	IRPC Public Company Limited
	October 1, 2022 - Present	Secretary to the Board/ President and Chief Executive Officer,	IRPC Public Company Limited
	December 2, 2017 - September 8, 2022 and October 1, 2022 - Present	Director,	IRPC Public Company Limited
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
	October 15, 2022 - Present	Director,	IRPC Polyol Company Limited
	October 1, 2022 - March 15, 2023	Director,	UBE Chemicals (Asia) Public Company Limited
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
	July 6, 2023 - Present	Executive Committee,	Chulalongkorn University Alumni Association under the Royal Patronage
	December 16, 2022 - Present	Member of Vidyasirimedhi Institute of Science and Technology Council (VISTEC)	
	October 1, 2022 - Present	Director,	Thailand Business Council for Sustainable Development (TBCSD)
	October 1, 2022 - Present	Member of Council of Trustees,	Petroleum Institute of Thailand
	September 14, 2022 - Present	Director and Secretary General,	Foundation for Industrial Development
	May 31, 2022 - Present	Advisor,	Industrial Promotion and Support, The Federation of Thai Industries
	April 22, 2022 - Present	Secretary General,	The Federation of Thai Industries
	February 2021 - Present	Board of Trustees,	Sirindhorn International Institute of Technology (SIIT)
	June 1, 2020 - Present	Executive Director,	Thailand Energy Academy
	August 22, 2019 - Present	Honorary Board Member,	Social Enterprise Promotion Board (OSEP)



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Mr. Worawat Pitayasiri
President and Chief Executive Officer,
Global Power Synergy Public Company Limited
Age (Year) 57

- President and Chief Executive Officer,
Global Power Synergy Public Company Limited
(Appointed on December 1, 2020)

(%) of Share Possession
-None-

**Family Relationship among
Directors and Executives**
-None-

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> ● Bachelor of Engineering (Chemical Engineering), Chulalongkorn University ● Master of Business Administration (Management), Thammasat University <p>Certification</p> <ul style="list-style-type: none"> ● Director Certification Program (DCP 158/2012), Thai Institute of Directors Association (IOD) ● Asia Petrochemical Industry Conference (APIC) (Class 2), Japan Petrochemicals Industry Association ● PTT Group VP Leadership Development Program, PTT Public Company Limited ● NIDA-Wharton Executive Leadership Program (Class of 2009), The Wharton School of the University of Pennsylvania, USA ● Senior Executive Program (SEP), (Class 26), Sasin Graduate Institute of Business Administration, Chulalongkorn University ● Advanced Certificate Course Politics and Governance in Democratic Systems for High Level Executives, (Class 22), King Prajadhipok's Institute ● Diploma, The National Defence Course (Class 64), National Defence College 	December 1, 2020 - Present	Senior Executive Vice President, PTT, reporting to Chief New Business and Infrastructure Officer working on a secondment as President and Chief Executive Officer	Global Power Synergy Public Company Limited
	July 13, 2021 - October 7, 2022	Director	Avaada Energy Private Limited
	December 1, 2020 - October 4, 2021	Advisor to the Board	Alpha Com Company Limited
	March 3, 2020 - November 29, 2020	Director	Alpha Com Company Limited
	February 27, 2020 - November 29, 2020	Chairman	PTT Raise Company Limited
	November 11, 2019 - November 29, 2020	Chairman	PTT Digital Solutions Company Limited
	November 2019 - February 17, 2020	Director	InnoSpace (Thailand) Company Limited
	September 3, 2019 - November 11, 2019	Director	PTT Digital Solutions Company Limited
	June 2019 - August 16, 2019	Director	PTT Energy Solutions Company Limited
	February 28, 2019 - November 30, 2020	Member of the Executive Board	Vidyasirimedhi Institute of Science and Technology

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	September 19, 2018 - November 30, 2020	Director/ Member of the Risk Management Committee	IRPC Public Company Limited
	September 16, 2018 - November 30, 2020	Senior Executive Vice President, Innovation and Digital	PTT Public Company Limited
	May 2018 - November 23, 2018	Director	PTT Tank Terminal Company Limited
	November 27, 2017 - November 4, 2019	Committee	Community Partnership Association
	October 1, 2016 - September 15, 2018	Executive Vice President, Downstream Business Group Planning	PTT Public Company Limited
Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	December 1, 2020 - Present	Director/ Secretary to the Board/ Member of the Risk Management Committee/ President and Chief Executive Officer, Global Power Synergy Public Company Limited	
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
	January 6, 2022 - Present	Director, NUOVO PLUS Company Limited	
	January 4, 2021 - Present	Director, Global Renewable Power Company Limited	
	December 1, 2020 - Present	Director, Glow Energy Public Company Limited	
	December 1, 2020 - Present	Director, Xayaburi Power Company Limited	
	December 1, 2020 - Present	Director, Ratchaburi Power Company Limited	
	December 1, 2020 - Present	Director, Glow Company Limited	
	December 1, 2020 - Present	Director, Glow SPP 2 Company Limited	
	December 1, 2020 - Present	Director, Glow SPP 3 Company Limited	
	December 1, 2020 - Present	Director, Glow IPP 2 Holding Company Limited	
	December 1, 2020 - Present	Director, Glow SPP 11 Company Limited	
	December 1, 2020 - Present	Director, Glow IPP Company Limited	

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	July 6, 2023 - Present	Chairman, Innovation and New Activities, Chulalongkorn University Alumni Association under the Royal Patronage	
	May 8, 2023 - Present	Executive Committee, Chulalongkorn University Alumni Association under the Royal Patronage	
	June 13, 2022 - Present	Vice President, Committee of the Institute of Industrial Energy (Term 2022 - 2024)	
	May 30, 2022 - 2023	Advisor to Executive Board and Board of Directors, IEEE Power & Energy Society (Thailand) (IEEE PES) (Term 2022 - 2023)	
	April 22, 2022 - Present	Director/ Executive Director The Federation of Thai Industries (Term 2022 - 2024)	
	March 2022 - Present	Council Board, Thailand Carbon Neutral Network	
	December 1, 2020 - Present	Executive Director, Thailand Energy Academy	

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	<p>Mr. Suchat Ramarch President, PTT Oil and Retail Business Public Company Limited Age (Year) 55</p>	<p>(%) of Share Possession 0.000563 (Own 0.000563; Spouse 0)</p>
	<ul style="list-style-type: none"> • President, PTT Oil and Retail Business Public Company Limited (Appointed on October 1, 2022) 	<p>Family Relationship among Directors and Executives -None-</p>

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Education</p> <ul style="list-style-type: none"> • Bachelor of Engineering, Rajamangala University of Technology Krungthep • Master of Arts (Social Development Administration), National Institute of Development Administration 	October 1, 2022 - Present	Senior Executive Vice President, PTT, reporting to Chief Operating Officer, Downstream Petroleum Business Group working on a secondment as President	PTT Oil and Retail Business Public Company Limited

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
<p>Certification</p> <ul style="list-style-type: none"> • Director Certification Program (DCP 176/2017), Thai Institute of Directors Association (IOD) • Corporate Governance for Directors and Senior Executives of Regulators, State Enterprises and Public Organizations (PDI) (Class 22), King Prajadhipok's Institute • Executive Program in Capital Market Leader (Class 28), Capital Market Academy (CMA) • Leadership Development Program 3, PTT Leadership and Learning Institute (PLLI) • Advance Certificate Course in Public Administration and Law for Executives, King Prajadhipok's Institute (Class 13) • Management Development Program 3 (MDP3), PTT Leadership and Learning Institute (PLLI) • Advance Management Program 2 (AMP2), PTT Leadership and Learning Institute (PLLI) • Executive Development Program (2011), The Stock Exchange of Thailand (SET) • Diploma, The National Defence Course (Class 64), National Defence College • Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class 17), Thailand Energy Academy (TEA) 	November 26, 2021 - October 31, 2022	Chairman	Business Professional Recruitment Solutions Company Limited
	November 23, 2021 - October 31, 2022	Member	Human Resource Committee, Vidyasirimedhi Institute of Science and Technology
	October 1, 2021 - September 30, 2022	Senior Executive Vice President, Organization Effectiveness and Corporate Governance (Changed the position name from Senior Executive Vice President, Organization Management and Sustainability with effect from October 1, 2021)	PTT Public Company Limited
	March 29, 2021 - September 29, 2021	Director	Pluk Phak Praw Rak Mae Company Limited
	November 20, 2020 - September 29, 2021	Chairman	Peaberry Thai Company Limited
	October 29, 2020 - April 5, 2021	Chairman	PTT Retail Management Company Limited
	September 30, 2020 - September 29, 2021	Chairman	PTTOR China (Shanghai) Company Limited
	April 25, 2019 - February 3, 2022	Director	Business Services Alliance Company Limited
	April 25, 2019 - November 25, 2021	Director	Business Professional Recruitment Solutions Company Limited
	2019 - September 30, 2021	Senior Executive Vice President, Non-Oil Retail Business	PTT Oil and Retail Business Public Company Limited
	2018 - 2019	Senior Executive Vice President, Non-Oil Retail Business	PTT Oil and Retail Business Public Company Limited
	2016 - 2020	Director	PTT Retail Management Company Limited
	2016 - 2018	Executive Vice President, Retail Marketing	PTT Public Company Limited

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	April 10, 2023 - Present	Member of the Corporate Governance and Sustainable Development Committee, Thai Oil Public Company Limited	
	October 1, 2021 - Present	Director, Thai Oil Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	November 4, 2022 - Present	Chairman, PTT Retail Management Company Limited	
	February 4, 2022 - Present	Chairman, Business Services Alliance Company Limited	
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	May 25, 2023 - Present	Member of the Retail and Service Committee, The Thai Chamber of Commerce and Board of Trade of Thailand	
	April 28, 2023 - Present	Member of the Business Matching Committee, The Thai Chamber of Commerce and Board of Trade of Thailand	



Mrs. Nivadee Jaroensitipun
Executive Vice President Acting Senior Executive Vice President, Government Relations
Age (Year) 57

- Executive Vice President Acting Senior Executive Vice President, Government Relations
(Appointed on November 1, 2022)

(%) of Share Possession
-None-

Family Relationship among Directors and Executives
-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education	November 1, 2022 - Present	Executive Vice President Acting Senior Executive Vice President, Government Relations	PTT Public Company Limited
<ul style="list-style-type: none"> • Bachelor of Business Administration, Rajamangala Institute of Technology • Master of Arts (Political Science), Kasetsart University • Master of Arts (Communication Arts and Information), Kasetsart University 			

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Certification	November 1, 2021 - October 31, 2022	Executive Vice President attached to Senior Executive Vice President, Organization Effectiveness and Corporate Governance, PTT secondment as Managing Director, Business Services Alliance Company Limited	Business Services Alliance Company Limited
	June 1, 2021 - October 31, 2021	Vice President, PTT Oil and Retail Business Public Company Limited, working on a secondment as Senior Executive Vice President, Service Business, Business Services Alliance Company Limited	Business Services Alliance Company Limited
<ul style="list-style-type: none"> • Director Certification Program (DCP 316/2022), Thai Institute of Directors Association (IOD) • Executive Training Program on Administrative Justice (Class 1) • The Rule of Law for Democracy, (Class 8), College of the Constitutional Court • Advanced Certificate Course in Public Economics Management for Executives (PEM) (Class 5), King Prajadhipok's Institute • Certificate, Good Governance for Medical Executives (Class 7), King Prajadhipok's Institute and the Medical Council of Thailand • PTT Leadership Development Program 1 for EVP Pool by Development Dimensions International (DDI) 	July 1, 2018 - May 31, 2021	Vice President, Oil and Retail Business Academy	PTT Oil and Retail Business Public Company Limited
	October 1, 2015 - June 30, 2018	Vice President, Oil Business Academy	PTT Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	-	-	
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
	February 28, 2023 - May 31, 2023	Director, Energy Complex Company Limited	
	November 25, 2021 - June 9, 2023	Director, Business Professional Recruitment Solutions Company Limited	
	November 25, 2021 - March 31, 2023	Director, Sport Services Alliance Company Limited	
	November 1, 2021 - Present	Director, Business Services Alliance Company Limited	
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
	-	-	



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Mrs. Wanida Boonpiraks
Executive Vice President,
Group Corporate Finance and Strategy
Age (Year) 57


- Executive Vice President,
Group Corporate Finance and Strategy
(Appointed on December 1, 2023)

(%) of Share Possession

0.00238
(Own 0.00237;
Spouse 0.00001)

Family Relationship among Directors and Executives

-None-



Miss Jaroonsri Wankertphon
Executive Vice President,
Group Accounting and Tax Policy
Age (Year) 58

- Executive Vice President,
Group Accounting and Tax Policy
(Appointed on December 1, 2023)

(%) of Share Possession

0.000091
(Own 0.000091)

Family Relationship among Directors and Executives

-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Accountancy (Accounting), Chulalongkorn University • Master of Business Administration (Finance), University of St. Thomas, USA Certification <ul style="list-style-type: none"> • Director Certification Program (DCP) (DCP 195/2014), Thai Institute of Directors Association (IOD) • Executive Development Program (EDP) (Class 9), Thai Listed Companies Association (TLCA) • Chief Financial Officer Certification Program (CFO) (Class 19) Federation of Accounting Professions Under the Royal Patronage • Leadership Development Program 2 (LDP2), PTT Leadership and Learning Institute (PLLI) • Orchestrating Winning Program (OWP) 2018, IMD Business School, Switzerland • Leadership Development Program 3 (LDP3), IMD Business School, Singapore • Certificate, Executive Program in Energy Literacy for a Sustainable Future, Thailand Energy Academy (TEA) 	December 1, 2023 - Present	Executive Vice President, Group Corporate Finance and Strategy	PTT Public Company Limited
	January 1, 2021 - November 30, 2023	Executive Vice President, PTT, working on a secondment as Executive Vice President, Finance and Accounting	Thai Oil Public Company Limited
	April 1, 2020 - December 31, 2020	Executive Vice President, PTT, working on a secondment as Chief Financial Officer	Global Power Synergy Public Company Limited
	March 1, 2018 - March 31, 2020	Executive Vice President, PTT, working on a secondment as Executive Vice President, Finance and Accounting	Global Power Synergy Public Company Limited
	January 1, 2018 - February 28, 2018	Vice President, PTT, working on a secondment as Chief Financial Officer	Global Power Synergy Public Company Limited
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
-		-	
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
-		-	
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
-		-	

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Business Administration (Business Administration), Chulalongkorn University • Bachelor of Business Administration (Accounting), Krirk University • Master of Science (Financial Accounting), Thammasat University Certification <ul style="list-style-type: none"> • Director Certification Program (DCP 220/2016), Thai Institute of Directors Association (IOD) • TLCA Executive Development Program, Thai Listed Companies Association • Financial & Fiscal Management Program for Senior Executive, (Class 6), The Comptroller General's Department • EP LEAD 3 Leadership Development Program, IMD • Advanced Master of Management Program (Class 8), National Institute of Development Administration Continuing Professional Development 2020 <ul style="list-style-type: none"> • TFRSs Financial instruments: Implementation and analysis of non-financial institutions' financial statement - CPD (Accounting) 	December 1, 2023 - Present	Senior Vice President, attached to Executive Vice President, PTT Exploration and Production Public Company Limited, working on a secondment as Executive Vice President, Group Accounting and Tax Policy	PTT Public Company Limited
	October 1, 2022 - November 30, 2023	Senior Vice President, attached to Executive Vice President, PTT Exploration and Production Public Company Limited, working on a secondment as Executive Vice President, Global Business Services Acting Executive Vice President, Group Accounting and Tax Policy	PTT Public Company Limited



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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Continuing Professional Development 2021 (financial) <ul style="list-style-type: none"> • Shared Service Centre Evolution - Key to Agility after the Pandemic • Recognizing and evaluating the value of trade account receivable in the "Looking forward concept" and differentiation between PAEs and NPAEs in practice • Estimation of discounted cash-flow for impairment according to TAS36 after relief measurement • TFRS9 IBOR Reformation Phase 2 and Related Disclosure • RPA for Digital Accounting • F&A Knowledge Sharing: "M&A: Purchase Price Allocation (PPA) in practices" • PTT New Core Competencies: PTT New Vision • Mentoring Guidelines & Process 	October 2020 - September 30, 2022	Senior Vice President, attached to Executive Vice President, PTT Exploration and Production Public Company Limited, working on a secondment as Executive Vice President, Global Business Services	PTT Public Company Limited
	February 28, 2019 - September 23, 2020	Director	Energy Complex Company Limited
	January 2019 - September 2020	Senior Vice President, Accounting Division	PTT Exploration and Production Public Company Limited
	January 1, 2018 - October 1, 2020	Director	PTTEP Holding Company Limited
Continuing Professional Development 2022 (financial) <ul style="list-style-type: none"> • Strategic Management Accounting, (Class 2/2022) • Internal control of legal compliance for business sustainability • Derivatives and Hedging Accounting, An Accountant with Criteria Specified by the Department of Business Development 	July 2016 - September 2018	Senior Vice President, Accounting Division	PTT Exploration and Production Public Company Limited
	March 20, 2015 - October 1, 2020	Director	PTTEP HK Holding Limited
	April 22, 2011 - October 1, 2020	Director	PTTEP Sadang Limited
	October - December 2018	Senior Vice President, Accounting Division and Acting Vice President, Financial Accounting Department	PTT Exploration and Production Public Company Limited
Continuing Professional Development 2023 (financial) <ul style="list-style-type: none"> • Collaborative Practice Dialogue on ERM and ESG Related Risks and Opportunities in accordance with COSO's international guidelines • The Development of Accounting Systems in the Digital Age (Class 2/2023) 	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	April 26, 2023 - Present	Director, Dhipaya Group Holdings Public Company Limited	
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
	March 28, 2023 - Present	Director, Dhipaya Insurance Public Company Limited	
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
-			-



Miss Numpetch Supharatanasit
Executive Vice President, Global Business Services
Age (Year) 54

- Executive Vice President, Global Business Services (Appointed on December 1, 2023)
(The person supervising Accounting)

(%) of Share Possession

-None-

Family Relationship among Directors and Executives

-None-

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> • Bachelor of Accountancy (Cost Accounting), University of the Thai Chamber of Commerce • Master of Science (Business Information Technology), Chulalongkorn University 	December 1, 2023 - Present	Executive Vice President, Global Business Services	PTT Public Company Limited
	October 1, 2020 - November 30, 2023	Vice President, Managerial Accounting Department	PTT Public Company Limited
	January 1, 2017 - September 30, 2020	Vice President, Accounts Receivable and Costing Management Department	PTT Public Company Limited
Certification <ul style="list-style-type: none"> • Leadership Development Program 2 (LDP 2), PTT Leadership and Learning Institute (PLLI) • Advanced Management Program 2 (AMP 2): Business and People Management, PTT Leadership and Learning Institute (PLLI) • Advanced Master of Management Program (Class 11), National Institute of Development Administration 	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)		
	-		
	Relevant Important Positions in Non-Listed Company (In the Previous Year)		
-			-
Continuing Professional Development 2023 (financial) <ul style="list-style-type: none"> • Data Analysis: Management and analysis of corporate data for accounting • Risk Accounting and Risk Management for Accountants 	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)		
	2020 - 2023	Member of Board of Accounting Professions on Management Accounting, Federation of Accounting Professions Under the Royal Patronage	



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Mr. Nisit Phongvutirapant
Company Secretary
Age (Year) 53

- Company Secretary
(Appointed on October 1, 2020)
- Executive Vice President,
Company Secretary and Corporate Relation
(Appointed on October 1, 2020)

(%) of Share Possession
0.000003
(Own 0.000003;
Spouse 0)

**Family Relationship among
Directors and Executives**
-None-

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Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
Education <ul style="list-style-type: none"> Bachelor of Economics (Development Economics), Bangkok University Certification <ul style="list-style-type: none"> Director Certification Program (DCP 195/2014), Company Secretary Program (CSP 113/2020), Thai Institute of Directors Association (IOD) Advanced Management Program 2 (Class 1/2018), PTT Leadership and Learning Institute (PLLI) Leadership Development Program PTT Leadership and Learning Institute (PLLI) Bain Academy Asia Pacific 2019 Program, Bain & Company SE Asia, Inc., Singapore Advanced Management Program (AMP 3) - Business & People Management, PTT Leadership and Learning Institute (PLLI) 	October 1, 2020 - Present	Senior Executive Vice President, PTT Oil and Retail Business Public Company Limited, working on a secondment as Executive Vice President, Company Secretary and Corporate Relation	PTT Public Company Limited
	June 22, 2020 - September 30, 2020	Director	PTT (Cambodia) Limited
	June 5, 2020 - September 30, 2020	Director	Modulus Company Limited
	June 1, 2020 - September 30, 2020	Senior Executive Vice President, Corporate Strategy, Innovation and Sustainability	PTT Oil and Retail Business Public Company Limited
	February 1, 2020 - May 31, 2020	Vice President, Strategy and Portfolio Management Department	PTT Oil and Retail Business Public Company Limited
	November 29, 2019 - September 30, 2020	Director	Brighter Energy Company Limited (JV Terminal)
	August 30, 2019 - May 31, 2020	Director	Brighter PTT Oil and Retail Business Company Limited
	May 1, 2019 - January 31, 2020	Vice President, PTT Oil and Retail Business Public Company Limited, working on a secondment as Managing Director	PTT Oil Myanmar Company Limited

Education/ Certification	Working Experiences in the 5 Preceding Years (As of December 31, 2023)		
	Time Period	Position	Organization/ Company
	August 29, 2018 - January 31, 2020	Director	PTT Oil Myanmar Company Limited
	July 1, 2018 - April 30, 2019	Vice President, International Business Development and Planning Department	PTT Oil and Retail Business Public Company Limited
	May 17, 2017 - April 30, 2019	Director	PTT Philippines Corporation
	January 1, 2017 - June 30, 2018	Vice President, International Business Development and Planning Department	PTT Public Company Limited
	2012 - April 30, 2019	Director	PTT (Lao) Company Limited
	1992 - 2021	Managing Partner	Phluang Kasetrungrueng (1992) Limited Partnership
Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			
	-	-	-
Relevant Important Positions in Non-Listed Company (In the Previous Year)			
	-	-	-
Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			
	2022 - Present	Vice Chairman, Power for Sustainable Future Foundation	
	November 23, 2021 - Present	Member of the Executive Committee, Vidyasirimedhi Institute of Science and Technology	
	November 17, 2021 - Present	Vice Chairman and Treasurer, Power of Innovation Foundation	
	November 1, 2020 - Present	Committee Member, Thai Company Secretary Club, Thai Listed Companies Association	

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Report of the Audit Committee

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Detail of Head of the Office of Corporate Audit

	<p>Mr. Chayagorn Leangruenrom Executive Vice President, Office of Corporate Audit Head of the Office of Corporate Audit Age (Year) 55</p>	<p>(%) of Share Possession -None-</p>
		<p>Family Relationship among Directors and Executives -None-</p>

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Education/ Certification	Working Experiences in the 10 Preceding Years (As of December 31, 2023)			
	Time Period	Position	Organization/ Company	
<p>Education</p> <ul style="list-style-type: none"> • Bachelor of Engineering, King Mongkut's Institute of Technology Ladkrabang • Master of Business Administration, Kasetsart University <p>Certification</p> <ul style="list-style-type: none"> • Anti-Corruption for Executive Program (ACEP 7/2013), Corporate Governance for Executives Program (CGE 19/2022), and Subsidiary Governance Program (SGP Online 1/2022), Thai Institute of Directors Association (IOD) • Leadership Development Program 2, PTT-Harvard Business School, PTT Leadership and Learning Institute (PLLI) • Public Private Partnerships for Executives Program (PEP) (Class 8), Institute of Research and Development for Public Enterprises (IRDP) • Corporate Governance for Directors and Senior Executives of Regulators, State Enterprises and Public Organizations (PDI) (Class 24), King Prajadhipok's Institute • Advanced Management Program (AMP) 3 - Business & People Management, PTT Leadership and Learning Institute (PLLI) • Capital Market Academy Leader Program (Class 32), Capital Market Academy (CMA) 	2022 - Present	Executive Vice President, Office of Corporate Audit	PTT Public Company Limited	
	2020 - 2022	Executive Vice President, Corporate Governance	PTT Public Company Limited	
	2019 - 2020	Vice President, Natural Gas Marketing Department	PTT Public Company Limited	
	2016 - 2019	Vice President, Project Director, Myanmar - Thailand LNG Receiving Terminal	PTT Public Company Limited	
	2016	Vice President, Internal Audit Department	PTT Public Company Limited	
	2013 - 2016	Vice President, Subsidiary Audit Department	PTT Public Company Limited	
	2011 - 2013	Vice President, Internal Audit Department	PTT Public Company Limited	
	Relevant Important Positions in Listed Companies - The Stock Exchange of Thailand (In the Previous Year)			-
	Relevant Important Positions in Non-Listed Company (In the Previous Year)			-
	Other Experiences/ Other Activities/ Other Organizations (In the Previous Year)			-

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Business Assets and Details on Asset Valuation

-None-

Business Assets

Details are listed under **Section 1.2 Nature of Business**

Details of Asset Valuation

-None-

Attachment 5

Corporate Governance, Ethical Standards and Code of Business Ethics Handbook of PTT Public Company Limited, including Authorities, Duties and Responsibilities of the Board and Duties and Responsibilities of Specific Committees of PTT Public Company Limited

1. Corporate Governance, Ethical Standards and Code of Business Ethics Handbook of PTT Public Company Limited

PTT has announced its corporate governance principles and formulated the Corporate Governance, Ethical Standards and Code of Business Ethics Handbook (CG Handbook) for the acknowledgement and adoption of the Board of Directors, all executives, and employees as their practical guidelines at work to promote PTT as a company with efficient business operations, excellent corporate governance and management, integrity, transparency, and auditability. The Handbook is publicized on PTT's Intranet and web site.

Further details related to PTT's CG Handbook can be studied from PTT's Website www.pttplc.com.

<https://www.pttplc.com/en/Home.aspx> Menu: About PTT, Topic: Corporate Governance or follow the link below:
<https://www.pttplc.com/en/About/Corporate-Governance.aspx> and
https://www.pttplc.com/uploads/CG/Publication/CGHandbookforOneReport/PTTCGHandbook_Revision5.2_EN.pdf



2. Charter of the Board of Directors and Charters of Specific Committees of PTT Public Company Limited

2.1 Charter of the Board

(Details are reported under Section 2 "7.2.3 Roles and Duties of the Board")

2.2 Charters of the Audit Committee/ Nominating Committee/ Remuneration Committee/ Corporate Governance and Sustainability Committee and Enterprise Risk Management Committee

(Details are reported under Section 2 "7.3 Information about Specific Committees")

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Report of the Audit Committee

Details are reported on pages 324 - 327

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About This Report



Part 3: Driving Business towards Sustainability Section 1: Business Operations and Performance

PTT consistently discloses sustainability performance data to stakeholders through annual reports, sustainability reports, and the website www.pttplc.com in the sustainability section every year. In 2023, PTT announced sustainability performance to stakeholders through the "Form 56-1 One Report", which integrates the annual report and sustainability report for the fourth consecutive year. Sustainability performance is disclosed under Part 3: Driving Business towards Sustainability, Section 1: Business Operations and Performance, covering all 3 dimensions: Environmental, Social, and Governance. As in previous years, this information continues to be disclosed via the website www.pttplc.com under the Sustainability section.

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56-1 One Report 2023
PTT Public Company Limited

Scope of the Report

The information presented in Part 3: Driving Business towards Sustainability, Section 1: Business Operations and Performance, in this "Form 56-1 One Report", covers sustainability performance data from January 1, 2023 to December 31, 2023, for all business groups of PTT. This includes the Upstream Petroleum and Natural Gas Business Group, Downstream Petroleum Business Group, New Business and Infrastructure Group, and support functions, as well as the performance of companies within PTT Group as specified in each section. Additionally, the scope of operations under the 3P Decarbonization Pathway includes PTT and flagship companies; **PTT Exploration and Production Public Company Limited (PTTEP)**, **PTT Global Chemical Public Company Limited (GC)**, **Thai Oil Public Company Limited (TOP)**, **IRPC Public Company Limited (IRPC)**, **Global Power Synergy Public Company Limited (GPSC)**, and **PTT Oil and Retail Business Public Company Limited (OR)**, as well as Scope 1, 2 and 3 of greenhouse gas emissions, covering companies in which PTT holds direct equity exceeding 20% and those where it has 100% equity, including joint venture companies with equal equity shares, and companies that are part of the same scope. Sustainability reporting guidelines at both national and international levels are applied to present essential information and performance outcomes as follows:

56-1 ONE REPORT	The handbook for preparing the Securities and Exchange Commission's Annual Registration Statements: 56-1 One Report
GRI	Reporting on sustainability according to the Global Reporting Initiative (GRI) Standards, ensuring alignment with current relevant indicators (GRI Standards 2021: Universal Standards and Topic Standards) and the Sector Standard Project for Oil and Gas (GRI 11: Oil and Gas Sector 2021), with comprehensive content adherence to the criteria outlined in "Reporting in accordance with the GRI Standards"
IFRS	Reporting on sustainability linked to the International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards (S) of the International Sustainability Standards Board (ISSB) encompasses IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information, which integrates with GRI Standards, reporting on organizational value creation according to the Integrated Reporting (IR) framework of the International Integrated Reporting Council (IIRC), and the Sustainability Accounting Standards Board (SASB). It includes IFRS S2 Climate-related Disclosures, which aligns reporting on climate-related performance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)
UNGC	Reporting on progress in operations according to the ten principles of the United Nations Global Compact (UNGC) at the Advanced level
UN SDGs	Reporting on the progress of operations supporting the United Nations Sustainable Development Goals (UN SDGs)
WEF	Reporting on sustainable value creation by the core metrics outlined in the "Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation" framework by the World Economic Forum (WEF)
CHRB	Ranking of corporate human rights performance according to the Corporate Human Rights Benchmark (CHRB)

Report Assurance

The sustainability performance data disclosed in Part 3: Driving Business towards Sustainability, Section 1: Business Operations and Performance of the "Form 56-1 One Report" for the year 2023 has been approved by senior management of relevant departments and PTT's Board of Directors. Furthermore, it has undergone continuous external verification by independent agencies for the 13th consecutive year to ensure stakeholders' confidence

in the accuracy, completeness, reliability, and business alignment of the disclosed information. Readers can access further details of each topic and track PTT's sustainability performance in Part 3: Driving Business towards Sustainability, Section 1: Business Operations and Performance of Form 56-1 One Report for the year 2023 by clicking or scanning the QR code provided on the right hand side.



PTT Website
(www.pttplc.com),
Sustainability Section



PTT's sustainability
performance results



Displaying data according
to international standard
indicators



KPMG Phoomchai Audit Ltd.
50th Floor, Empire Tower,
1 South Sathorn Road, Yannawa
Sathorn, Bangkok 10120, Thailand
Tel +66 2677 2000
Fax +66 2677 2222
Website kpmg.com/th

บริษัท เคพีเอ็มจี ภูมิไชย สอบบัญชี จำกัด
ชั้น 50 เอ็มไพร์ทาวเวอร์
1 ถนน สาทรใต้ แขวงยานนาวา
เขตสาทร กรุงเทพฯ 10120
โทร +66 2677 2000
แฟกซ์ +66 2677 2222
เว็บไซต์ kpmg.com/th

Independent limited assurance report

To the Directors of PTT Public Company Limited ("PTT")

Conclusion

Based on the procedures performed, as described below, nothing has come to our attention that causes us to believe that the selected subject matters ("Subject Matters") identified below and included in the 56-1 One Report 2023 (Driving Business towards Sustainability Section) or referred to in the Report of PTT's corporate website ("the Website") for the year ended 31 December 2023, are not, in all material respects, prepared in compliance with the reporting criteria (the "Criteria").

Our Responsibilities

We have been engaged by PTT and are responsible for providing a limited assurance conclusion in respect of the Subject Matters for the year ended 31 December 2023 to be included in the Report as identified below.

Our assurance engagement is conducted in accordance with the International Standard on Assurance Engagements ISAE 3000 (Revised) *Assurance Engagements other than Audits or Reviews of Historical Financial Information*, and ISAE 3410 *Assurance on Greenhouse Gas Statements*. These standards require the assurance team to possess the specific knowledge, skills and professional competencies needed to provide assurance on sustainability information, and that we plan and perform the engagement to obtain limited assurance on whether the Subject Matters are prepared, in all material respects, in compliance with the Criteria.

Our Independence and Quality Management

We have complied with the independence and other ethical requirements of the International Ethics Standards Board for Accountants' *International Code of Ethics for Professional Accountants (including International Independence Standards)* (IESBA Code), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. The firm applies International Standard on Quality Management 1 which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have not been engaged to provide an assurance conclusion on any other information disclosed within the Report.

Subject Matters

Subject Matters comprised of the following data expressed numerically or in descriptive text for the year ended 31 December 2023:

- GRI 201-1 Direct economic value generated and distributed-Community investments (2016)
- GRI 302-1 Energy consumption within organization (2016)
- GRI 302-3 Energy intensity (2016)
- GRI 303-3 Water withdrawal (2018)
- GRI 303-4 Water discharge (2018)
- GRI 305-1 Direct (Scope 1) GHG emissions (2016)
- GRI 305-2 Energy indirect (Scope 2) GHG emissions (2016)
- GRI 305-3 Other indirect (Scope 3) GHG emissions (2016)
- GRI 305-4 GHG emission intensity (2016)
- GRI 305-7 Nitrogen oxides (NOx), Sulfur oxides (SOx), and other significant air emissions (Volatile Organic Compounds: VOCs) (2016)
- GRI 306-3 Significant spills (2016)
- GRI 306-3 Waste generated (2020)
- GRI 306-4 Waste diverted from disposal (2020)
- GRI 306-5 Waste directed to disposal (2020)
- GRI 308-1 New suppliers that were screened using environmental criteria (2016)
- GRI 308-2 Negative environmental impacts in the supply chain and actions taken (2016)

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- GRI 403-9 Work-related injuries (2018)
- GRI 403-10 Work-related ill health (2018)
- GRI 404-1 Average hours of training per year per employee (2016)
- GRI 405-2 Ratio of basic salary and remuneration of women to men (2016)
- GRI 414-1 New suppliers that were screened using social criteria (2016)
- GRI 414-2 Negative social impacts in the supply chain and actions taken (2016)

Criteria

The Subject Matters were assessed according to the following criteria:

- The Sustainability Reporting Standards of the Global Reporting Initiative (“GRI Standards”)

Directors’ and management’s responsibilities

The directors and management of PTT are responsible for the preparation and presentation of the Subject Matters, specifically ensuring that in all material respects the Subject Matters are prepared and presented in accordance with the Criteria. This responsibility also includes the internal controls relevant to the preparation of the Report that is free from material misstatement whether due to fraud or error.

Procedure performed

In forming our limited assurance conclusion over the Subject Matters, our procedures consisted of making enquiries and applying analytical and other evidence gathering procedures including:

- Interviews with senior management and relevant staff at corporate and operating sites;
- Inquiries about the design and implementation of the systems and methods used to collect and process the information reported, including the aggregation of source data into the Subject Matters;
- Inquiries about managements practices and procedures related to identifying stakeholders and their expectations, determining material sustainability matters and implementing sustainability policies and guidelines;
- On-site visit at Head Quarter in Bangkok, and Rayong Gas Separation Plant (GSP) and Region 1 Pipeline Operations Division which selected on the basis of risk analysis including the consideration of both quantitative and qualitative criteria;

- Agreeing Subject Matters to relevant underlying sources on a sample basis to determine whether all the relevant information has been included in the Subject Matters and prepared in accordance with the Criteria.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement and consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion.

Inherent limitations

Due to the inherent limitations of any internal control structure it is possible that errors or irregularities in the information presented in the Report may occur and not be detected. Our engagement is not designed to detect all weaknesses in the internal controls over the preparation and presentation of the Report, as the engagement has not been performed continuously throughout the period and the procedures performed were undertaken on a test basis.

Restriction of use of our report

Our report should not be regarded as suitable to be used or relied on by any party wishing to acquire rights against us other than PTT, for any purpose or in any other context. Any party other than PTT who obtains access to our report or a copy thereof and chooses to rely on our report (or any part thereof) will do so at its own risk. To the fullest extent permitted by law, we accept or assume no responsibility and deny any liability to any party other than PTT for our work, for this independent limited assurance report, or for the conclusions we have reached.

К/МС Р/1000/СМА/1 АУДИТ ЛТД.

KPMG Phoomchai Audit Ltd.

Bangkok

8 March 2024

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56-1 One Report 2023
PTT Public Company Limited

Readers can click or scan the QR Code for feedback Survey on the Overall Impression of 2023 Annual Registration Statement/ Annual Report (56-1 One Report) and Subsection 3: Driving Business towards Sustainability Section 1: Business Operations and Performance. For further information, please visit www.pttplc.com



Reader Feedback Survey



