

ANNUAL REPORT 2018



PTTEP





PTTEP

INNOVATING for
SUSTAINABILITY

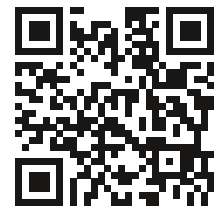




From the beginning ... to today,
PTT Exploration and Production Public Company Limited or PTTEP
has continued to learn, improve, share and pass on the knowledge on
petroleum exploration and production by Thais from one generation
to the next, to secure a sufficient and lasting energy source for
the Thai people.

Besides energy security, PTTEP also strives to better the
standard of living and well-being of the communities and
societies wherever we operate through the implementation
of social projects focusing on 4 aspects: basic needs,
education, environment and culture. The objective is to instill
foundational knowledge in the communities, so that they
can become self-reliant and together with PTTEP achieve
sustainable growth.

We are committed to good corporate governance, business
ethics, risk management and regulatory compliance,
with a view to fostering trust and confidence in all of our
stakeholders and contributing to building a good and
harmonious society.



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MV MADE IN BONGKOT







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Asset Revaluation

▶▶ Financial Highlights



Net Cash from Operating Activities*

2016	2,308
2017	2,687
2018	3,276



Net Cash Used in Investing Activities

2016	(1,002)
2017	(1,576)
2018	(2,019)



Net Cash Used in Financing Activities

2016	(544)
2017	(665)
2018	(1,724)



Cash and Cash Equivalent at the Beginning of the Period**

2016	3,260
2017	4,022
2018	4,468



Cash and Cash Equivalent at the End of the Period**

2016	4,022
2017	4,468
2018	4,001

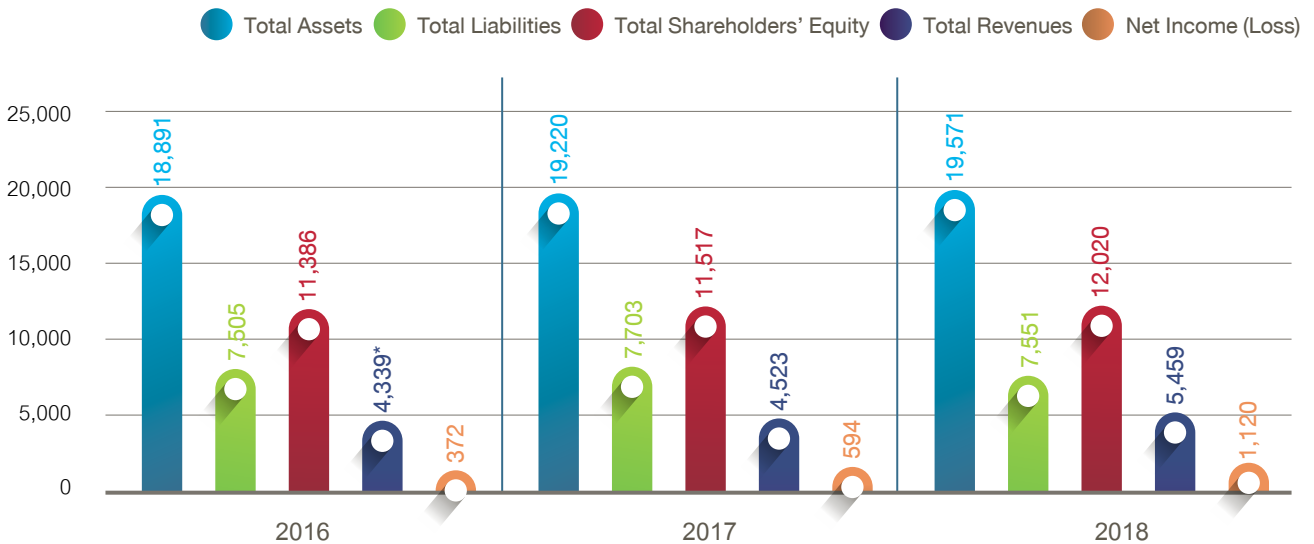
(Million USD)

* Including effect of exchange rate changes

** Including short term investment

Financial Highlights

(Million USD)



* Revenue of PTTEP Oman Company Limited was represented in discontinued operations

	2016	2017	2018
Dividend per Share (Baht)	3.25	4.25	5.00*
Dividend Yield (%)**	3.38	4.25	4.41

* The total dividend of 2018 will be 5.00 Baht per share including the interim dividend at the rate of 1.75 Baht per share and the second half-year operations dividend at the rate of 3.25 Baht per share. Payment of the interim dividend and the second half-year operations dividend will be proposed in the 2019 General Shareholder's Meeting on March 29, 2019 for acknowledgement and approval, respectively.

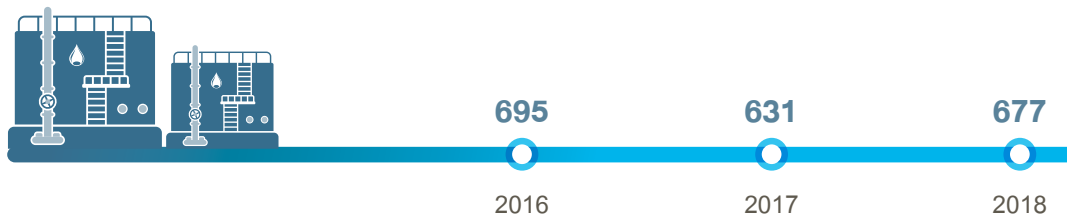
** Calculated from PTTEP's closing share price on period end

Financial Ratios

	2016	2017	2018
EBITDA to Revenue from Sales (%)	71	70	73
Debt to Equity (times)	0.25	0.25	0.16
Return on Equity (%)	3	5	10
Return on Assets (%)	2	3	6

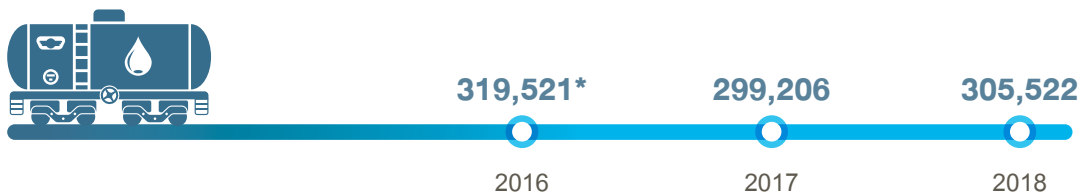
Petroleum Proved Reserves

(MMBOE)



Petroleum Sales Volume

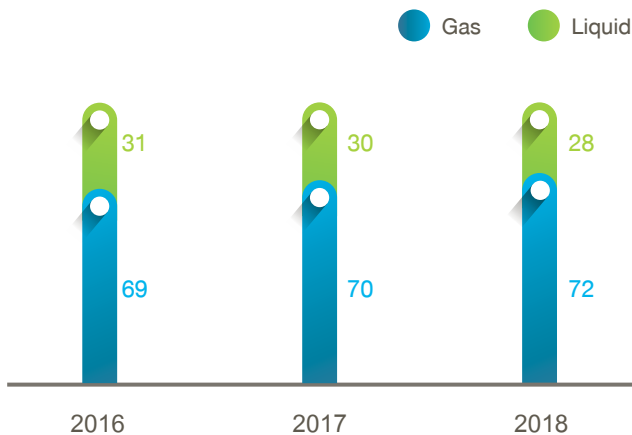
(BOED)



* Included sales volume of Oman 44 Project until August 2016

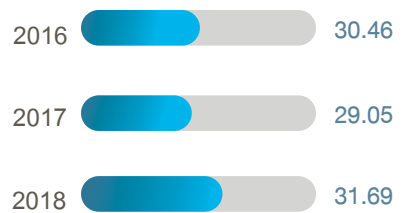
Gas and Liquid Ratio for Sales Volume

(%)



Unit Cost

(USD per BOE)





▶ Message from Chairman and CEO

Dear Shareholders,

2018 marked another successful year for PTTEP, reflecting continued growth in our earnings, the winning bids for Bongkot and Erawan fields, expansion in the areas where PTTEP is proficient, a new business partnership, preparation in terms of organizational structure and human resources, application of new technologies, and a clearer plan in exploring new business opportunities for sustainable growth.

In 2018, PTTEP efficiently operated accordingly to the “RESET REFOCUS RENEW” strategy and our achievements are as follows:

Portfolio Management and Cost Control

To maintain our profitability and shareholders' returns, PTTEP increased production from legacy assets. This was achieved mainly through the acquisition of a 22.2222% stake in the Bongkot field from Shell affiliates and continually-controlled production cost which maintained our competitiveness. In 2018, the unit cost marginally increased from USD 29.05 per Barrel of Oil Equivalent (BOE) to USD 31.7 per BOE, as royalty expenses moved up in line with a rise in the average selling price. Additionally, PTTEP also rationalized our investment portfolio in non-core areas. We negotiated for lower obligations in the Mariana Oil Sands Project in Canada. We also divested our investment in the Montara Field in Australia which has been in operation for a long time and experienced high operating costs, which will save expenses in the long term.

Investment Expansion to Raise Petroleum Reserves

PTTEP focused on expanding and growing business in strategic areas where we have a full range of experience and expertise, namely Thailand and Southeast Asia. We succeeded in this regard with the acquisition of the 22.2222% stake in the Bongkot field and the winning bids for the Bongkot and Erawan fields. While our main goal is to maintain production output for national energy security, we explored M&A opportunities for both green field and brown field projects. We accelerated development of large natural gas projects in our portfolio especially Mozambique Rovuma Offshore Area 1 Project. Long-term LNG Sale and Purchase Agreements (SPAs) have been achieved, for a volume sufficient to reach the Final Investment Decision (FID) in the first half of 2019 as targeted. Regarding exploration activities, PTTEP accelerated exploration plans in Thailand, Myanmar and Malaysia. We searched for opportunities in low-cost areas and hence bid for 2 exploration blocks in Malaysia. Our focus was extended to other petroleum prolific areas such as the United Arab Emirates, in partnership with strategic alliances. Additional investment is expected to raise our petroleum reserves both in the short and long term.



Leveraging Expertise and Charting a New Course for New Business Opportunities

The energy business landscape has altered along with fast-changing technologies and fierce competition. PTTEP introduced an organizational restructuring by establishing the New Business Unit and Business and Organization Transformation Unit, to search for business opportunities related to petroleum exploration and production and others. Work process was adjusted, while human resources were readied in-line with our strategies that clearly defined investment targets. PTTEP aims to venture into new businesses on top of petroleum exploration and production which is our main business. We set to leverage our expertise in growing new businesses which include the Gas Value Chain through planned investment in an LNG Value Chain project in cooperation with PTT, and Gas-to-Power in Myanmar which will become more concrete in 2019.

2018 Performance

PTTEP reaped USD 1,120 million in net profit in 2018, an increase of 89% compared to USD 594 million in the previous year. Sales revenue reached USD 5,203 million, a 22% increase from 2017. Average sales volume increased from 299,206 barrels of oil equivalent per day (BOED) to 305,522 BOED. Average selling price rose from USD 39.20 per barrel of oil equivalent (BOE) in 2017 to USD 46.66 per BOE in 2018.

PTTEP posted USD 1,215 million in profit from normal operation (Recurring Net Profit), showing an increase from USD 836 million in 2017 thanks to a rise in sales volume and average selling price. At the end of 2018, PTTEP showed strong financial positions with total assets worth USD 19,571 million against USD 7,551 million in liabilities. As directed by PTTEP's financial policy, the debt to equity ratio was at 0.16. With cash and short-term investments of USD 4 billion, PTTEP has sufficient funds to finance new investments aiming to maintain production levels as planned, expenses related

to the acceleration of Pre-development projects and exploration activities, the preparation of the Bongkot and Erawan fields transition as proposed to the Ministry of Energy, and other M&A activities as specified in the investment strategy.

Sustainable Organization, Creating Shared Value to All Stakeholders

PTTEP's sustainable development is aligned with international practices and the United Nations' standards. PTTEP was consequently selected as a member of the Dow Jones Sustainability Indices (DJSI), in the World Oil and Gas Upstream & Integrated Industry for the fifth consecutive year. PTTEP also remained a constituent member of the FTSE4Good Index Series, in the category FTSE4Good Emerging Index, for the third consecutive year. For the first time, PTTEP was honored with the SET Sustainability Award 2018 - Outstanding category. Importantly, at the ASEAN level, PTTEP won two ASEAN CG Awards for the Top 3 PLCs – Thailand, and Top 50 ASEAN PLCs (Top 10 group) being among the top 10 in ASEAN based on the ASEAN CG Scorecard assessment.

PTTEP realizes the importance and necessity of development of technology and innovation. As part of this we have entered into a joint venture to set up the Vidyasirimedhi Institute of Science and Technology (VISTEC) with the PTT Group, which focuses on the education of science, engineering and cutting edge technology, which PTTEP contributes a budget allocation of approximately 3% of annual net profits for technology research and development. In 2018, the R&D activities were geared towards the development and application of technology. These included application of Artificial Intelligence (AI)-based predictive maintenance for critical production equipment, technology to improve the efficiency of subsea equipment inspection such as oil and gas pipelines for environmental-friendly decommissioning work aligned with international standards, and Autonomous Underwater Vehicle (AUV). The 3 prototype projects were tested, ready for implementation in 2019.

Aside from that, PTTEP established AI and Robotics Ventures Co., Ltd. for the development and investment in robotics and artificial intelligence (AI) applicable with the exploration and production business.

Strategic Plans for 2019

PTTEP has introduced a new vision to become an "Energy Partner of Choice" on a belief that collaboration with strategic alliances is more vital than competition. Strategic alliances, with a shared goal to create mutual values and benefits, will drive the organization towards solid and sustainable growth. Through being an "Energy



(Prajya Phinyawat)

Chairman



Partner of Choice", aside from business gains, PTTEP strives to create shared values with all stakeholders ranging from shareholders, employees, suppliers, the public sector and communities to competitors. Meanwhile, PTTEP's 3R strategy (RESET REFOCUS RENEW) is upgraded to "EXPAND and EXECUTE" to achieve the organizational goals in terms of business expansion, operations, and cost management at continuously competitive levels.

For more than 30 years, PTTEP has been committed to the operations with responsibility to society and community, with 4 areas of focus – basic needs, education, environment, as well as culture. In 2018, PTTEP pushed its successful social projects to another level to ensure continued benefits for the community. For example, the Crab Hatchery Learning Center project in Songkhla Province was expanded to other areas of the province and in Pattani Province; and 2 more SIOLA (Stimulation, Intervention, Optimization of Services for Children) centers were created in West Sulawesi, Indonesia. PTTEP takes pride in helping out communities and societies with its knowledge, technology and innovation. In 2018, our technology was used in the rescue mission of the Wild Boar Academy football team stranded in the Tham Luang-Khun Nam Nang Non cave in Chiang Rai Province. In the mission, a Multipurpose Plant Inspection Octocopter (MPIO) drone was deployed to survey the mountain top to make an aerial map of the terrain in support of the rescue and water drainage operations, helping guide the mission to eventual success.

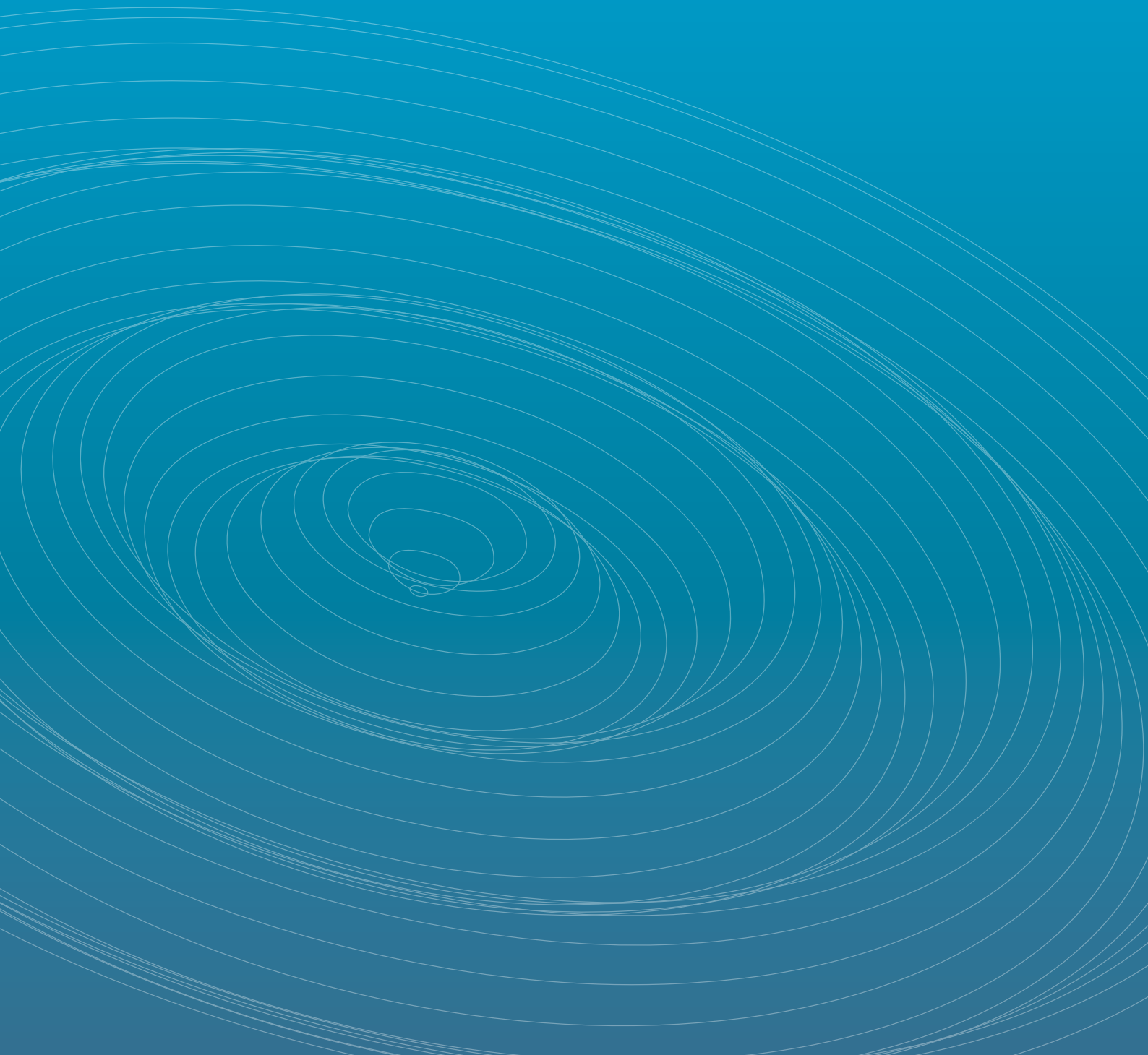
PTTEP's Board of Directors, executives and employees hereby express our gratitude to all shareholders for their continued trust and support. We assure all that PTTEP will further move forward in ensuring energy security and sustainable development as well as creating economic value for the country under the principles of good corporate governance and business ethics.



(Phongstorn Thavisin)

President and Chief Executive Officer

 Section 1
 **Our Business**



▶▶ 1. Policy and Business Operations Overview



1.1 Vision, Mission, Objective and Strategy

PTTEP Group is one of the leading E&P companies in Thailand, exploring for sustainable sources of petroleum supply for the country and other countries in which the Company operates or invests in, and generating return that would satisfy the shareholders and stakeholders. In the midst of external complexities, rapidly changing environment, depleting petroleum resources, and geographical complexity, a more advanced technology with a greater capability is required, and so is the need to maintain environmental and social equilibrium. The Company's mission and vision have then been reviewed and identified.

Mission: PTTEP operates globally to provide reliable energy supply and sustainable value to all stakeholders.

Vision: Energy Partner of Choice through Competitive Performance and Innovation for Long-term Value Creation

Goal and Objective: PTTEP Group continuously and consistently monitors domestic and global economies to conduct energy trend and situation analysis in order to develop effective strategy and execution plan. The Company's objective is to create the balance between strong performance and business sustainability aspects to the following goals:

Strong Performance: Target to have a Return on Capital Employed (ROCE) at a level higher than that the industry's average and the unit cost in the top quartile of our Asian peer companies

Business Sustainability: Target to maintain the proved reserves to production ratio (R/P Ratio) of no less than 7 years by 2025 as well as to achieve a production target of 5% Compound Annual Growth Rate (CAGR) during 2018-2030

Strategy: To attain the above, we have formulated our strategic directions as follows:

(1) **RESET:** To increase production growth and sustain competitive performance by supplying more gas from current level, implementing digitalization to improve productivity and sustain cost competitiveness, increasing reserves through development project execution, divesting non-core assets, and accelerating and/or de-risking exploration projects

(2) **REFOCUS:** To expand core business from two dimensions

(2.1) **Coming-Home Strategy:** PTTEP aims to focus the investments in Thailand and South East Asia where the company designated as strategic investment areas. This includes the plan to accelerate activities in exploration projects located in Myanmar and Malaysia in order to improve petroleum reserves. Moreover, PTTEP is also looking to further expand our business into opportunities such as the Gas Value Chain business in Myanmar in the form of Gas-to-Power projects.

(2.2) **Strategic Alliance:** PTTEP captures new investment opportunity in other petroleum prolific areas with strategic alliances by mainly focusing on the Middle-East where considered as low cost barrel region.

(3) **RENEW:** The Company has transformed the organization and invested in new business focusing on technology and innovation as well as R&D capability to support core E&P business and future investment opportunity related to energy industry. In 2018, PTTEP has re-organized the structure and business operations to improve our agility and efficiency to be in line with our growth strategy. The new organization structure came into effect in January, 2019.

Procedure to Set the Company's Vision and Mission

PTTEP Board of Directors (Board) reviews and approves the vision and mission of the Company annually, being accompanied generally by the management, through a systematic planning process. The process is started by updating the current business environment and the E&P industry trend, and their implications on the Company regarding opportunities and risks. The role of the Company as a national oil company to provide a reliable and sustainable energy supply for Thailand is also reviewed. In addition, the Company's investment portfolio is reviewed and assessed on returns and risks to identify the vision, mission, and short-term and long-term strategic directions. These allow the Company to achieve sustainable growth as well as to be able to cope with business changes. The management will then develop the Company's work plan, budget, and Key Performance Indicators (KPIs), based on the given strategic directions and policies, to be presented to the Board for approval prior to the implementation.

After the Board approves the vision, mission, and corporate strategy, the management will cascade down the approved strategic directions and corporate targets to promote a better understanding among all of the Company's employees. In principles, this will subsequently lead to sub-work plan development and implementation which are in line with the corporate target, work plan, and core values to achieve the Company's goals at the end. However, the Board also regularly supervises and monitors management's implementation of stated strategic plans in accordance with business directions and strategies. The management is responsible for reporting its performance in comparison to the strategic plans to the Board of Directors for acknowledgement on a quarterly basis.

1.2 PTTEP Sustainability Management

1.2.1 Sustainability Management Overview

PTTEP's Sustainability Management is an integration of environmental and social responsibility into our business decisions to meet the expectations of our stakeholders, investors, shareholders, business partners, host governments, various communities, and employees. We continuously emphasize effective management of the three pillars of sustainability to reflect all ongoing concerns regarding any environmental and social issues as well as to create value for the Company and our stakeholders. Sustainability targets and strategies, and their implementation are driven by efficient business processes, funding, Governance, Risk and Compliance (GRC) management, innovation and technology, cost reduction, and human capability development to enhance production and to achieve work efficiency. To accomplish this, we have adopted His Majesty King Bhumibol Adulyadej's (Rama IX) Sufficiency Economy Philosophy (SEP) as the guideline for our business operations and have aligned our sustainability management with the United Nations Sustainable Development Goals (UN SDGs), focusing on Goals 3, 4, 7, 8, and 16, while continuing our support for the rest of the SDGs in our routine operations. Further, we use the Dow Jones Sustainability Indices (DJSI) to measure our sustainability performance at the international level.

In 2018, PTTEP was selected as a DJSI member in the World Oil and Gas Upstream & Integrated Industry for the fifth consecutive year. In addition, we were chosen as a member of the FTSE4Good Index Series for the FTSE4Good Emerging Index category for the third consecutive year. Additionally, in 2018, we received the SET Sustainability Awards 2018 – Outstanding Category from the Stock Exchange of Thailand (SET) for the first time.

1.2.2 Materiality Assessment

PTTEP's materiality assessment review process engages both internal and external stakeholders by using international standards, such as the Global Reporting Initiative (GRI Standards) Sustainability Reporting Guideline: Oil and Gas Sector Disclosures (OGSD) framework – core level, IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability, Dow Jones Sustainability Indices (DJSI), AA1000 AccountAbility Principles Standard (2008) (AA1000APS), and SASB Materiality Map™ by Sustainability Standards Board (SASB). This includes a thorough review of the current and future business risks and opportunities in the business, social and environmental dimensions, so as to identify and prioritize the Company's material sustainability issues which are significant issues to our business and stakeholders. These are then used to develop the Sustainable Development Master Plan and are integrated into our short-term and long-term strategy.

In 2018, 16 material sustainability issues of importance were identified and prioritized from the process of engaging with our stakeholders and top management through the standard materiality assessment process. They are arranged into 10 groups of issues for sustainability reporting, some of which are also used for the Company's KPIs. The 10 issues are listed below:

Business Dimension

- GRC – Governance, Risk Management and Compliance
- Human Capital Management
- Increasing Petroleum Reserve
- Technology and Innovation
- Supply Chain Management

Social Dimension

- Occupational Health and Safety
- Social Development

Environmental Dimension

- Climate Change
- Environment Management
- Spills

The Company's process for identifying the material sustainability issues for 2018 includes a structured and systematic review of the issues with significant business, environmental and social impact on the Company as well as those issues which are important to our internal and external stakeholders. The review is conducted by identifying and assessing the material issues from the Company's and the stakeholder's perspectives, defining reporting boundaries, and prioritizing the issues from their level of significance using agreed criteria and stakeholder engagement. The result is subsequently submitted to the Sustainable Development Working Team and the Sustainable Development Council for content review and approval. Additional details can be found at: <https://www.pttep.com/en/Sustainabledevelopment/Disclosure/Approachtoreporting.aspx>.

1.2.3 Environmental and Social Contribution

PTTEP's sustainable development targets and plans include environmental and social programs. New and ongoing key environmental projects in 2018 were: the flash & flare gas recovery and utilization, methane (CH₄) survey and leak reduction (in process), energy efficiency improvement by implementing optimization of the heat recovery steam generators and seawater cooling water pump, and the logistics fleet management projects. In 2018, these projects (combined) contributed to the reduction of greenhouse gas emissions of more than 269,412 tonnes carbon dioxide equivalent (CO₂e) per year, while generating revenue and saving cost of approximately THB 765 from hydrocarbon recovery and energy efficiency improvement.

We also carry out other programs which create socio-economic value such as the Crab Hatchery Learning Center Project, which is a joint initiative between PTTEP and the community in Hua Khao Sub-district, Songkhla Province. Most of the locals are fishermen who experienced the problem of declining number of crabs due to overfishing. We collaborated with the National Institute of Coastal Aquaculture (NICA) and the network of local fishermen to establish the Crab Hatchery Learning Center in 2013, with the objective of developing the knowledge base on crab hatcheries. This in turn helped to replenish marine resources, safeguard the livelihoods of local fishermen and promote sustainable fishery practices. Since then, the project has been replicated in other areas and there were 3 learning centers by the end of December 2018, leading to the establishment of 31 conservation networks and 8 marine conservation zones. The Crab Hatchery Learning Center is one of our social development initiatives that demonstrate the Company's intention to combine our expertise with local wisdom to solve problems and to strengthen local communities in a sustainable way. We believe that these efforts will earn us the social license to operate our business, prevent potential significant impacts on the environment and communities, and indirectly reduce our operating costs.

1.3 Development and Significant Changes in 2018

During 2018, PTTEP operated our business in accordance with the strategy which is in line with changing energy industry landscape. The Company has transformed the organization and applied new appropriate technology. Recently, the Company has established "AI and Robotics Ventures Company Limited" (ARV) in order to support future investments in Artificially Intelligence (AI) and Robotics which could enhance operational efficiency, safety and environmental impact from exploration and production activities. In addition, the Company continued to rationalize the investment focusing in strategic areas where the Company has full range expertise, namely "Coming-Home Strategy" including Thailand and South East Asia. The following are the highlights of these developments and changes by region.

Thailand

In June 2018, the Company has completed the acquisition of 22.2222% participating interest in the Bongkot Project, consisting of Blocks B15, B16 and B17 from Shell Integrated Gas Thailand Pte. Limited (Shell) and Block G12/48 from Thai Energy Company Limited (a subsidiary of Shell). After the completion of the transaction, the Company holds 66.6667% of participating interest in Bongkot Project.

In December 2018, the Company has been awarded the rights of petroleum exploration and production and as the operator for Exploration Block No. G1/61 (Erawan field) and G2/61 (Bongkot field) with participating interest of 60% and 100% respectively. For the exploration block no. G1/61, the partner is MP G2 (Thailand) Limited, a subsidiary of Mubadala Petroleum (Thailand) Holdings Limited. The Production Sharing Contracts (PSC) are expected to be signed within the first quarter of 2019. According to the Term of Reference (TOR), the minimum production volume of Erawan and Bongkot fields are committed at 800 and 700 MMSCFD respectively while the production would begin from 2022-2023.

South East Asia

In March 2018, the Company has successfully expanded our business into the strategic investment area as the Company has won the bidding and obtain the right for exploration and production of 2 blocks, consisting of Sarawak SK417 Project and Sarawak SK438 Project, which are located in the shallow water of Malaysian offshore. PTTEP is the operator with participating interests of 80%.

Indonesia Malunda Project and Indonesia Semai II Project received approval from the Government of Indonesia to terminate and return the exploration block after completed requirement under PSCs. The termination of Indonesia Malunda Project and Indonesia Semai II Project are effective from April 10, 2018 and May 9, 2018 respectively.

North America and South America

In January 2018, the Company and the consortium have been selected as the successful bidders of 2 exploration blocks from the Mexico Bidding Round comprising of Block 12, located in Mexican Ridges (Western Gulf of Mexico) and Block 29, located in Campeche (Southern Gulf of Mexico) with participating interests of 20% and 16.67% respectively. The concession agreement signing was completed on May 7, 2018.

Australasia

On May 7, 2018, the Company received approval from the Government of Commonwealth of Australia to terminate and return Block AC/L1 and AC/L2, which are a part of PTTEP Australasia Project, due to no commercial discovery.

In September 2018, the Company completed divestment of the Montara field to Jadestone Energy (Eagle) Pty Ltd, to rationalize investment portfolio in non-core areas. However, the operatorship transfer is awaiting for approval from the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) which is expected to complete within 2019.

1.4 Shareholding Structure of PTTEP Group

1.4.1 Business Overview

PTTEP's core business is exploration and production of petroleum in Thailand and foreign countries. As of December 31, 2018, PTTEP Group had 40¹ petroleum exploration and production projects in 11 countries. 18 projects were under the exploration phase and 22 projects were under the commercial production phase.

No.	Project Name	Phase	Location	Participation Interest	Operator
Thailand: 14 projects					
1.	Bongkot Project	Production	Gulf of Thailand	66.6667% ²	PTTEP
2.	S1 Project	Production	Upper Central	100%	PTTEP
3.	PTTEP 1 Project	Production	Central	100%	PTTEP
4.	B6/27 Project	Production	Gulf of Thailand	100%	PTTEP
5.	Arthit Project	Production	Gulf of Thailand	80%	PTTEP
6.	L22/43 Project	Production	Upper Central	100%	PTTEP

¹ Excluding Indonesia Malunda and Indonesia Semai II projects in which PTTEP had submitted relinquishment documents to the Governments of Indonesia and was granted the approval on April 10, 2018 and May 9, 2018 respectively.

² PTTEP successfully completed the acquisition of additional 22.2222% stake in Bongkot Project from Shell on June 21, 2018, resulting the current working interest of 66.6667%.

No.	Project Name	Phase	Location	Participation Interest	Operator
7.	L53/43 & L54/43 Project	Production	Central	100%	PTTEP
8.	E5 Project	Production	North East	20%	ExxonMobil
9.	Contract 3 Project	Production	Gulf of Thailand	5%	Chevron
10.	Contract 4 Project	Production	Gulf of Thailand	60%	Chevron
11.	G4/43 Project	Production	Gulf of Thailand	21.375%	Chevron
12.	Sinphuhorm Project	Production	North East	55%	PTTEP
13.	B8/32 & 9A Project	Production	Gulf of Thailand	25.001%	Chevron
14.	G4/48 Project	Production	Gulf of Thailand	5%	Chevron
Overlapping Area: 2 projects					
1.	G9/43 Project	Exploration	Thailand-Cambodia	100%	PTTEP
2.	MTJDA Project	Production	Thailand-Malaysia	50%	CPOC
Overseas: 24 projects					
Myanmar					
1.	Myanmar M3 Project	Exploration	Gulf of Moattama	80%	PTTEP
2.	Myanmar M11 Project	Exploration	Gulf of Moattama	100%	PTTEP
3.	Zawtika Project	Production	Gulf of Moattama	80%	PTTEP
4.	Yadana Project	Production	Gulf of Moattama	25.5%	TOTAL
5.	Yetagun Project	Production	Gulf of Moattama	19.31784%	Petronas
6.	Myanmar MD-7 Project	Exploration	Andaman Sea	50%	PTTEP
7.	Myanmar MOGE 3 Project	Exploration	Onshore	75%	PTTEP
Vietnam					
8.	Vietnam 9-2 Project	Production	Offshore	25%	HV JOC
9.	Vietnam 16-1 Project	Production	Offshore	28.5%	HL JOC
10.	Vietnam B & 48/95 Project	Exploration	Offshore	8.5%	Petrovietnam
11.	Vietnam 52/97 Project	Exploration	Offshore	7%	Petrovietnam
Indonesia					
12.	Natuna Sea A Project	Production	Offshore	11.5%	Premier Oil
Malaysia					
13.	Sarawak SK410B Project	Exploration	Offshore	42.5%	PTTEP
14.	Sarawak SK417 Project ³	Exploration	Offshore	80%	PTTEP
15.	Sarawak SK438 Project ³	Exploration	Offshore	80%	PTTEP

³ On March 30, 2018, PTTEP signed the Production Sharing Contracts for exploration and production rights of the 2 blocks in Malaysia: Sarawak SK417 and Sarawak SK438 projects.

No.	Project Name	Phase	Location	Participation Interest	Operator
Algeria					
16.	Algeria Hassi Bir Rekaiz Project	Exploration	Onshore	24.5%	PTTEP
17.	Algeria 433a & 416b Project	Production	Onshore	35%	GBRS
Australia					
18.	PTTEP Australasia Project ⁴	Exploration	Offshore	90 - 100%	PTTEP
Canada					
19.	Mariana Oil Sands Project	Exploration	Onshore	100%	PTTEP
Mozambique					
20.	Mozambique Rovuma Offshore Area 1 Project	Exploration	Offshore	8.5%	Anadarko
Brazil					
21.	Barreirinhas AP1 Project	Exploration	Offshore	25%	Shell Brasil
22.	Brazil BM-ES-23 Project	Exploration	Offshore	20%	Petrobras
Mexico					
23.	Mexico block 12 (2.4) Project ⁵	Exploration	Offshore	20%	PC Carigali Mexico
24.	Mexico block 29 (2.4) Project ⁵	Exploration	Offshore	16.67%	Repsol Exploración México

Principal Projects in Operation

The following is a summary of project activities undertaken during 2018. Production and sales figures described hereunder are total production and sales figures for the respective projects.

(1) Highlights of Project Activity in Thailand

PTTEP has 16 projects in Thailand including projects in the overlapping claims area. Most projects are in the production phase, located both in the Gulf of Thailand and onshore. The following are highlights of key project activities in Thailand during 2018.

Bongkot Project

The Bongkot Project is located in the southern part of the Gulf of Thailand, consisting of Bongkot North and Bongkot South fields (Blocks B15, B16 and B17). The Company currently holds 66.6667% interest after the completion of additional stake of 22.2222 in Blocks B15, B16 and B17 from Shell Integrated Gas Thailand Pte. Limited (Shell) and Block G12/48 from Thai Energy Company Limited (a wholly-owned subsidiary of Shell) on June 21, 2018. The Company is the operator. The project has been in production since 1993. All of the natural gas and condensate produced from the Bongkot Field are sold to PTT, under a Take-or-Pay basis pursuant to long-term Gas Sales Agreements (GSA).

⁴ On September 28, 2018, PTTEP completed the divestment of Montara field (one of the blocks in PTTEP Australasia Project). Apart from the divestment, PTTEP Australasia Project holds many petroleum blocks which have varying participation interests ranging from 90 – 100%.

⁵ PTTEP and the consortium have been selected as the successful bidders of 2 exploration blocks in Mexico: Block 12 and Block 29; with the concession agreement signed on May 7, 2018.

During the year 2018, the project continuously drilled production wells, installed wellhead platforms and constructed gas pipeline in order to maintain its production plateau. The Block G12/48, located adjacent to the east of Bongkot South field and is held and operated by the Company with 66.6667% working interest, was approved the production area and development plan by the Department of Mineral Fuels, Thailand, in March 2015, and started production since October 20, 2018 through Bongkot South field's Central Processing platform with the natural gas being sold to PTT under the field's sales contract. Overall, the average sales volume of the project in year 2018 was 752 million standard cubic feet per day (MMSCFD) for natural gas (equivalent to 122,357 barrels of oil equivalent per day (BOED)) and 24,703 barrels per day (BPD) of condensates.

On December 13, 2018, as announced in the bidding result of the expiring concessions in 2022-2023 in the Gulf of Thailand, the Company was solely awarded the rights of petroleum exploration and production and as the operator of Block G2/61 (Bongkot field, consisting of Blocks B15, B16 and B17). The Production Sharing Contract is expected to be signed within first quarter of 2019.

S1 Project

The S1 Project is the largest onshore oil field in Thailand, with an area covering parts of Kamphaeng Phet, Sukhothai and Phitsanulok provinces. PTTEP is the sole owner and operator. Product from the S1 Project consists of crude oil, natural gas, and liquefied petroleum gas (LPG). Crude oil produced at S1 is sold to PTT which is transported via truck and rail to the refineries of Thai Oil Public Company Limited, Bangchak Corporation Public Company Limited (Bangchak) refineries, PTT Global Chemical Public Company Limited, and IRPC Public Company Limited. Part of produced gas from the project undergoes to a gas plant to separate LPG, before being sold to PTT and another part is subsequently directed to EGAT as fuel for power generation and used for production of CNG for natural gas vehicles (NGV).

During the year 2018, the project continuously drilled additional production wells with exploration drilling plan in 2019 to maintain its production level. Environmental impact assessments were also undertaken in both existing and new production areas. The project's average crude oil sales volume for the year was 26,982 BPD, while sales volume of natural gas averaged 14 MMSCFD (equivalent to 2,758 BOED), and average LPG sales volume was 204 metric tons per day (equivalent to 1,687 BOED).

PTTEP 1 Project

The PTTEP 1 Project is located in Suphan Buri and Nakhon Pathom provinces. PTTEP is the sole owner and operator. Crude oil produced at the project is sold to PTT and is transported via truck to the Bangchak refinery.

During the year 2018, the project carried on the production wells drilling activities to maintain production plateau with average crude oil sales volume of 252 BPD.

B6/27 Project

The B6/27 Project is located in the Gulf of Thailand, off the coast of Chumphon Province. PTTEP is the sole owner and operator. The project continues to focus on the geological and geophysical study for future development.

Arthit Project

The Arthit Project is located in the southern part of the Gulf of Thailand. The Company has 80% participating interest in the project and is the operator. The project entered into long-term GSA and condensate agreement with PTT on a take-or-pay basis.

During the year 2018, the project continued to drill production wells as well as constructed and installed wellhead platforms and gas pipelines in order to maintain production levels. The Block G8/50, located adjacent to the north of Arthit Project and is held and operated by the Company with 80% working interest, has production through Arthit Project's Central Processing platform with the natural gas being sold to PTT under Arthit Project's sales contract. The average natural gas sales volume for the project in 2018 was 215 MMSCFD (equivalent to 34,776 BOED) and average condensate sales volume was 10,393 BPD.

L22/43 Project

The L22/43 Project is located in Phitsanulok and Pichit provinces. The Company is the sole owner and operator. Crude oil produced from the project is sold to PTT which is transported via truck to Bangchak refinery.

In 2018, the average crude oil sales volume of the project was 22 BPD. The project has temporarily shut down from June 2018 to December 2019 with the plan to replace appropriate producing equipment for the field and transfer mobile production facility to support S1 Project.

L53/43 and L54/43 Project

The L53/43 and L54/43 Project are located in Suphan Buri, Kanchana Buri, Ayutthaya and Ang-Thong provinces. The Company owns 100% interest in the project and is the operator. Crude oil produced from the project is sold to PTT which is transported via truck to the Bangchak refinery.

During the year 2018, the project carried out the exploration and development drilling activities to uphold production level. The project's average crude oil sales volume was 1,042 BPD.

E5 Project

The E5 Project is located in Khon Kaen Province. The Company holds 20% participating interest in the project with ExxonMobil as the operator. All of the natural gas produced by the E5 Project is sold to PTT on a take-or-pay basis pursuant to a long-term GSA. PTT then transports the gas via pipelines to EGAT power plant.

In the year 2018, average natural gas sales volume for the project amounted to 8 MMSCFD (equivalent to 1,340 BOED).

Contract 3 Project

The Contract 3 Project is located in the Gulf of Thailand, off the coast of Surat Thani Province. The Company holds a 5% interest in the project with Chevron as the operator. All of the natural gas and condensate produced from the project is sold to PTT on a take-or-pay basis pursuant to long-term gas and condensate sales agreements, whilst the produced crude oil is under annual sales agreement and spot cargo with other purchasers.

In the year 2018, the project continued to carry out development drilling activities in order to maintain production levels. The average sales volume of the project in 2018 was 612 MMSCFD (equivalent to 103,757 BOED) for natural gas, 22,573 BPD for crude oil and 20,309 BPD for condensates.

Contract 4 Project

The Contract 4 Project and Block G7/50, is located in the Gulf of Thailand. The Company holds a 60% interest in the project, with Chevron as the operator. All of the natural gas and condensate produced from the project is sold to PTT under a long-term gas and condensate sales agreements.

In the year 2018, the project sold natural gas at an average rate of 407 MMSCFD (equivalent to 67,546 BOED) and condensates at an average rate of 17,455 BPD. The project continued to drill additional development wells aiming to maintain production plateau and decided to develop Block G7/50 with the production through Contract 4 Project's facilities in order to be commercialized.

In addition, the project has continued to accelerate the development of Ubon Oil Field, a part of the Contract 4 Project and is currently in the planning process with operator on the field development with the target first production by 2023 at planned capacity of 25,000 BPD for crude oil and 50 MMSCFD for natural gas (approximately 8,300 BOED).

G4/43 Project

The G4/43 Project is located in the Gulf of Thailand. The Company holds a 21.375% interest in the project with Chevron as the operator. The project has mutual long-term GSA and crude oil sale agreements with the B8/32 & 9A Project.

In the year 2018, the project continued to carry out development drilling activities to sustain production level. The sales volume of crude oil and natural gas averaged 3,701 BPD and 1 MMSCFD (equivalent to 264 BOED) respectively.

Sinphuhorm Project (EU-1 and E5-North)

The Sinphuhorm Project is located in Udon Thani and Khon Kaen provinces. The Company owns a 55% interest in the project and is the operator. The project has long-term gas sales agreement with PTT.

In the year 2018, sales volume of the project averaged 79 MMSCFD for natural gas (equivalent to 12,927 BOED) and 246 BPD for condensates.

B8/32 & 9A Project

The B8/32 & 9A Project is located in the Gulf of Thailand, off the coast of Chumphon Province. The Company holds a 25% interest in the project with Chevron as the operator. The project currently has long-term GSAs with PTT and annual crude sales agreement with other purchasers for spot cargo.

During the year 2018, the project continued to carry out development drilling and waterflood operations in order to maintain the crude oil production levels. Sales volume averaged 18,563 BPD for crude oil and 71 MMSCFD for natural gas (equivalent to 12,892 BOED).

G4/48 Project

The G4/48 Project is located in the Gulf of Thailand, offshore from Surat Thani Province. PTTEP holds 5% interest in the project with Chevron as the operator. The project has mutual long-term gas sales agreements and crude oil sale agreements for spot cargo with the Contract 3 Project.

In the year 2018, sales volume from the G4/48 Project averaged 6 MMSCFD for natural gas (equivalent to 912 BOED) and 1,527 BPD for crude oil.

Projects located in overlapping claims areas

G9/43 Project

The G9/43 Project is located in the Gulf of Thailand with PTTEP as a sole owner and operator. At present, all activities for this project have been suspended awaiting for the resolution of the boundary dispute between the governments of Thailand and Cambodia.

MTJDA Project

PTTEP has a 50% participating interest in the MTJDA Project with Carigali PTTEPI Operating Company Sdn. Bhd. as the operator. PTTEP, PC JDA Ltd. (a subsidiary of Petronas, Malaysia's Natural Oil Company) and the Malaysia-Thailand Joint Authority (MTJA) executed a GSA for the sales of the natural gas from the MTJDA Project to PTT and Malaysia. Whilst, crude oil and condensates produced from the project were sold through auction.

During the year 2018, the project completed the drilling of 11 production wells and is currently in the process of drilling additional production wells in according to the phase 4 of the development plan, in order to maintain production level. The project has average sales volume for 2018 of 330 MMSCFD (equivalent to 52,599 BOED) for natural gas and 7,633 BPD for condensates.

(2) **International Projects:** PTTEP has 24 projects overseas, separated into the following regions.

(2.1) **Project Activity Highlights in South East Asia:** PTTEP has 15 projects in this region which are located in the Republic of the Union of Myanmar (Myanmar), Socialist Republic of Vietnam (Vietnam), Malaysia and Republic of Indonesia (Indonesia). The following section highlights the project activities.

Myanmar M3 Project

The Myanmar M3 Project is located in the Gulf of Moattama, Myanmar. The Company owns 80% participating interest in the project and is the operator. The project is awaiting approval for the Field Development Plan that was proposed in the fourth quarter of 2018, from the Government of Myanmar.

Myanmar M11 Project

The Myanmar M11 Project is located in the Gulf of Moattama, Myanmar. The Company owns 100% participating interest in the project and is the operator. In 2018, the Government of Myanmar approved the additional extension of exploration period for the project to 5 years (October 23, 2014 to October 22, 2019).

The project is currently in preparation for drilling plan of an exploration well in the first quarter of 2019 and is seeking partner to manage the project's risk.

Zawtika Project

The Zawtika Project is a gas project located in the Gulf of Moattama, Myanmar. The Company holds 80% participating interest and is the operator, with Myanma Oil and Gas Enterprise (MOGE) holding the remaining 20% interest. The gas produced from this project is sold to PTT, supplying Thai market under long-term GSA on a take-or-pay basis; and sold to MOGE for domestic consumption in Myanmar under the long-term sales contract. To transport natural gas from Zawtika Project to Thailand, the Company and the joint venture partners established a gas transportation company called Andaman Transportation Limited (ATL) to construct and operate an offshore and onshore pipeline from the project to the Thai border. The project commenced its gas sales in Myanmar in March 2014 and began delivering natural gas to PTT in August 2014.

During the year 2018, the project completed the construction of 4 production platforms in Phase 1C and continues to carry out drilling activities in order to maintain production plateau. The average sales volume of natural gas for the project in 2018 was 298 MMSCFD (equivalent to 47,569 BOED).

Yadana Project

The Yadana Project is a large gas project located in the Gulf of Moattama, Myanmar. The Company holds a 25.5% interest with Total E&P Myanmar (TEPM) as the operator. Natural gas produced from the project is sold to PTT on a take-or-pay basis pursuant to long-term GSA, and a certain portion is sold to MOGE for domestic use in Myanmar. To transport natural gas from Yadana to Thailand, the Company and our joint venture partners established a gas transportation company, called Moattama Gas Transportation Company (MGTC), to construct and operate an offshore and onshore pipeline from the Yadana Project area to the Thai border. Consequently, PTT completed an onshore pipeline section from the Thai border to the EGAT power generation plant in Ratchaburi Province.

During the year 2018, the project had evaluated the field's resource potential from 3D and 4D seismic survey on Block M5 and Yadana-Sein respectively, in order to prepare exploration drilling plan. Overall, the project has average gas sales volume of 779 MMSCFD (equivalent to 96,099 BOED).

Yetagun Project

The Yetagun Project is a natural gas and condensates producing project located in the Gulf of Moattama, Myanmar. The Company holds a 19.31784% interest in the project with PC Myanmar (Hong Kong) Limited as the operator. All natural gas from the Yetagun Project is sold to PTT on a take-or-pay basis pursuant to long-term GSA. To transport natural gas from Yetagun Project to Thailand, the Company and the joint venture partners established a gas transportation company called Taninthayi Pipeline Company (TPC) to construct and operate an offshore pipeline and an onshore pipeline (parallel to the Yadana pipeline) from the project to the Thai border.

During the year 2018, the project was in the process of evaluating result from 3D seismic survey with the plan to drill 2 exploration wells and 3 production wells in 2019 and perform production wells intervention in order to maintain production plateau. The project's total sales volume averaged 149 MMSCFD (equivalent to 23,535 BOED) for natural gas and 2,768 BPD for condensates.

Myanmar MD-7 Project

The MD-7 Project is located in deep waters of the Gulf of Moattama, Myanmar. The Company has a 50% interest in the project and is the operator. TOTAL E&P Myanmar (TEPM) joined the consortium with 50% participating interest in 2017.

The project is currently in the process of evaluating the fields' resources potential in order to prepare for an exploration well drilling in 2019.

Myanmar MOGE 3 Project

The Myanmar MOGE 3 Project is an onshore project located in Myanmar. PTTEP holds a 75% interest and is the operator of this project.

In the year 2017, the project officially received the approval to extend exploration period for additional two years (21 August 2015 to 20 August 2020). The project drilled an exploration well in December 2018 and is under drilling preparation of 3 exploration wells in 2019.

Vietnam 9-2 Project

The Vietnam 9-2 Project is located offshore southeast of Vietnam, and PTTEP has a 25% interest in the project with Hoan Vu Joint Operating Company as the operator. The crude oil produced from the project is sold to domestic refineries while the produced natural gas is sold to PetroVietnam Gas, a state own enterprise, for domestic consumption.

In the year 2018, the project drilled an additional production well in order to maintain production plateau. The project's sales volume of crude oil averaged 4,110 BPD, while sales volume of natural gas averaged 13 MMSCFD (equivalent to 2,740 BOED).

Vietnam 16-1 Project

The Vietnam 16-1 Project is located offshore of Vietnam, with PTTEP holding a 28.5% interest, with Hoang-Long Joint Operating Company as the operator. Crude oil production of the project is sold to domestic Vietnamese refineries as well as to an international market through a bidding process. Natural gas is sold to the Vietnam Oil and Gas Group, a state-owned enterprise, for domestic consumption.

During the year 2018, the project started production from 2 wells and is in process of drilling an additional production well in Q1/2019 in order to maintain the production levels. The sales volume from the project for 2018 averaged 17,238 BPD of crude oil and 6 MMSCFD of natural gas (approximately 1,353 BOED).

Vietnam B & 48/95 Project

The Vietnam B & 48/95 Project is located offshore of Vietnam. The Company holds 8.5% of participating interest in the project with Petrovietnam as the operator. The project has been granted approval for the Field Development Plan and is currently in the negotiation process on commercial terms in order to push forward the Final Investment Decision (FID) with targeted first production of 490 MMSCFD (including the production from Vietnam 52/97 Project) by the end of 2022.

Vietnam 52/97 Project

The Vietnam 52/97 Project is located offshore of Vietnam. The Company holds 7% of participating interest in the project with Petrovietnam as the operator. The project has been granted approval for the Field Development Plan and is currently in the negotiation process on commercial terms in order to push forward the Final Investment Decision (FID) with targeted first production of 490 MMSCFD (including the production from Vietnam B & 48/95 Project) by the end of 2022.

Natuna Sea A Project

The Natuna Sea A Project is located in the west of the Natuna Sea in Indonesia. In 2013, PTTEP Netherlands Holding Coöperatie U.A. (PTTEP NH), a subsidiary of PTTEP, jointly signed a share purchase agreement with Pertamina Hulu Energy, a subsidiary of Pertamina, on a 50:50 basis, to acquire subsidiaries of Hess Corporation holding 23% interest in the Natuna Sea A Project. As a result, PTTEP holds 11.5% interest in the project, with Premier Oil as the operator. The crude oil and condensate produced are sold through auction, while natural gas produced is sold in Singapore for domestic consumption.

During the year 2018, the project has accelerated the development plan to maintain production plateau. The sales volume of natural gas at an average rate of 221 MMSCFD (equivalent to 38,878 BOED) and condensates at averaged at 1,299 BPD.

Sarawak SK410B Project

The Sarawak SK410B Project is located in offshore Sarawak, Malaysia. The Company holds participating interest of 42.5% in the project and is the operator. In the year 2018, the project was in the process of evaluating field's resources potential in order to prepare for an exploration well drilling in 2019.

Sarawak SK417 Project

The Sarawak SK417 Project is a shallow-water project and is located in the offshore Sarawak, Malaysia. The Company holds participating interest of 80% in the project and is the operator. On March 30, 2018, the Company signed the Production Sharing Contracts with Petroliaam Nasional Berhad (PETRONAS) for exploration and production rights.

In the year 2018, the project was in the process of evaluating field's resources potential in order to prepare for drilling.

Sarawak SK438 Project

The Sarawak SK438 Project is a shallow-water project and is located in the offshore Sarawak, Malaysia. The Company holds participating interest of 80% in the project and is the operator. On March 30, 2018, the Company signed the Production Sharing Contracts with Petroliaam Nasional Berhad (PETRONAS) for exploration and production rights.

In the year 2018, the project is in the process of evaluating field's resources potential in order to prepare for drilling of 2 exploration wells in 2019.

(2.2) **Project Activity Highlights in Africa:** PTTEP has 3 projects in this region, located in the People's Democratic Republic of Algeria (Algeria), and the Republic of Mozambique (Mozambique) with the following as key highlights:

Algeria Hassi Bir Rekaiz Project

The Algeria Hassi Bir Rekaiz Project is located onshore in eastern Algeria. The Company holds a 24.5% interest and is the operator.

The project's development plan has been approved by the Algerian government (ALNAFT) in April 2018 and is divided into 2 phases. The first phase capacity of around 10,000-13,000 BPD is expected to start production within 2020 with a plan for the second phase production capacity ramping up to around 50,000-60,000 BPD in 2024.

Algeria 433a & 416b Project

The Algeria 433a & 416b Project is located onshore in the eastern Algeria. The Company holds a 35% interest in the project, with Groupement Bir Seba (Joint Operating Company) as the operator. The project had average production for crude oil in 2018 of 17,350 BPD.

Mozambique Rovuma Offshore Area 1 Project

The Mozambique Rovuma Offshore Area 1 Project is a large natural gas project located offshore of Mozambique. The Company owns an 8.5% interest with Anadarko as the operator.

During the year 2018, the project made a significant progress which includes the government approval of Plan of Development (POD) in Golfinho-Atum area in February; negotiation on construction agreement of onshore LNG liquefaction plant; the completion of contract selection for offshore installation.

In addition, the project has fully executed two Sale and Purchase Agreements (SPAs): EDF, a French company (1.2 MTPA) and Tohoku Electric Co., Inc., a Japanese company (0.28 MTPA); and is now under the finalization and signing of long term LNG Sale and Purchase Agreements (SPAs) with potential buyers including Tokyo Gas Co., Ltd. and Centrica LNG Co., Ltd. with the total capacity of 2.6 MTPA. In parallel, the project is negotiating for project finance with financial institutions in order to support the Final Investment Decision (FID) in the first half of 2019, with planned first phase of production at 12 MTPA starting in 2024.

(2.3) Project Activity Highlights in Australasia: PTTEP has 1 project in this region which is located in the Commonwealth of Australia (Australia) comprising of 8 concession permits with the following as key highlights:

PTTEP Australasia Project

In 2009, the Company acquired 100% of the ordinary shares of Coogee Resources Limited, which was later renamed to PTTEP Australasia Pty Ltd. (PTTEP AA). PTTEP AA owns exploration and development fields located in the Timor Sea, in Australia and currently holds concessions to 8 permits with two key oil and gas fields, including Cash-Maple field, which is under the feasibility studies, and Orchid field (Block AC/P54), which will drill an exploration well in Q1/2019. The rest of the concessions are primarily in the exploration phase.

Montara Field

The Montara Field is located in the Timor Sea in Australia. The Company holds 100% interest in the project. On September 28, 2018, PTTEP completed the divestment of Montara field (one of the blocks in PTTEP Australasia Project) to Jadestone Energy (Eagle) Pty Ltd with the pending approval of operatorship transfer from the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), expected to be within 2019. The project has average sales volume for the year 2018 of 5,368 BPD.

Cash-Maple Field

The Company holds 100% interest in the Project. The field completed Pre-FEED study and is under the evaluation of appropriated development plan.

For other concessions, PTTEP has interests ranging from 90% to 100%, all of which are undergoing geological and geophysical studies to determine potential for petroleum.

(2.4) Project Activity Highlights in North and South America: PTTEP has 5 projects in this region which located in Canada, the Federative Republic of Brazil (Brazil) and the United Mexican States (Mexico). The following are significant activities in this region:

The Mariana Oil Sands Project

The Mariana Oil Sands Project is located in Alberta, Canada. The Company holds 100% participating interest and is the operator of the Thornbury, Hangingstone, and South Leismer fields. The project submitted the development proposal for Thornbury Phase 1 to the government of Alberta in May 2015 and was granted the approval in May 2018. Currently, the project is under the evaluation of appropriate project development plan.

Barreirinhas AP1 Project

The Barreirinhas AP1 Project is located in the Barreirinhas Basin, offshore to the east of Brazil. The Company holds participating interest of 25% in the project, with Shell Brasil Petroleo Ltda. as the operator. The project comprises of 4 exploration blocks: BAR-M-215, BAR-M-217, BAR-M-252 and BAR-M-254. The project is currently evaluating the petroleum potential.

The Brazil BM-ES-23 Project

The Brazil BM-ES-23 Project is located in the Espirito Santo Basin, offshore to the east of Brazil. The Company holds 20% stake in the project, with Petrobras as the operator. The project is currently evaluating the petroleum potential.

The Mexico block 12 (2.4) Project

The Mexico block 12 (2.4) Project is located in the Mexican Ridges, western Gulf of Mexico. The Company holds 20% participating interest in the project, with PC Carigali Mexico, S.A. de C.V. as the operator. The Company and consortium was selected as the successful bidders of exploration block 12 on January 31, 2018 and signed the concession agreement in May 2018.

The project submitted the exploration plan to the National Hydrocarbons Commission in Mexico in Q4/2018, expecting the approval within Q1/2019.

The Mexico block 29 (2.4) Project

The Mexico block 29 (2.4) Project is located in the Campeche, southern Gulf of Mexico. The Company holds 16.67% participating interest in the project, with Repsol Exploración México, S.A. de C.V. as the operator. The Company and consortium was selected as the successful bidders of exploration block 29 on January 31, 2018 and signed the concession agreement in May 2018.

The project submitted the exploration plan to the National Hydrocarbons Commission in Mexico in Q4/2018, expecting the approval within Q1/2019.

Projects Divestment and Relinquishment in 2018

Indonesia Malunda Project

The Indonesia Malunda Project was an offshore exploration block, located in Indonesia. In May 2015, the Company had submitted a request to terminate and return the exploration block after the fulfillment of the requirements of the Production Sharing Contract. On April 10, 2018, the Company received the approval from the Government of Indonesia to terminate and return the exploration block.

Indonesia Semai II Project

The Indonesia Semai II Project was an offshore exploration block, located southwest of West Papua Island in Indonesia. On November 7, 2014, the Company and its joint operation partners had submitted a request to terminate and return the exploration block after the fulfillment of the requirements of the Production Sharing Contract. On May 9, 2018, the Company received approval from the Government of Indonesia to terminate and return the block.

PTTEP Australasia Project

The PTTEP Australasia Project received approval from the Government of Commonwealth of Australia to terminate and return blocks AC/L1 and AC/L2 on May 7, 2018 as the project completed the exploration program with no commercial discovery.

1.4.2 Operational Policy of PTTEP Group

PTTEP has continuously expanded our E&P business, including in related and new businesses, domestically and internationally. The establishment of subsidiaries and/or associated companies in various regions is necessary for investment purposes, improving our operational efficiency, competing with other international oil companies, operational flexibility, and adjusting to global economic changes. Several factors, such as laws and regulations, financial structures, tax regimes, business and investment conditions, and risk management, should be taken into consideration in any decision to set up a subsidiary or an associated company.

It is our policy to manage PTTEP's subsidiaries in line with PTTEP's business direction and strategy. We designate PTTEP executives and staff to second into key positions of PTTEP's subsidiaries. The strategic direction and financial investment of PTTEP's subsidiaries is overseen by the Company. The boards of directors of the subsidiaries, especially the E&P related and new business, have the business management decision authority to the paths to achieve the set targets and strategy. As for the associated companies, we nominate PTTEP representatives to serve as shareholders and/or members of the Board of Directors in accordance with the terms of investment, in order to take part in the decision making of the overall business strategy and policy of these companies. To manage both the subsidiaries and associated companies, we adhere to the Good Corporate Governance and Business Ethics of the PTTEP Group, in order to ensure effectiveness, transparency, fairness, and the attainment of our business goals.

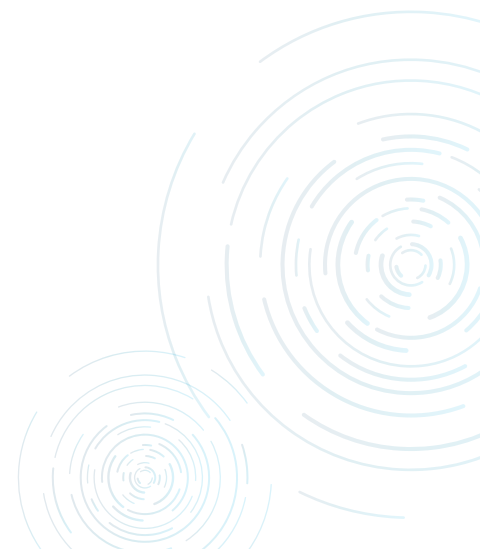
With respect to the selection of directors of the Company's subsidiaries and associated companies, we designate PTTEP executives responsible for projects under each relevant subsidiary and associated company as directors of these entities to ensure that they are managed in line with the Company's business direction and strategy. We may also appoint a local director, if required by the domestic laws and regulations or investment conditions. The subsidiaries and associated companies meanwhile are obligated to report their performance to the Company on a quarterly basis in order to ensure their performance and effectiveness.

1.5 Relationship with the Major Shareholder

The Company's petroleum exploration and production business is part of the business group of PTT Public Company Limited (PTT), our major shareholder, the national energy company which engages in a fully integrated petroleum and petrochemical business by strategically investing directly and indirectly through its group of companies, both in the upstream and downstream businesses.

Currently, PTT holds 65.29% of PTTEP's registered and paid-up capital, effectively making the PTT Group the only full-scale natural gas business operator in Thailand. As the major buyer of the Company's petroleum products, PTT, in turn, refines and processes the products and supplies them as energy and raw materials for the power, petrochemical, transportation sectors as well as other industries and households.

In 2018, PTTEP supplied crude oil, natural gas, LPG, and condensate to PTT. Conditions and price settings of all transactions between PTTEP and PTT follow the normal business practices at the arm's length basis conditions for non-related persons or operations. Details of connected transactions between PTTEP and PTT are disclosed in the "Connected Transactions" section.





▶▶ 2. Nature of Business Operation

2.1 Revenue Structure

PTTEP and our subsidiaries' revenues are mainly from sales of petroleum products of which its price is marked to the world fuel price in US Dollar. Thus, PTTEP and our subsidiaries' revenue structure of 2016 - 2018 are presented here in US Dollar in order to reflect the Company's revenue structure for the petroleum exploration and production projects in the production phase of PTTEP and our subsidiaries as at December 31, 2018 comprised 22 projects: the Bongkot, Contract 4, Arthit, S1, MTJDA, B8/32 & 9A, Contract 3, Siphuhorm, L53/43 & L54/43, G4/43, E5, PTTEP1, G4/48, L22/43, Zawtika, Yadana, Vietnam 16-1, Natuna Sea A, Yetagun, Algeria 433a&416b, Vietnam 9-2 and B6/27 projects.

In addition, PTTEP and our subsidiaries recorded revenues proportionately from gas pipeline transportation which are Moattama Gas Transportation Company (MGTC), Taninthayi Pipeline Company LLC (TPC) and Andaman Transportation Limited (ATL).

Revenue structure of PTTEP and our subsidiaries during 2016 - 2018

Product	Operated by	% of shares held by the Company	2016		2017		2018		
			Revenue (Million USD)	%	Revenue (Million USD)	%	Revenue (Million USD)	%	
Sales									
Crude oil	PTTEP	-	115.46	2.66	137.42	3.03	186.21	3.41	
	PTTEPI	100	36.30	0.83	45.38	1.00	53.74	0.98	
	PTTEPS	100	290.41	6.68	346.92	7.65	469.42	8.59	
	Orange	53.9496	75.49	1.74	87.08	1.92	81.38	1.49	
	B8/32 Partners	25.0009	28.75	0.66	36.84	0.81	36.49	0.67	
	PTTEP HV	100	17.34	0.40	20.49	0.45	26.07	0.48	
	PTTEP AP	100	235.79	5.42	220.59	4.87	143.80	2.63	
	PTTEP HL	100	114.77	2.64	113.58	2.51	123.07	2.25	
	Natuna 2	50	1.54	0.04	2.80	0.06	2.32	0.04	
	PTTEP AG	100	34.10	0.78	53.58	1.18	55.93	1.02	
	Natural gas	PTTEP	-	1,560.28	35.89	1,492.21	32.92	1,869.72	34.20
		PTTEPI	100	856.73	19.71	789.76	17.42	907.14	16.59
		PTTEPS	100	36.34	0.84	42.44	0.94	42.79	0.78
Orange		53.9496	31.84	0.73	23.95	0.53	20.70	0.38	
B8/32 Partners		25.0009	9.90	0.23	10.09	0.22	9.59	0.18	
PTTEP HV		100	1.36	0.03	1.51	0.03	1.61	0.03	
PTTEP HL		100	1.70	0.04	0.32	0.01	0.91	0.02	
Natuna 2		50	43.97	1.01	61.35	1.35	75.60	1.38	
PTTEP SP		100	177.99	4.09	139.11	3.07	161.07	2.95	
LPG		PTTEP	-	9.48	0.22	9.04	0.20	7.94	0.14
		PTTEPS	100	28.44	0.65	27.14	0.60	23.82	0.44

Product	Operated by	% of shares held by the Company	2016		2017		2018	
			Revenue (Million USD)	%	Revenue (Million USD)	%	Revenue (Million USD)	%
Condensate	PTTEP	-	401.05	9.22	522.10	11.52	768.63	14.06
	PTTEPI	100	43.02	0.99	49.70	1.10	66.70	1.22
	PTTEPS	100	1.07	0.02	0.76	0.02	0.94	0.02
	PTTEP-SP	100	36.44	0.84	47.04	1.04	67.22	1.23
Total sales			4,189.56	96.36	4,281.20	94.44	5,202.81	95.17
<u>Revenue from pipeline transportation</u>								
Pipeline transportation	MGTC	25.5	28.20	0.65	36.20	0.80	61.93	1.14
	TPC	19,3178	9.30	0.21	9.35	0.21	7.23	0.13
	ATL	80	28.99	0.67	32.26	0.71	38.40	0.70
Total revenue from pipeline transportation			66.49	1.53	77.81	1.72	107.56	1.97
<u>Other income</u>								
Gain on foreign exchange			11.59	0.27	51.40	1.13	-	-
Interest income			30.06	0.69	59.58	1.31	83.35	1.52
Gain on financial derivatives			-	-	-	-	13.97	0.26
Other income			41.48	0.95	53.27	1.18	50.79	0.93
Total other income			83.13	1.91	164.25	3.62	148.11	2.71
Total revenues			4,339.18	99.80	4,523.26	99.78	5,458.48	99.85
Share of gain of associates and joint ventures			8.55	0.20	9.75	0.22	7.93	0.15
Grand total after inclusion of share of gain of associates and joint ventures			4,347.73	100.00	4,533.01	100.00	5,466.41	100.00

For 2018, total revenues for PTTEP and our subsidiaries was 5,466 MMUSD (equivalent to 176,943 MMTHB), an increase of 933 MMUSD or 21% when compared with the revenues in 2017 which was 4,533 MMUSD (equivalent to 153,526 MMTHB). The increase was primarily due to an increase in sales revenue of 922 MMUSD from an increase in natural gas and condensate sales revenue. The increase was primarily due to an increase in the average selling price of operating projects under PTTEP and PTTEP International Limited (PTTEPI).

2.2 Products and Services

2.2.1 Petroleum

Petroleum is defined as a naturally occurring hydrocarbon mixture, which includes crude oil, natural gas, condensate, related products, and other hydrocarbon products which are free in nature.

Crude oil is the portion of petroleum which is liquid in nature and obtained from oil wells and gas separation process, yet to be refined or purified.

Natural gas is hydrocarbon in gas or vapor phase at atmospheric temperature and pressure, commonly having methane as its major constituent.

Condensate is a low-density liquid hydrocarbon. It is condensed from hydrocarbon gas. Condensation occurs when gas is produced at the surface where temperature and pressure are lower than those in the reservoir.

Liquefied Petroleum Gas (LPG) is obtained from a crude oil refinery or the natural gas separation process, primarily consisting of butane and propane.

Crude oil, condensate, and LPG are measured in barrels, while natural gas is measured in cubic feet at standard conditions (One atmosphere or atm at 60 degrees Fahrenheit). All petroleum products can be converted to barrels of oil equivalent (BOE) based on their heat contents. One cubic foot of natural gas has a heating value of approximately 1,000 British thermal units (BTU), whereas one barrel of crude oil has a heating value of approximately 6,000,000 BTU.

2.2.2 Gas Transportation Pipeline

PTTEP Offshore Investment Company Limited (PTTEPO), a wholly-owned subsidiary of PTTEP, has major investments in other companies, such as an 80% holding in Andaman Transportation Limited (ATL), 25.5% in Moattama Gas Transportation Company (MGTC), and 19.31784% in Taninthayi Pipeline Company (TPC). The objective of the company is to invest in gas pipeline transportation connecting at the border between the Republic of the Union of Myanmar and Thailand.

2.2.3 Jetty and Warehouse

Petroleum Development Support Base was established to provide jetty and warehouse services to support PTTEP Group's offshore exploration and production activities both in Thailand and abroad. The Support Base mainly accommodates the Company's own offshore operating projects in Thailand, such as Bongkot Project, Arthit Project, B6/27 Project, as well as those projects of other offshore oil and gas operating companies, such as PTT, Chevron Thailand Exploration and Production Limited, Carigali-PTTEPI Operating Company Sdn Bhd (CPOC), MP G11 (Thailand) Limited, KrisEnergy G10 (Thailand) Ltd., and Mubadala Petroleum (Thailand) Limited. Moreover, the Support Base can also support affiliated offshore operating projects, such as Myanmar M3 Project, Myanmar M11 Project, and Zawtika Project which are located in the Republic of the Union of Myanmar. Currently, our Support Base operates at two branches in the provinces of Songkhla and Ranong.

1. *Petroleum Development Support Base (Songkhla Branch)* solely provides marine jetty berthing and warehousing services. It is owned and operated by PTTEP International Limited (PTTEPI), a subsidiary of PTTEP. The jetty is equipped with 380 meters of wharf which is capable of simultaneously berthing six supply vessels with a size of more than 500 gross tons. The jetty is also equipped with storage facilities and operated with a high standard of material-handling equipment. The Support Base also operates under an international management system which focuses on safety and security while taking into account the issues of occupational health and the environment. It strictly follows the International Ship and Port Facilities Security Code (ISPS Code) which has been approved by the Marine Safety and Environment Bureau of the Royal Thai Marine Department. The jetty is therefore recognized as one of the country's leading shore-based facilities for petroleum exploration and production activities. The 58-rai warehousing service facility is divided into four sections, namely; storage warehouse; open yard; free zone storage warehouse; and free zone yard for the best storage and maintenance purposes of materials and equipment. This facility is also used for certain goods that have been granted tax and duty benefits in its duty-free areas.

2. *Petroleum Development Support Base (Ranong Branch)* provides marine jetty berthing and warehousing services. It is also owned and operated by PTTEPI; though the jetty service, which is operated through Ranong's multi-purpose port, is owned by the Port Authority of Thailand. The jetty has a 150-meter wharf that is capable of simultaneously berthing two supply vessels with a size of more than 500 gross tons. The Support Base is also fully equipped with storage facilities and standard material-handling equipment. The 25-rai warehousing service facility is divided into four sections, namely; storage warehouse; open yard; free zone storage warehouse; and free zone yard for the best storage and maintenance purposes of materials and equipment. As well, this facility is for certain goods that have been granted tax and duty benefits in its duty-free areas.

To ensure that the services of both Support Base branches meet international standards and top safety levels, performance audits are continually conducted at both sites, emphasizing safety, security, occupational health and the environment. Both are also operated by and equipped with high security systems, such as parameter and high mast lights, barbed-wire fencing, a CCTV system, and 24-hour security guards.

PTTEP is also aware of its responsibilities to society and the environment, especially the local communities surrounding the Support Bases. The Company's efforts in this regard have resulted in several international accreditations including the International Environment Control Program (ISO 14001 certification), and the Occupational Health Control Program (OHSAS 18001 certification). The Company has also prepared an Emergency Response Plan under the ISO 22301 standard to handle unexpected and emergency cases as well as to rehearse and exercise our response plans. This ensures that our Support Bases are capable of responding to emergency situations with the latest technologies and methods for continuity of the operation.

2.2.4 PTT Digital Solutions Company Limited (PTT Digital)

PTT ICT Solutions Company Limited (PTT ICT), an affiliate of which 20% is owned by PTTEP, signed an agreement with PTTEP to provide the Company with all information technology and communication services in accordance with the resolution of PTTEP's Board of Directors Meeting No. 10/2549/254 on September 29, 2006. This agreement includes infrastructure design and implementation services, consultancy services, procurement services, and outsourcing services to support the Company's needs in information technology and communications, based on the PTT Group's ICT Policy Strategy to drive and increase synergy within the group.

PTT ICT has re-registered its name with the Department of Business Development of the Ministry of Commerce as PTT Digital Solutions Company Limited, effective since June 22, 2017. The current service contract is valid for 5 years starting from January 1, 2016.

2.2.5 Energy Complex Company Limited (Energy Complex)

PTT and PTTEP have jointly established, constructed, and managed the Energy Complex Investment Project. The complex is considered to be the energy business center of the country, also comprising the Ministry of Energy, subsidiaries and associated companies of the PTT Group, as well as some private energy companies.

2.2.6 PTTEP Services Limited (PTTEP Services)

PTTEP Services was established in accordance with the resolution of PTTEP Board Meeting No. 12/2546/216. With its primary business objective of supplying the manpower to support PTTEP Group's operational activities, the company ensures that PTTEP is sufficiently staffed for both domestic and international expansion.

To fulfill its objective, PTTEP Services has recruited and hired various types of staff, both Thai and non-Thai, such as specialists, engineers, operators, technicians, etc., to serve PTTEP since July 1, 2004. The company has continuously developed and improved its compensation, welfare and benefits to ensure its staff are provided with fair compensation and good welfare and benefit programs that make its staff feel motivated. This has also helped to improve the company's competitiveness in the market.

To enhance personnel capabilities that will effectively support PTTEP operations, PTTEP Services has provided several training and development programs that focus on compulsory Safety, Security, Health and Environment (SSHE) training in addition to functional training based on PTTEP's business requirements. Furthermore, the company has provided any basic training required for personnel to perform their duties effectively. This includes computer training, English training and other soft skills training.

PTTEP Services' business has continuously grown and expanded. Apart from supplying manpower for PTTEP, the company has also provided manpower for Carigali-PTTEPI Operating Company Sdn. Bhd. (CPOC), a PTTEP joint venture company in Malaysia. On March 23, 2018, the company increased its paid-up capital from 1 million Baht to 10 million Baht; the Company was also registered as an International Headquarters (IHQ) in order to optimize benefits from providing services to overseas clients.

2.2.7 PTT Global LNG Company Limited (PTTGL)

PTTEP and PTT have jointly established PTTGL on June 23, 2017 pursuant to the resolution of PTTEP's Board of Directors No. 1/2560/419 on January 26, 2017 and No. 7/2560/425 on May 25, 2017 to carry out business related to Liquefied Natural Gas (LNG) value chain with equal shareholding at 50%. PTTEP is seeking investment opportunities in LNG as natural gas has seen the highest consumption growth, being the cleanest form of energy among fossil fuels, with an abundance of reserves globally.

As of December 31, 2018, PTTGL had one investment project, a 10% share in PETRONAS LNG 9 Sdn Bhd (a subsidiary of PETRONAS). The company operates an LNG liquefaction plant in Malaysia with 3.6 million tons per annum (31.2 million barrels of oil equivalent) capacity.

2.2.8 AI and Robotics Ventures Company Limited (ARV)

PTTEP incorporated the establishment of AI and Robotics Ventures (ARV) on September 21, 2018. ARV is wholly-owned by EP-Tech Ventures Holding Company Limited, which is a subsidiary of PTTEP. The business strategy of ARV targets becoming an innovation platform to leverage cutting-edge AI and robotics technologies to create simplified solutions that respond to business challenges in E&P and non-E&P industries, such as agriculture and environment sectors, all of which are the key driving forces to fuel domestic and Southeast Asian economies. Based on the abovementioned strategy, ARV has also set out its strategic objectives, which are to accelerate the AI and robotics research and development in Thailand, strengthen the manufacturing and competitiveness in both national and regional levels, and become a new channel of income for PTTEP in the near future.

In addition, ARV has set its main goal for the initial stage (2019 - 2021) to become a successfully recognized AI & Robotics organization in Southeast Asia under the investment budget of approximately THB 1.6 billion, covering three main activities, which are (1) research and development of innovative technology, (2) marketing and services, and (3) platform development in order to create a solid basis of innovation development for long-term sustainable growth.

2.3 Permission to Operate, Concession or Business Promotion

PTTEP operates petroleum exploration and production business in the Kingdom of Thailand and abroad. The Company's investments in foreign countries must comply with all applicable laws and regulations of those invested countries, such as Production Sharing Contract, Concession, or Services Agreement. Within the Kingdom of Thailand, the Company must comply with the Petroleum Act B.E. 2514 and its amendments which set out the rights to explore, exploit and produce petroleum under concession regime, production sharing contract regime and services agreement regime. Key points in the petroleum business are as follows:

2.3.1 Demarcation of Petroleum Exploration and Production Areas

The Department of Mineral Fuels, the Ministry of Energy, as the government authority under petroleum law, is responsible for demarcating each petroleum exploration and production areas (Block) and inviting oil companies to submit their applications requesting for awarding concession, production sharing contract or services agreement. In considering any awards, the Petroleum Committee has duty to render consultation to the Minister. The Minister with the approval of the Cabinet has the authority to sign the concession, production sharing contract or services agreement to award the right to explore, exploit and produce petroleum. Qualification of each applicant will be considered by the State to award the right to explore, exploit and produce petroleum which includes without limitation to adequacy of the investment funds to be brought in and used in the exploration activities, transfer of knowledge and technology, employment of Thai nationals, and the utmost benefits of the State.

2.3.2 Characteristic of Joint Venturer

A petroleum concession, a production sharing contract or a services contract may be awarded to a single concessionaire/contractor or multiple concessionaires/contractors. Since the risk of the petroleum exploration and production business is relatively high in its nature, it is common for concessionaires or contractors to form a joint venture in order to diversify such business risk. In a joint venture, a company will be designated as the "operator" to conduct the exploration and production operations on behalf of its partner(s) and commonly under the supervision of a management committee or an operating committee which is composed of representatives of all parties. Other non-operator companies will participate in making of operational decisions including technical, work program and budget. The operator will cash call all parties to finance the project. Generally, whether an oil company will become a project operator depends largely on its investment conditions, readiness, and business strategy in that particular project.

2.3.3 Nature of Operations and Investment Decisions

Before an oil company decides to invest in a petroleum exploration in the Kingdom of Thailand or abroad, it has to consider the chance of having a successful exploration as well as other investment risk factors. A thorough study on the information available is conducted to determine whether the area has high petroleum potential and whether the project is commercially feasible. The success ratio of exploration wells in neighboring areas as well as other risk factors in the invested countries must also be taken into account. Assuming that the project is commercially feasible, the company will apply for a right to explore, exploit and produce petroleum or, if such right is already awarded, "farm-in" to the existing petroleum concession.

After the oil company is awarded a right to explore, exploit and produce petroleum, an exploration program will be conducted, normally taking 2-3 years. If the petroleum reserves are found, the oil company will compare the amount of investment funds required for the development phase and the expected sales value of the petroleum based on the commercialized petroleum reserves. If the study indicates that the reserves are worth investing in as generally, this means that the petroleum field is considered to have commercial viability; a further investment onto development phase is therefore justified. The operator shall then apply for an approval of petroleum production and simultaneously may start its production activity. The operator is still able to explore the rest of the existing areas if it is within the time frame of the exploration period as mentioned in the concession, the production sharing contract or the services contract. At this stage, the operator must have a certain degree of confidence about the investment. However, as the investment expenditure required for such development phase is very high; the operator must normally be able to identify buyers of the petroleum in advance, whereas a long-term sales agreement for the petroleum to be produced shall be signed. Currently, PTT Public Company Limited (“PTT”) is the biggest petroleum buyer in Thailand. The principal elements of the sales agreement for petroleum generally include determination method of the sales price and quantity of the petroleum to be delivered. Sales of natural gas from domestic areas is made at the wellhead, while sales of natural gas from foreign areas is made at the Thai borders. PTT is currently responsible for installation of most of the gas pipelines for the production amount as specified in the gas sales agreement. Sales of crude oil is made at the buyer’s refinery, while sales of condensate is made at the Floating Storage Unit (FSU) near the wellhead.

2.3.4 Description of Laws Relating to the Business

Operation of petroleum business in Thailand is governed by two major enactments, namely, the Petroleum Act B.E. 2514, and the Petroleum Income Tax Act B.E. 2514 and its amendments. The concessionaire and contractor must be a limited company or a juristic person which has the same status as a limited company, established under the laws of Thailand or foreign laws. Several major features of these laws are as follows:

(1) Concession

(1.1) The concessionaire(s) and the co-venturer(s) shall pay the royalty which is normally in cash. The Minister may authorize such royalty payment in kind of petroleum with the prior notice of not less than 6 months. The royalty can be used as credit against income tax (Thailand I) or deducted as expenses (Thailand III).

(1.2) Petroleum income tax is prescribed at a rate not lower than 50% and not higher than 60% of the net profit from the petroleum operation.

(1.3) Interest paid cannot be deducted as expenses for income tax purposes.

(1.4) Each concessionaire could be awarded concessions with no limitation in terms of number of blocks.

Thailand I for the petroleum concessions awarded by the Ministry of Industry¹ from B.E. 2514 to B.E. 2532 and those onshore petroleum concessions issued before B.E. 2525

Thailand II² for the onshore petroleum concessions awarded by the Ministry of Industry from B.E. 2525 to B.E. 2532

Thailand III for the petroleum concessions awarded by the Ministry of Industry from B.E. 2533

¹ Currently, the Ministry of Energy

² Under Section 36 of the Petroleum Act (No. 4) B.E. 2532, all petroleum concessionaires under Thailand II have applied to be subject to the criteria under Thailand III.

Details of the Terms: Thailand I, II, and III

Term	Thailand I	Thailand II	Thailand III
Royalty Rates	12.5% of income from sales or disposal of petroleum which may be treated as tax credit	12.5% of income from sales or disposal of petroleum which may be treated as tax credit	progressive rate at sliding scale of 5-15%, deemed to be expenses which could be deducted in tax calculation
Petroleum Income Tax	50% of net profit from petroleum business operation	50% of net profit from petroleum business operation	50% of net profit from petroleum business operation
Special Benefits	-	annual benefits and annual production bonus	special remunerator benefit which may be taken as deduction
Exploration Period	8 years with 4 year extension	8 years with 4 year extension	6 years with 3 year extension
Production Period	not exceeding 30 years from exploration's expiration date, with extension not exceeding 10 years	not exceeding 30 years from exploration's expiration date, with extension not exceeding 10 years	not exceeding 20 years from exploration's expiration date, with extension not exceeding 10 years
Concession Areas	not exceeding 10,000 sq. km. per exploration block, up to 5 exploration blocks	not exceeding 10,000 sq. km. per exploration block, up to 5 exploration blocks	not exceeding 4,000 sq. km. per exploration block, up to 5 exploration blocks ³

(2) Production Sharing Contract

(2.1) All petroleum operation expenditure shall be responsible by the contractor whereas the contractor shall be recovered such expenditure by deducting from the production. The expenditure that can be deducted shall be the actual expenditure according to the work program and budget approved by the Director General of the Department of Mineral Fuels, the Ministry of Energy, but shall not exceed 50% of the overall production.

(2.2) The contractor shall pay the royalty to the State at the rate of 10% of the overall production.

(2.3) The remaining production after deducting the royalty and the recoverable expenditure shall be shared to the contractor, but not exceeding 50%.

(2.4) Petroleum income tax is prescribed at a rate not lower than 20% of the net profit from petroleum operation.

(3) Services Contract

(3.1) Services contract can be either the hiring for exploration and production contract, the hiring for exploration contract or the hiring for production contract.

(3.2) The contractor shall be paid by the State according to the terms and conditions of each services contract.

(3.3) All petroleum operation expenditure shall be responsible by the contractor.

(3.4) Payment shall be made to the contractor after deducting the royalty.

³ Under Section 28 of the Petroleum Act (No. 6) B.E. 2550, effective on October 18, 2007, there is currently no limitation in terms of number of blocks.

2.4 Market and Competition

PTTEP has invested in both domestic and overseas projects, including the Republic of Indonesia, the Republic of the Union of Myanmar, the Socialist Republic of Vietnam, Malaysia, the Commonwealth of Australia, Canada, the United Mexican States, the People's Democratic Republic of Algeria, the Republic of Mozambique and the Federative Republic of Brazil. The target markets are both domestic and overseas where we have invested in. The Company's petroleum products include natural gas, crude oil, condensate, and LPG.

In 2018, total sales by the Company and our subsidiaries averaged 305,522 barrels of oil equivalent per day (BOED). The total sales ratio of natural gas to liquid was 72%:28% by volume and 59%:41% by revenue, as shown below.

Product	Volume	Value (million USD)
Natural Gas	497,477 MMSCF or 80.16 MMBOE	3,089.14
Condensate	13.23 MMBBL	903.49
Crude Oil	17.52 MMBBL	1,178.43
LPG	74,292 metric tons or 0.62 MMBOE	31.76

2.4.1 Marketing Characteristics

PTTEP sells our outputs from domestic and regional projects primarily to the Thai market through PTT Plc. (PTT), the major buyer and processor of all the products. PTT then turns the processed products to the country's power sector, petrochemical industry sector, transportation sector, industry sector, and household sector.

Marketing of petroleum products varies with their characteristics and field location which in turn differentiate the market and sales price structures.

(1) Natural Gas

Due to capital-intensive investment in developing oil and gas exploration business, gas sales agreements (GSAs) must be agreed or signed between the buyer and seller before any major investment is made. GSAs are typically a long-term contract, ranging from 15 to 30 years. Prices, volumes, and points of sale are stipulated for each of the contracts. Currently, the designated transfer points for all domestically sold gas are at the Central Processing Platform (CPP), from which the buyer will invest in the transmission system to the CPP. The delivery point of the gas sold from the Republic of the Union of Myanmar to Thailand is however at the Myanmar-Thai border. In this case, the seller is responsible for investment in the transmission pipelines from the CPP to the border.

Gas prices are usually linked to fuel prices and several key economic indices as well as to reflect the investment costs and be competitive comparing with fuel oil for the GSA period.

Sales volumes are based on the assessed reserves on the negotiation date. GSAs stipulate obligations between buyer and seller for a committed volume. If the buyer does not take the volume of gas as committed to in the GSA, it must pay for the committed volume whether the gas is taken or not (Take-or-Pay). As a consequence, the buyer is entitled to take delivery of free of charge in subsequent years (Make-up Gas).

On the other hand, should the seller fail to deliver as nominated by the buyer, the buyer is entitled to an agreed discount price of the undelivered volumes as stipulated in the agreement (Shortfall).

(2) Condensate and Crude Oil

Condensate and crude oil prices are determined by their properties and benchmarked with crude oil prices of those predominantly sold in the region. Contracts are either short-term or long-term, and some are sold in spot the markets.

(3) LPG

LPG produced from S1 Project is sold to PTT under a long-term contract with the price in line with the government's policy and announcements by the Joint Committee on Energy Policy Administration.

Sales of petroleum products from PTTEP's international fields vary from country to country as follows:

- Zawtika, Yadana and Yetagun projects in the Republic of the Union of Myanmar: Approximately 80% of the produced natural gas from Zawtika and Yadana projects is primarily sold to Thailand through PTT, while the remaining 20% is sold to the Republic of the Union of Myanmar for its domestic power generation. Nearly all of the condensate from Yetagun Project in 2018 is sold in the regional spot markets due to the revamping of domestic refinery. All the gas output from Yetagun Project is currently sold to PTT for the consumption in Thailand.

- Vietnam 9-2 and Vietnam 16-1 projects in the Socialist Republic of Vietnam: All of the oil output produced from Vietnam 9-2 Project is sold to Binh Son Refining and Petrochemical Company Limited (BSR), a refinery in the Socialist Republic of Vietnam, for the consumption in the Socialist Republic of Vietnam. The produced crude from Vietnam 16-1 Project is sold in the regional spot markets through auction, while the produced gas from both projects is sold to Vietnam Oil and Gas Group, a state enterprise, for the consumption in the Socialist Republic of Vietnam.

- Algeria 433a & 416b Project in the People's Democratic Republic of Algeria: The Bir Seba Field has been commenced the production with its first commercial sales of crude oil since December 2015. The crude oil is sold and marketed by PTT as the marketing agent in the spot markets.

For MTJDA Project in Malaysia-Thailand Joint Development Area, the produced natural gas is sold to PTT for the consumption in Thailand. Starting from April 2015, the gas has been sold to Malaysia according to the Gas Balancing Agreement between PTT and Petroliam Nasional Berhad (PETRONAS). The condensate output meanwhile has been marketed and sold by a co-marketing agent of PTT and PETRONAS Trading Corporation Sdn Bhd (PETCO) through auction in the spot markets.

2.4.2 Competition

Thailand's E&P industry is an oligopolistic due to the business' relatively high investment and advanced technology required. The growing demand especially for natural gas and the GSAs which are predominantly long-term contract coupled with take-or-pay clauses however have continued to attract new investments to the market.

Regarding the approximate domestic production in 2018, PTTEP's petroleum production accounts for 32% of the total domestic production in 2018, making the Company the leader among the domestic producers.

Producers	% Domestic Production Volume
PTTEP	32
Chevron	30
Total	10
MOECO	8
Petronas	7
Others	13

Source: Department of Mineral Fuels, Ministry of Energy

Currently, the shale gas revolution is driving a dramatic restructuring of the global natural gas markets. It creates new opportunities and incentives to move lower-cost natural gas to higher-value global markets via LNG exports. The global LNG demand growth is therefore expected to be stronger, resulting in an increase of its market share in the future.

2.5 Production

2.5.1 Exploration and Production Stages and Technology

Petroleum exploration and production can generally be divided into four major stages as follows:

(1) Acquisition stage: This is the first step to identify the areas with petroleum potential. The main activities conducted in this stage include:

- Basin Assessment
- Prospect and Lead Assessment

(2) Exploration & Appraisal stage: This stage mainly involves with additional study and well operation to increase the certainty of estimating size and properties of the petroleum systems. Also it is expected to prove the existence of petroleum in the area. The main activities conducted in this stage include:

- Detailed study of petroleum geology and additional seismic survey
- Reservoir formation evaluation and conceptual development design
- Exploration & Appraisal well drilling and testing
- Post-well evaluation

(3) Development stage: This is the last stage prior to the production. The main activities conducted in this stage include:

- Prospect Inventory & Ranking
- Field development plan design and optimization
- Production facilities design, construction, and installation
- Development well drilling

(4) Production stage: This is the stage where petroleum and associated products are flowed through the pressure controlled equipment (wellhead) and processing facilities including measuring equipment to obtain the production rates of all of the productions. The main activities conducted during this stage include:

- Monitoring of production rate, proportion between produced gas, crude oil or condensate, and water, as well as pressure decline rate
- Forecasting of the future reservoir performance
- Well work-over and facilities maintenance

PTTEP has been well equipped in terms of manpower, technology and equipment to operate the business efficiently according to the Company's target.

2.5.2 Petroleum Reserves

Petroleum reserves can be divided into two categories, namely, Proved Reserves and Unproved Reserves according to the level of certainty.

(1) Proved Reserves are those quantities of petroleum which, by analysis of geological and engineering data, can be estimated with reasonable certainty to be commercially recoverable, from a given date forward, from known reservoirs and under current economic conditions, operating methods, and government regulations.

Practically, Proved Reserves mean the petroleum in reservoirs which can be commercially produced based on supporting data gathered during the well testing process. In some cases, reserves may be classified as Proved Reserves essentially when the results from well logging and/or analyzing of the core samples can prove that the reservoirs and petroleum in the reservoirs are similar or comparable to those of the neighboring areas which have already been commercially produced or with the potential to be produced according to their well testing results. In addition, Proved Reserves must be able to be produced by using the existing production equipment or with the production equipment that have a firmed plan to install in the future.

(2) Unproved Reserves are defined based on geoscience and/or engineering data similar to that used in the estimation of Proved Reserves but with technical or other uncertainties which preclude such reserves from being categorized as Proved. Unproved Reserves can be further categorized into Probable Reserves and Possible Reserves as follows:

- Probable Reserves are those additional quantities of petroleum obtained from an analysis of geoscience and/or engineering data similar to that used in the estimation of Proved Reserves but with less production possibility.
- Possible Reserves are those additional quantities of petroleum obtained from an analysis of geoscience and/or engineering data similar to that used in the estimation of Probable Reserves but with less production possibility than both Proved Reserves and Probable Reserves.

The Company's Proved Reserves are composed and reviewed annually by our earth scientists and reservoir engineers to ensure the industry's rigorous professional standards.

The Proved Reserves are reported on a gross basis which includes the Company's net working interest and related host country's interest. As of December 31, 2018, the total amount of Proved Reserves of PTTEP Group's projects was 164 million stock-tank barrels (MMSTB) of crude oil and condensate*, and 3,286 billion standard cubic feet (BSCF) of natural gas or 513 million barrels of oil equivalent (MMBOE). The total amount of Proved Reserves in terms of oil equivalent in consolidation was therefore 677 MMBOE. Details of the Company's Proved Reserves are shown in the following table.

* LPG included

PTT Exploration and Production Public Company Limited

Crude Oil and Condensate and Natural Gas Proved Reserves ⁽¹⁾

As of December 31, 2018

	Crude Oil and Condensate ⁽²⁾ (MMSTB)			Natural Gas (BSCF)			Barrel of Oil Equivalent (MMBOE)		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
Proved Reserves as of Dec 31, 2017	99	57	156	1,824	1,225	3,049	398	233	631
1) Revision of previous estimates	19	5	24	108	51	159	36	14	50
2) Improved recovery	5	0	5	57	13	70	14	2	16
3) Extensions and discoveries	14	1	15	368	3	371	72	1	73
4) Purchases/Sales of petroleum in place	6	(8)	(2)	249	-	249	47	(9)	38
5) Production	(27)	(7)	(34)	(425)	(187)	(612)	(97)	(34)	(131)
Proved Reserves as of Dec 31, 2018	116	48	164	2,181	1,105	3,286	470	207	677

(1) The Proved Reserves are reported on a gross basis which includes the Company's net working interest and the related host country's interest.

(2) LPG included

Furthermore, in order to improve efficiency, check and balance of the reserves estimation, reporting and disclosure, the company maintains a Reserves Committee which has the following roles and responsibilities:

- Review and endorse the Company's Annual Reserves
- Review and approve Major Changes of Reserves, and Reserves for Newly-Acquired Project
- Ensure that all activities that related to reserves estimation and disclosure of reserves information conform to regulatory and legal requirements as well as to corporate and international standards.
- Approve Annual Reserves Audit Plan, appoint Reserves Auditor, as well as approve Reserves Audit Report to ensure compliance with Company's framework and continual process improvement.

2.5.3 PTTEP Petroleum Production

In 2018, the total production of PTTEP Group was 131 MMBOE, consisting of 34 MMSTB of crude oil and condensate* and 612 BSCF or 97 MMBOE of natural gas. This was equivalent to a production rate of approximately 359,386 barrels of oil equivalent per day (BOED) which was approximately 11,878 BOED or 3.4% increase from the previous year. The increase was mainly due to the acquisition of the additional 22.2222% participating interests in the Bongkot Project and high nomination from buyer in MTJDA and Contract 4 projects.

2.5.4 Environmental Impact Management

To achieve PTTEP's new vision of becoming the "Energy Partner of Choice" by creating shared social values for all stakeholders, and engaging society become part of our business operations, we have consistently pursued the work on environmental impact mitigation and minimization. In 2018, we updated the environmental risk factors to be in line with the global trend. The environmental risks of the Company's business operations comprise 3 aspects:

- (1) Environmental Impact Assessment and Compliance
- (2) Greenhouse Gas Emission
- (3) Accidental spills of hydrocarbons (crude oil and condensate) and chemical substances

To ensure that our operations will have a minimal environmental impact, we have introduced and implemented the following environmental risk-related measures, which can be summarized as follows:

- (1) Environmental Impact Assessment and Compliance
 - Conducting environmental impact assessments, implementing prevention, correction and mitigation measures, for both domestic and international projects.
 - Using the technique of re-injecting produced water to subsurface reservoirs. Since 2008, the efficiency rate of produced water re-injection is 100 % for the Bongkot Project, Arthit Project, S1 Project, PTTEP 1 Project, and L53/43 & L54/43 Project.
 - Maintaining Synthetic Drilling Fluid (SDF) on discharged cuttings within the standard as stated in the Environmental Impact Assessment Report

- Monitoring the quality and condition of discharged wastewater from the production process, seawater, sediment, benthos, and fish around the production platform, as prescribed in the project's Environmental Impact Assessment Report. In addition, environmental compliance monitoring reports must be submitted to the Department of Mineral Fuels of the Ministry of Energy, and the Office of Natural Resources and Environmental Policy and Planning (ONEP) of the Ministry of Natural Resources and Environment.

In addition, PTTEP produced the environmental impact assessment report, as per the Announcement of the Ministry of Natural Resources and Environment, requiring an environmental impact assessment report for all exploration and production projects, to identify the environmental issues, and to determine prevention and mitigation measures as well as environmental monitoring programs. They are then submitted to the regulatory and approval agencies prior to commencement of the project. Our operations are regulated by government agencies of the respective countries in which we operate. In Thailand, there are two main agencies responsible for petroleum exploration and production activities, namely, the Department of Mineral Fuels (DMF) of the Ministry of Energy, which is the regulatory agency, and the Office of Natural Resources and Environmental Policy and Planning (ONEP) of the Ministry of Natural Resources and Environment, which is the approval agency.

(2) Greenhouse Gas Emissions

- Developing short-term and medium-term targets for the reduction of greenhouse gas emissions intensity of 20% by 2020 and 25% by 2030 from the 2012 base year. Details of the Company's greenhouse gas emissions are disclosed in the 2018 Sustainability Report.

- Conducting organizational risk assessment regarding climate change adaptation activities.
- Adopting the ISO14064-1:2006 Standard: Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and GHG Protocol, as well as the United Nations Framework Convention on Climate Change (UNFCCC) for the purpose of monitoring and reporting the Company's greenhouse gas emissions, including improving the greenhouse gas emissions report by direct measurement of hydrocarbon leak at sources.

(3) Accidental spills of hydrocarbons (oil and condensate) and chemical substances

- Updating spill response and management plans, and providing equipment, trainings and exercises to ensure immediate and effective Tier 1 spill response, including being a member of the Oil Industrial Environmental Safety Group Association (IESG) and a member of the Oil Spill Response Limited (OSRL), and working with PTT Group on Tier 2 and Tier 3 spill response respectively.

2.5.5 Performance over Past Three Years

PTTEP promotes operational and production process safety management, which is fundamental to our SSHE core value and practice, by managing and controlling the related risks to as low as reasonably practicable (ALARP). We adopt various safety performance indicators such as Lost Time Injury Frequency (LTIF) and Total Recordable Injury Rate (TRIR). In 2017, LTIF, TRIR and spill rates were better than the International Association of Oil and Gas Producers (IOGP) average.

To support the expansion of our operations, we emphasize the need for robust and comprehensive SSHE measures in both domestic and international projects. In the past year, documents on SSHE management were revised and standardized, including updating documents to be used as additional standard to cover activities with risks, conducting SSHE awareness training for all staff, and minimizing the rate of incidents to the lowest possible level. While sufficient SSHE measures have been in place, we are determined to continuously improve our performance in this regard to support the Company's future sustainable growth.

PTTEP has strictly complied with the relevant legal requirements and was recognized with numerous domestic and international awards, for instance:

(1) PTTEP was selected as a member of the 2018 Dow Jones Sustainability Indices (DJSI) in the DJSI World Oil and Gas Upstream & Integrated Industry for the fifth consecutive year since 2014.

(2) PTTEP received the SET Sustainability Award 2018 – Outstanding Category from the Stock Exchange of Thailand (SET). The Company also received Thailand Sustainability Investment Award 2018 for the third year. The awards recognized PTTEP as a listed company with outstanding sustainable practices and ongoing commitment to sustainability with good governance, environment and social responsibility, and transparency.

(3) PTTEP was assessed for the SSHE performance and was certified by an external organization. As a result of the determination of all PTTEP staff, our sustainability report was certified by the Global Report Initiative (GRI) for the seventh consecutive year.

(4) PTTEP implemented the environmental management system in alignment with the International Organization for Standardization (ISO). In 2018, we were certified with the ISO 14001:2015 by the AJA Registrars, accredited by the United Kingdom Accreditation Service (UKAS), for all operational units that we act as the operator in Thailand. The ISO 14001 "One Common System" is used for all sites including the international projects, to improve the efficiency of our environmental management system, continuously revise our process, as well as effectively maintaining, controlling, monitoring and mitigating the environmental impact, consistent with our SSHE management system, in the following areas:

- Headquarters
- Bongkot Project
- Arthit Project
- S1 Project
- PTTEP 1 Project and L53/43 & L54/43 Project
- Sinphuhorm Project
- PTTEP Petroleum Development Support Base (Songkhla and Ranong)
- PTTEP Core Research Center (Ayutthaya)
- Montara Field, Darwin base, and Perth office of PTTEP Australasia (Ashmore Cartier) Pty Ltd in Australia
- Block M9, Zawtika Operation Center at Dawei, Office at Yangon in the Republic of the Union of Myanmar

We are the first company in the petroleum exploration and production business in Thailand to be certified with this standard.

(5) PTTEP was certified with the OHSAS 18001:2007 Occupational Health and Safety Standard, by AJA Registrars, accredited by the ANSI-ASQ National Accreditation Board (ANAB), for the operational areas of our domestic projects, namely Arthit, and Bongkot (for both North & South fields), S1, PTTEP 1, L53/43 & L54/43, Sinphuhorm – petroleum production; and PTTEP Petroleum Development Support Base (Ranong) – offshore petroleum exploration and production support. We also plan to expand the coverage of the OHSAS to our international projects.

(6) Prior to the commencement of any new project, environmental impact assessment report is submitted to the approval agency for its consideration. In addition, a compliance report on the implementation of measures identified in the approved EIA is submitted periodically as required.

(7) A monthly and annual summary report on SSHE performance is submitted to the Department of Mineral Fuels. The operating sites are audited for SSHE performance by the Department of Mineral Fuels.

(8) PTTEP was selected as one of the 100 outstanding companies for Environmental, Social and Governance (ESG) by the Thaipat Institute, which is a pioneer for developing business sustainability data.

(9) Our certificates for Green Meetings and Green Meetings Plus of the PTTEP Headquarters and for Green Meetings of the PTTEP Petroleum Development Support Base (PSB) were renewed by Thailand Business Council for Sustainable Development (TBCSD), in recognition of our effort to organize meetings that reduce energy consumption and environmental impact.

(10) PTTEP received the Green Office Award for 2017– Excellence Level (G-Gold) for head office building. PTTEP is the first company in petroleum exploration and production business to receive the highest level award of the Thailand Green Office Award campaign organized by the Department of Environmental Quality Promotion. The award is given to an office with sound on environmental management in various aspects, e.g., energy utilization, water utilization, resource utilization and pollution prevention including low level emission of greenhouse gases.

(11) PTTEP received the Green Procurement Certificate from Thailand Environmental Institute (TEI), as PTTEP and TEI have jointly developed green procurement criteria. Green procurement is a part of PTTEP Green Practice Roadmap which aims at environmental impact mitigation from operations, lowering of carbon and ecological footprints, as well as creating value-added processes to business.

(12) PTTEP received the Low Emissions Support Scheme (LESS) Letter of Recognition from the Minister of Natural Resources and Environment, which was the second time that we received this recognition of The Thailand Greenhouse Gas Management Organization (TGO), for the commitment and cooperation of all staff the Head Office and Songkhla Petroleum Development Base in reducing the total amount of greenhouse gas emissions by 413,723 kilograms of carbon dioxide equivalent.

(13) PTTEP received the Best Practice Award in ISO 14001 & OHSAS 18001 presented by the AJA Registrars. PTTEP is one of the 21 companies out of more than 900 AJA certified companies in Thailand to receive such award.

(14) PTTEP received the Best Initiatives in Environmental Stewardship Award from the Asset Magazine, a leading financial magazine in Hong Kong.

(15) PTTEP organized the oil spill response (IMO level 1) training for 32 frontline staff (certified by IMO) to ensure staff's competency and readiness.

Regarding chemical and hydrocarbon spills, which is one of the key performance indicators for environment management, the figures for the years 2016 - 2018 were 0.74, 4.65 and 9.98 tonnes, respectively. Details are disclosed in the 2018 Sustainability Report.

2.5.6 Environmental Disputes or Lawsuits and Approach to Resolution

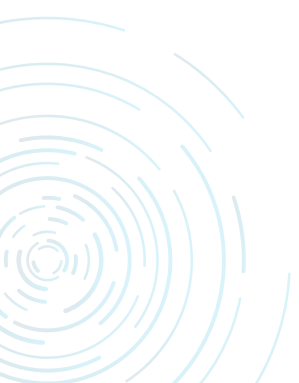
Details are disclosed in the "Legal Dispute" section.

2.5.7 Safety, Security, Health and Environment Management

PTTEP develops, implements, and continuously improves our Safety, Security, Health and Environment (SSHE) Culture based on the long-term roadmap to achieve our ultimate goal, which is to prevent any accident that may result in injury, occupational illness, and any other work-related harm. In 2018, PTTEP's SSHE strategy was mainly focused on improving the Company's SSHE Management System (SSHE MS) in both operational and process safety, and the strengthening of our SSHE culture. We aim to reach the highest level within our SSHE Culture Maturity Model, which is derived from the International Association of Oil & Gas Producers (IOGP), primarily by enhancing the awareness of our line management with regard to their roles and responsibilities. Furthermore, we will be promoting SSHE leadership awareness among our employees and contractors at all levels. Importantly, PTTEP is still dedicated to carry through with strong efforts to improve and sustain the environment in all areas of our operations. Successful implementation of these SSHE requires full commitment from all of PTTEP Group's personnel, from the highest executive officer to the operational staff and contractors.

In 2018, PTTEP's Safety Key Performance Indicators of Lost Time Injury Frequency Rate (LTIF) and Total Recordable Injury (TRIR) were better than those of the previous year and in the top quartile of IOGP's performance. This is a direct result of our ongoing incident prevention campaigns in operations.

PTTEP operates in accordance with SSHE standards and legislation in all areas and, furthermore, follows up incidents. In 2018, the Company received the Best Practice Award in ISO 14001 & OHSAS 18001 from AJA Registrars Limited, a leading company for SSHE management verification. We also received the PTT Group SSHE Awards 2018 in the "PTT Group Zero Accident - Most Valuable Zero PSE TIER 1" category from the PTT Group. Those achievements reflect PTTEP's emphasis and commitment to continuously improve SSHE implementation, so as to achieve our ultimate goal of being a "Target Zero" organization where employees and contractors can come to work and return home safely every day.





▶▶ 3. Risk Factors

Due to technical and operational complexities in the petroleum exploration and production business, together with the need for high volume of investment for new investment opportunities, exploration activities, project development activities, as well as production activities, PTTEP, therefore, places great importance on risk management by setting up a carefully considered Risk Governance Framework. This Framework defines roles and responsibilities for personnel working in each level of authority, ranging from the Board of Directors, management to the business units/functions to ensure that all the risks are addressed, monitored and reported with management that is systematic and efficient.

In 2018, despite improvement of the crude oil price from the previous year, a number of uncertainties led to the persistence of oil price volatility. Hence, PTTEP has continued our strategies in maintaining unit costs and increasing operational efficiency, while striving for long-term sustainable growth. PTTEP is also reshaping the organization to enhance our competitiveness in the E&P business, which is our core business, while searching for opportunities in related businesses to invest in the near future. Key risk factors associated with our core business can be summarized as follows.

3.1 Strategic & Portfolio Risks

3.1.1 New Investment Risks

PTTEP continues to focus on E&P opportunities in Southeast Asia, particularly Malaysia, Myanmar and Thailand that includes the bidding of the expiring Bongkot and Erawan concessions, which is the area that the Company is familiar with. Moreover, PTTEP also seeks out business opportunities in prolific petroleum areas with acceptable geopolitical risks and low costs of development and production. Certain risks and uncertainties must also be considered. These include political stability, energy policy changes, and clarity with regard to the decommissioning of construction and production equipment, benefit sharing and new fiscal regimes in Thailand (Production Sharing Contract or PSC).

The Company has drawn up plans to mitigate those risks which may potentially affect our operations and investment growth, such as adopting strict due diligence, recruiting proficient consultants, promoting understanding among stakeholders, proactively pursuing effective public relations, monitoring and providing opinions for appropriate decommissioning of equipment in areas related to the technical aspect, regulatory requirements, economic feasibility as well as environmental and social impacts. In addition, we also regularly assess and analyze risks associated with climate change in relation to the business, as well as attempt to identify our “Low Carbon Footprint Reduction” roadmap, targets and action plans to manage the risks and their impacts. The Company works to manage effects from related risks such as the collection of carbon taxes in various countries that we operate in, and physical damage to our assets and construction structures caused by the rise in global temperatures.

Investment in new countries or unfamiliar territories contains a number of inherent risks. The Company has therefore established risk mitigation guidelines for the assessment of each investment. The guidelines provide advice in various aspects, ranging from petroleum potential, size and project characteristics, acquisition procedures, additional reserves volume, operator’s capability and performance, attractiveness of the fiscal regime, geographical conditions, related laws and regulations, political stability, issues concerning international relations, economic conditions and financial stability. The risks are then taken into account when prevention measures and options are formulated and integrated into a return-on-investment analysis or a joint venture agreement.

Investment in new projects, including farm-in and farm-out joint ventures, mergers and acquisitions, as well as withdrawal or divestment from any given project must be intensively screened by the Investment Committee and Management Committee. Their responsibility is to assess and ensure that each project adheres to the Company's investment direction and policy and that each project is economically and technologically feasible, and whether conventional or unconventional resources are involved before proposing it to the Risk Management Committee prior to the final approval of the Board of Directors.

3.1.2 Organizational Capability Risks

Organizational capability is a key factor towards the achievement of the Company's targets. Thus, business processes and human resources are, inevitably, of great importance. Potential risks that may occur include the risk from a lack of expertise and knowledge, and risk of business process inefficiency. In this regard, PTTEP has taken the following actions to enhance our business processes and organizational capability.

(1) Knowledge management, including new technologies and capability of the Company's research and development program, is developed, in line with our growth strategy to expand into new business opportunities. Our Capability and Technology Development Roadmap has been developed along with continuous research on technology to support business growth.

(2) Systems, procedures, and organizational structure are improved and developed, in line with PTTEP's growth strategy and business plan. These include work process improvement towards matrix organization to maximize work efficiency, development of the Delegation of Authority and Signatures (DAS), as well as enhancement of the IT Global Platform, system stability and confidentiality control, e.g., adoption of cloud storage. Meanwhile, development of our financial and accounting management capability aims to take the Company to the level of world-class finance. Some improvement measures that are being implemented include; enhancement of efficiency of our managerial accounting data analysis for M&A decision-making; establishment of the Shared Service Center; use of blockchain technology for international payment; and provision of finance and accounting in-house training offerings for staff, called FNA Academy training.

(3) To prepare for our investments in our core business and new business opportunities, the Company has devised Human Resources Development plans to recruit required and qualified staff members in operating and targeted countries. The plans focus on developing their capabilities and leadership, recruiting of external personnel in key positions that do not yet have in-house personnel, together with enhancing our employees' engagement by targeting the Company to be ranked in Thailand's Top Quartile level in 2020. In addition, human resource improvement and our values and culture embedded also ensure that development and growth of the Company are in line with PTT Group's goals.

3.2 Financial & Marketing Risks

3.2.1 Financial Risks

PTTEP determines cash management policy with an emphasis on sources of funds, debt financing, and liquidity management, while it also properly and promptly manages financial risks that might affect the Company's financial status. The financial policy as defined by the Board of Directors is to ensure the robustness of the financial status to support the Company's investment plans and execution in both the short term and long term.

Financial risks mainly consist of counterparty risk, and cash and liquidity risks. To manage counterparty risk, it is PTTEP Group's policy that we conduct business only with reputable and creditworthy counterparties. The financial stability and credibility of each counterparty must be analyzed and reviewed regularly. Currently, the majority of PTTEP Group's products are sold to PTT which is our parent company.

For cash and liquidity risks which may arise from our inability to maintain adequate working capital necessary for the operations, PTTEP Group has a policy to minimize such risks by adopting appropriate cash flow management and maintaining both committed and uncommitted credit facilities with banks and financial institutions.

3.2.2 Marketing and Distributing Risks

PTTEP has entered long-term gas sales agreements (GSAs) with PTT, which is the Company's major domestic buyer. The terms of the GSAs generally last 15 - 30 years. To mitigate market risks which can result in refusals from buyers to purchase contracted volumes of natural gas, GSAs stipulate obligations for buyer and seller to commit to the annual minimum volumes. Buyers must pay for the committed volume of gas, whether or not the full amount is taken (Take-or-Pay).

To effectively cope with the dynamics of Thailand's energy demand, the Company closely monitors petroleum demand in coordination with PTT and related government agencies to collectively outline an optimized supply plan. The Company reviews and adjusts our production as well as project development plans regularly to ensure that the development master plan is able to optimize reserves and resources of existing assets to match the country's energy demand. We also have a project in Mozambique which possesses large natural gas reserves that can be developed as a Liquefied Natural Gas (LNG) project. This project is a good example of the projects which fit in well with PTT's plan to import LNG as well as to contribute effectively to the enhancement of the energy security of Thailand.

3.2.3 Petroleum and Oil Price Risks

PTTEP Group's product prices depend on the world's crude oil prices, which are subject to multiple factors beyond our control; for example, the economic, political, and geopolitical stability of various countries (e.g., countries affected by sanctions from the United States of America), OPEC's production policy, capability and production plans of major oil producing countries (e.g., the United States of America, Russia), oil reserves in each country, and changes of the global climate.

Fluctuations in the world's oil prices immediately affect the prices of PTTEP Group's crude oil and condensate. Yet, while natural gas prices tend to follow oil prices, most of PTTEP Group's contractual natural gas prices are adjusted every 3, 6, or 12 months, depending on the gas price formula of each project. As a result, natural gas prices are more stable when compared to those of crude oil and condensate.

For the year 2018, PTTEP Group implemented an oil price hedging program with the objective of minimizing the negative impact on the Company's cash flow and operating performance.

3.2.4 Exchange Rate Risks

PTTEP Group adopts the U.S. Dollar (USD) as its functional currency in accordance with the International Financial Reporting Standards (IFRS) since the USD is the main currency used for trading petroleum products, such as crude oil

and natural gas, which are the Company's major products. PTTEP Group's cash flows, however, still experience an exchange rate risk from the Thai Baht (THB) movement against USD as most of the Company's revenue is in THB which is linked to USD. For example, revenue from USD-linked crude oil sold to a Thai company must be paid in THB equivalent to USD only, while the Company's main cash outflows, such as investments and operating expenditures, are mostly in USD. The currency mismatch and discrepancies between payables and receivables' settlement periods as well as the USD/THB volatility therefore inevitably impose foreign exchange risks to our cash flows. Under this circumstance, PTTEP Group has minimized the foreign exchange risks by using available financial derivative instruments in the market, such as forward and option contracts, to hedge the exposure relating to the foreign exchange rate as determined in the sales agreements by, for example, matching the Company's USD revenue with USD investments and operating expenditures.

With USD as the functional currency, coupled with the foreign exchange rate volatility, PTTEP Group is also exposed to the foreign exchange translation risk arising from the translation of non-USD assets and liabilities at the end of every accounting period. To minimize such translation risk, we have consistently put in great efforts to maintain a proper balance between our non-USD assets and liabilities, mainly in THB, as well as entering cross-currency swaps on our non-USD denominated obligations to reduce the impact from the exchange rate volatility by converting both interest and principal payments to USD.

3.2.5 Interest Rate Risks

PTTEP Group is exposed to interest rate risk as the risk affects future cash flows and fair value of the financial instruments employed. PTTEP Group eliminates and minimizes the risk by maintaining an appropriate debt portfolio optimization (ratio of fixed rate liabilities and floating rate liabilities) and using financial derivatives, such as interest rate swaps. Interest rate risk management is conducted dynamically, appropriately, and correspondingly to the nature of the business, the market conditions, relevant costs and the Company's acceptable risk limits.

3.3 Political and Legal/Regulatory Risks

3.3.1 Political Risks in Investment Countries

Based on PTTEP's foreign investment policy, we aim to invest in target areas of strategic significance in order to accommodate long-term growth. It is possible that such areas may be prone to geopolitical risks. Given this circumstance, PTTEP not only sets a certain level of acceptable risks in terms of politics, the economy, investment, law and regulations but we also appoint a geopolitical risk team to closely follow the situations in countries and territories where PTTEP operates. The team periodically produces analytic reports on the developments regarding political stability, macro-economic conditions, legal and regulatory aspects, and security, across a range of investment countries. So far, we have found that the high-risk areas remain in Africa and the Middle East, mainly as a result of political and economic instability. PTTEP believes that comprehensive assessments of these risks are key to preparedness especially during an urgent incident. Evaluating risks in different scenarios assists our management and relevant departments to efficiently mitigate the risks related to the countries where PTTEP invests.

Results from the above analysis are used to formulate geopolitical risk rating scores which will be considered as part of the assessment process before making decisions about whether to invest in new projects. In addition, PTTEP liaises closely with the Ministry of Foreign Affairs and Royal Thai Embassies in countries we invest to ensure that the Company's business operations are well-supported by relevant government agencies and that the projects are aligned with the respective national energy policies.

3.3.2 Compliance Risks

Generally, these risks can result from a variety of factors, such as complexity of specific laws, changes made to existing laws and regulations, misinterpretation of laws, or even nuances of the language in which the laws are written. The risks can potentially lead to certain actions or conduct that may be deemed incorrect, ultimately causing a violation of or non-compliance with applicable laws which may then lead to pecuniary forms of punishment, such as fines and operational difficulties, potential revocation, suspension of licenses, and possible damage to PTTEP Group's reputation. To minimize these risks, the Compliance Department¹ is responsible for assuring that all of the business units strictly comply with their relevant laws, thereby building confidence among the Company's shareholders, Board of Directors, management, and employees that we are in full compliance with laws relating to our business operations. In addition, PTTEP regularly monitors the legislation process to ensure that PTTEP's businesses comply with emerging laws.

In 2018, the Company continued to focus on anti-corruption risks and their monitoring programs. Details are disclosed in the "Corporate Governance" section, "Anti-Corruption" part.

3.4 Operational Risks

3.4.1 Exploration Risks

Exploration activities are essential for the E&P business as they are to ensure that additional new petroleum reserves are found to replace those which have been turned to production to generate the revenues, as well as to add new reserves to support future production targets and growth.

The objective of an exploration is to search for sizable petroleum resources for commercial development. The risks associated with exploration activities are geological risks and the uncertainty of finding a petroleum field of commercial size (Resources Volume Uncertainty).

Managing key exploration risks thus depends on the selection of exploration sites with good chances of finding sizable petroleum reserves that allow for commercial operations within an appropriate time and cost. The key factors that are used to consider whether to invest in petroleum exploration include chance of success, resource estimation, exploration period and planned expenditures, thoroughness of geological studies, seismic acquisition and interpretation, exploration economic evaluation, and the terms of contracts.

PTTEP establishes clear processes and criteria in evaluating each step of the project, starting from potential petroleum basin evaluation and selection, in-depth subsurface studies of targeted blocks, and above-ground investment risks. The Geosciences and Exploration Group of PTTEP is tasked with formulating the exploration strategy and strategic plan based on the exploration portfolio management, while allocating exploration budgets to high potential blocks for further exploration activities. This process is reviewed and revised annually to ensure that the exploration strategies reflect and remain in line with the outcomes of the overall exploration activities, and the agreement with the corporative targets.

¹ Since January 1, 2019, the Compliance Department has been renamed to the Governance, Compliance, and Internal Control Department, as part of the organizational restructuring of PTTEP to centralize all compliance works into the same function.

In addition, the Company also stipulates that exploration studies need to pass the evaluation by the petroleum potential assessment review team to ensure that processes and results of various exploration project studies have covered the key issues. The assessment must also remain in line with certain criteria and standards as well as PTTEP's practices to ensure investment confidence and that the results of the exploration are in accordance with PTTEP's goals.

3.4.2 Project Development Risks

Following oil price fluctuations, PTTEP has continued to adjust the Company's development plans as well as cost-cutting plans. Development projects are part of the preparation towards increasing reserves and production in the near future, such as those in the Mozambique Rovuma Offshore Area 1 Project, Algeria Hassi Bir Rekaiz Project, and the Cash-Maple Field in PTTEP Australasia Project. Meanwhile, for new projects with the potential of delays and cost overruns, the Company has implemented the following risk mitigation measures to ensure that they all remain on schedule.

(1) Project management: To safeguard against project delays and cost overruns, the Company focuses on related policy formulation, project management organization, project planning and engineering system designs, contract management, procurement, and construction monitoring.

(2) Personnel and process: To meet the targets set for safety, quality, budget, and timeline for project completion, the Company focuses on development of the team's skills which help us to better prepare for and protect ourselves when there is increased competition in employment market for those with extensive skills and experience in the field. Information and experience-sharing from previous projects are also encouraged as part of all our project team skills development, while the Company's Project Realization Process (PREP) continues to actively seek out new approaches to fine-tune the operations so that targets are realized.

(3) Commercial contracts: To ensure maximum efficiency in minimizing the risks associated with non-contractual compliance and disputes while working with our contractors, the Company focuses on contract drafting, definitions of terms and conditions and contract administration. These risks can, however, be controlled by negotiations based on comprehensive competency, knowledge, and concerted effort from various departments, such as those pertaining to construction, engineering, procurement, finance, accounting, and legal aspect. Prudent contract management also lessens the risks and helps mitigate possible damage which can potentially result from delays, potentially causing adverse effects on a given project and the Company's performance at large.

3.4.3 Production Risks

In every production process, PTTEP has to face various potential risks, starting from the production process at the bottom of the well until the point of sale. These risks involve, for instance, risk of well potential, production design flaws, damaged equipment, aging facilities, operation errors, and poor product quality, all of which can directly impact the corporate goals, production and sales targets.

Mitigation of production risks focuses on the areas of process planning and platform design, production control systems, and preventive maintenance. Operational Excellence Management System - Reliability & Asset Integrity, which is a part of the Operational Excellence Project, has been adopted and continuously improved to ensure the highest standards of

production in terms of integrity and safety. The Asset Reliability & Integrity Management System (ARIMS) has been designed specifically to minimize production losses due to worn-out equipment and also to improve equipment efficiency through preventive maintenance and inspection, with the goal of achieving zero unplanned shutdowns. Meanwhile, work procedures, operation manuals, and extensive training programs have been improved, developed and adopted to instill greater understanding and efficiency among the Company's operating personnel.

The Company has also set up the Operational Risk Committee (ORC) to analyze and assess the production risks in respect to technical issues, contracts, and operational support for projects to increase the overall efficiency and effectiveness.

3.4.4 Safety, Security, Health and Environmental Risks

PTTEP has continued to analyze Safety, Security, Health and Environment (SSHE) risks to reduce the likelihood and impact of unexpected events. The analysis comprises identification of internal and external factors. This helps to prevent major accidents as well as to reduce the risks that would affect PTTEP Group's employees and assets.

PTTEP has managed SSHE Risks through the Company's SSHE Management System to set the SSHE policies, standards, guidelines and procedures for employees and contractors, so that they understand the implementation process and its objectives. This is in addition to fostering SSHE awareness in the corporate culture by providing training relating to safety and risk management to improve knowledge and performance as well as to keep the risks to the level as low as reasonably practicable (ALARP).

PTTEP has monitored SSHE Risk Management through the Company's Risk Management Committee in many levels and with a variety of key risk indicators and trackers; for example, Total Recordable Injury Rate, audit findings, close-out status, natural disasters, security status, and health infection in high risk countries to ensure that all situations are being monitored to determine the suitable mitigation plans for improvement, corrections, and preventions towards achieving even higher social and business sustainability.

3.4.5 Digital Security Threat Risks

Cybercrime frequently occurs and spreads across multiple business sectors through various channels, such as software vulnerability attacks, ransomware, and malware which can potentially lead to business disruption. PTTEP recognizes the importance of safeguarding against digital security threats and includes the risk of digital security threats in the Company's Corporate Risk Profile to closely monitor the development as well as to implement necessary measures.

Measures include upgrading the IT systems and antiviruses to ensure that it is able to detect security threats, conducting penetration tests to find network weaknesses and those networks in need of improvement, raising IT security awareness and understanding among the Company's staff through IT security e-learning programs, establishing the Security Operation Center (SOC) to be responsible for IT network surveillance, conducting Cyber Security Response Drills, regularly performing data backup and reviewing disaster recovery plan, which the results are subsequently reported to the Risk Management Committee and the Board of Directors, respectively to ensure prompt response to disruptive and emergency situations.

3.5 Emerging Risks

3.5.1 Climate Change Risks

As an exploration and production company, PTTEP is well aware of risks from climate change and its possible impacts on our business operations in various aspects, namely (1) Physical: a cyclone, a flood, or a phenomenon caused by higher global temperatures, which can lead to serious damage to the Company's production platforms or make exploration areas / production sites inaccessible, (2) Regulatory: such as emission pricing, carbon tax, or more stringent enforcement of climate change legislation depending on the countries in which we operate, and (3) The trend towards more environmentally-friendly forms of energy usage. At the 2015 United Nations Climate Change Conference (COP21) held in Paris, France, in December 2015, heads of state and governments around the world signed an agreement with the aim of reducing greenhouse gas emissions and substituting typical fossil fuel for low carbon fuel. Thailand has also adopted a plan to reduce greenhouse gas emissions by 20 - 25% by 2030 (compared to the base year 2015).

PTTEP has established risk management framework on climate change focusing on improving work processes to maximize energy efficiency aiming for 5% reduction of energy intensity within 2020 and 25% reduction of greenhouse gas emissions within 2030 (compared to base year 2012). The Company has conducted reforestation activities to help increase the absorption of greenhouse gases as well as carbon offset through various mechanisms. Correspondingly, PTTEP has also engaged with Thailand Greenhouse Gas Management Organization (TGO) to develop a set of activities, measures, and policies to reduce greenhouse gases under the Thailand Voluntary Emission Reduction (T-VER) project.

PTTEP's strategy on the new business opportunities emphasizes the gas value chain businesses including the "Gas to Power" project and Liquefied Natural Gas (LNG), as well as renewable energy opportunities will also support the transition to low carbon society.

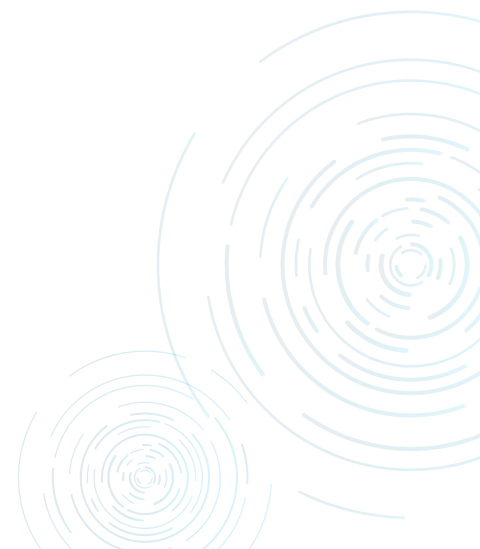
3.5.2 Risks arising from Disruptive Technology that Adversely Impacts Oil and Gas Industry

Technological advancement and renewable energy are playing an increasingly more crucial role in the energy industry. They come in all forms, such as more reliable and efficient energy storage, battery-powered cars (Electric Vehicle), as well as other renewables and EV businesses whose production costs have decreased exponentially over the years. Such disruptive technologies coupled with the government's policy regarding environmental issues with the intention of reducing greenhouse gas (GHG) emissions following the recent Paris Agreement on climate change as well as promotion of alternative energy usage, such as the Alternative Energy Development Plan (AEDP) 2015 - 2036 that aims to increase the proportion of alternative energy consumption in forms of electricity, heat, or biofuel to 30% of the final stage of energy consumption in 2036, can cause tremendous damage to the energy industry. Oil demand has consequently been affected to the degree in which some believe that days of the oil era can start to be numbered. For PTTEP Group, our revenues from crude oil and condensate make up approximately 30 - 40% of total revenue.

In this regard, for the year 2018, PTTEP modified business operations by establishing the Business and Organization Transformation Group and setting up a Business and Organization Transformation project under the name "ENTERPRISE" to help push the Company's transformation, which involves using digital technologies and innovation as well as

“Organizational Transformation” to remodel processes, allowing for more efficient and effective systems in order to become a lean organization with agile ways of working, resulting in reduced costs with lower uses of environmental resources. The “ENTERPRISE” project is expected to create value 4.8 times compared to investment by the year 2022.

In addition, PTTEP has explored new business opportunities in order to enhance operational flexibility and competitiveness for sustainable growth by placing a great emphasis on 3 principal areas: (1) diversifying into other businesses in the oil and gas value chain, e.g., “Gas to Power” project in Myanmar and Liquefied Natural Gas (LNG) (2) establishing a new subsidiary in order to support future investments, such as being a service provider for activities using robotics and AI, predictive maintenance, and (3) renewable energies. PTTEP targets the profit contribution from new businesses around 10% of PTTEP’s profit within 2030.





4. PTTEP and Our Subsidiaries' Assets

4.1 Property, Plant and Equipment

4.1.1 Oil and Gas Properties

PTTEP and our subsidiaries' properties are mainly jointly controlled oil and gas properties in each project. These properties comprise land, buildings, construction, machine and equipment, transportation pipeline, capitalized exploratory and production drilling costs, decommissioning costs, which are estimated by PTTEP Group's engineers and management's judgment, and acquisition costs of concession right, which shall incur when PTTEP and our subsidiaries acquire the concession right.

As at December 31, 2018, PTTEP and our subsidiaries' oil and gas properties are represented as share of the joint ventures' individual assets for each project as follows:

<u>PTTEP's joint ventures</u>	<u>Company's interest (%)</u>
Bongkot ¹	66.6667
Arthit	80
Contract 4 (B12/27)	45
Sinphuhorm (E5 North)	20
S1	25
Contract 3 (B10, B11, B12 and B13)	5
E5	20
Algeria Hassi Bir Rekaiz	24.5
<u>PTTEPI's joint ventures</u>	<u>Company's interest (%)</u>
Yadana	25.5
Yetagun	19.31784
PTTEP1	100
G4/43	21.375
G9/43	100
L22/43	100
L53/43 & L54/43	100
G4/48	5
Bongkot (G12/48) ¹	66.6667
Contract 4 (G7/50)	45
Arthit (G8/50)	80
Zawtika	80

¹ On January 31, 2018, the Company signed an Agreement for the Assignment and Transfer of the 22.2222% participating interests in the Bongkot Project, consisting of Blocks B15, B16, B17 and G12/48, as disclosed in Note 5 - Business Acquisition.

Myanmar M3	80
Myanmar M11	100
MTJDA	50
<u>PTTEPO's joint venture</u>	<u>Company's interest (%)</u>
B8/32 & 9A ²	25.001
<u>PTTEP SV's joint venture</u>	<u>Company's interest (%)</u>
Vietnam 52/97	7
<u>PTTEP KV's joint venture</u>	<u>Company's interest (%)</u>
Vietnam B & 48/95	8.5
<u>PTTEP HL's joint venture</u>	<u>Company's interest (%)</u>
Vietnam 16-1	28.5
<u>PTTEP HV's joint venture</u>	<u>Company's interest (%)</u>
Vietnam 9-2	25
<u>PTTEP AG's joint venture</u>	<u>Company's interest (%)</u>
Algeria 433a & 416b	35
<u>PTTEPS's joint venture</u>	<u>Company's interest (%)</u>
Sinphuhorm (EU-1)	20
B6/27	100
S1	75
<u>PTTEP SM's joint venture</u>	<u>Company's interest (%)</u>
Indonesia Semai II ³	-
<u>PTTEP SA's joint venture</u>	<u>Company's interest (%)</u>
Myanmar MD-7	50
Myanmar MOGE 3	75
<u>PTTEP ML's joint venture</u>	<u>Company's interest (%)</u>
Indonesia Malunda ⁴	-
<u>PTTEP CA's joint venture</u>	<u>Company's interest (%)</u>
Mariana Oil Sands	100

² PTTEP Offshore Investment Company Limited (PTTEPO) has shareholding in Orange Energy Limited and B8/32 Partners Limited, which hold the project's concession.

³ On May 9, 2018, PTTEP Semai II Limited (PTTEP SM) received the official approval from the Government of the Republic of Indonesia to terminate and return the exploration block of Indonesia Semai II Project.

⁴ On June 4, 2018, PTTEP Malunda Limited (PTTEP ML) received the official approval from the Government of the Republic of Indonesia to terminate and return the exploration block of Indonesia Malunda Project.

<u>PTTEP AP's joint venture</u>	<u>Company's interest (%)</u>
PTTEP Australasia	
• AC/L7, AC/L8 ⁵	-
• AC/RL7, AC/RL12 and AC/P54	100
• AC/L1, AC/L2 ⁶	-
• AC/L3	100
• AC/RL10	90
• AC/RL4 (Tenacious)	100
• AC/RL6 (Audacious), AC/RL6 (exclusive of Audacious)	100
• AC/RL4 (exclusive of Tenacious), AC/RL5	100
<u>Cove Group</u>	<u>Company's interest (%)</u>
Mozambique Rovuma Offshore Area 1	8.5
<u>Natuna 2's joint venture</u>	<u>Company's interest (%)</u>
Natuna Sea A	11.5
<u>PTTEP BL's joint venture</u>	<u>Company's interest (%)</u>
Barreirinhas AP 1	25
Brazil BM-ES-23	20
<u>PTTEP SP's joint venture</u>	<u>Company's interest (%)</u>
Contract 4 (B12/27)	15
Sinphuhorm (E5 North and EU-1)	35
<u>PTTEP G7's joint venture</u>	<u>Company's interest (%)</u>
Contract 4 (G7/50)	15
<u>PTTEP HKO's joint venture</u>	<u>Company's interest (%)</u>
Sarawak SK410B	42.5
Sarawak SK417 ⁷	80
Sarawak SK438 ⁷	80

⁵ On July 15, 2018, PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AAA) signed the Agreement for the Sale of Montara Assets to divest a 100% stake in the Montara field (block AC/L7 and AC/L8), as disclosed in Note 6 - Montara Divestment.

⁶ On May 7, 2018, PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AAA) received the official approval from the Government of Commonwealth of Australia to terminate and return the exploration blocks of AC/L1 and AC/L2.

⁷ On March 30, 2018, PTTEP HK Offshore Limited (PTTEP HKO), a subsidiary of the Group, had entered into the Production Sharing Contract to obtain the exploration and production rights of 2 offshore exploration blocks, Sarawak SK417 and Sarawak SK438 located in Malaysia. PTTEP HKO is the operator of the projects.

PTTEP MEP's joint venture

Mexico Block 12 (2.4)⁸

Mexico Block 29 (2.4)⁸

Company's interest (%)

20

16.67

As at December 31, 2018, details of properties' net book value are as follows:

Unit: Million USD

Details of properties	Historical cost	Accumulated depreciation	Allowance for impairment of assets	Net book value
Oil and Gas Properties	25,839.55	(17,990.69)	(329.88)	7,518.98
Exploration and Evaluation Assets	4,955.80	-	(1,643.45)	3,312.35
Goodwill	1,203.43	-	(112.39)	1,091.04
Pipeline and Others	1,200.57	(429.06)	(5.25)	766.26
Total	33,199.35	(18,419.75)	(2,090.97)	12,688.63

⁸ On January 31, 2018, PTTEP Mexico E&P Limited, S. de R.L. de C.V. (PTTEP MEP), a subsidiary of the Group, and its partners had been selected as the successful bidders of 2 exploration blocks located in the Gulf of Mexico, Mexico, which are block 12 in the Mexican Ridges located on the Western Gulf of Mexico and block 29 in the Campeche on the Southern Gulf of Mexico. PTTEP MEP and the consortium signed the concession agreement on May 7, 2018.

4.2 Investments

PTTEP has details of subsidiaries, associates, joint operations and joint ventures presented as follows:

Company name	Registered country	Type of business	Participating interest (%) (including indirect holding)	
			Dec 31, 2018	Dec 31, 2017
<u>Subsidiaries</u>				
1. PTTEP International Limited (PTTEPI)	Thailand	Petroleum	100	100
2. PTTEP Offshore Investment Company Limited (PTTEPO)	Cayman Islands	Petroleum	100	100
3. PTTEP Services Limited (PTTEP Services)	Thailand	Human resource support	100	100
4. PTTEP Siam Limited (PTTEPS)	Thailand	Petroleum	100	100
5. PTTEP HK Holding Limited (PTTEP HK)	Hong Kong	Petroleum	100	100
6. PTTEP Treasury Center Company Limited (PTTEP TC)	Thailand	Treasury center for the Group's business	100	100
7. PTTEP Energy Holding (Thailand) Company Limited (PTTEP EH) ¹	Thailand	Petroleum	100	-
8. PTTEP Business Center Company Limited (PTTEP BC)	Thailand	Petroleum	100	100
9. PTTEP Energy Development Company Limited (PTTEP ED) ²	Thailand	Petroleum	100	-
10. EP-Tech Ventures Holding Company Limited (EP-Tech) ³	Thailand	Petroleum-related Technology	100	-
11. AI and Robotics Ventures Company Limited (ARV) ⁴	Thailand	Technology	100	-
12. PTTEP Southwest Vietnam Company Limited (PTTEP SV)	Cayman Islands	Petroleum	100	100
13. PTTEP Kim Long Vietnam Company Limited (PTTEP KV)	Cayman Islands	Petroleum	100	100
14. PTTEP Hoang-Long Company Limited (PTTEP HL)	Cayman Islands	Petroleum	100	100
15. PTTEP Hoan-Vu Company Limited (PTTEP HV)	Cayman Islands	Petroleum	100	100
16. PTTEP Algeria Company Limited (PTTEP AG)	Cayman Islands	Petroleum	100	100
17. PTTEP Holding Company Limited (PTTEPH)	Cayman Islands	Petroleum	100	100

¹ On May 8, 2018, the Company established PTTEP Energy Holding (Thailand) Company Limited (PTTEP EH), as disclosed in Note 18.6 - Significant Transactions during the Year.

² On May 9, 2018, the Group established PTTEP Energy Development Company Limited (PTTEP ED), as disclosed in Note 18.6 – Significant Transactions during the Year.

³ On June 4, 2018, the Group established EP-Tech Ventures Holding Company Limited (EP-Tech), as disclosed in Note 18.6 – Significant Transactions during the Year.

⁴ On September 21, 2018, the Group established AI and Robotics Ventures Company Limited (ARV), as disclosed in Note 18.6 – Significant Transactions during the Year.

Company name	Registered country	Type of business	Participating interest (%) (including indirect holding)	
			Dec 31, 2018	Dec 31, 2017
<u>Subsidiaries (continued)</u>				
18. PTTEP Indonesia Company Limited (PTTEP ID)	Cayman Islands	Petroleum	100	100
19. PTTEP Africa Investment Limited (PTTEP AI)	Cayman Islands	Petroleum	100	100
20. PTTEP Rommana Company Limited (PTTEPR) ⁵	Cayman Islands	Petroleum	-	100
21. PTTEP Australia Pty Ltd (PTTEP AU)	Commonwealth of Australia	Petroleum	100	100
22. PTTEP Australia Offshore Pty Ltd (PTTEP AO)	Commonwealth of Australia	Petroleum	100	100
23. PTTEP South Asia Limited (PTTEP SA)	Cayman Islands	Petroleum	100	100
24. PTTEP Semai II Limited (PTTEP SM)	Cayman Islands	Petroleum	100	100
25. PTTEP Australia Perth Pty Ltd (PTTEP AP)	Commonwealth of Australia	Petroleum	100	100
26. PTTEP Australia Browse Basin Pty Ltd (PTTEP AB)	Commonwealth of Australia	Petroleum	100	100
27. PTTEP Australia Timor Sea Pty Ltd (PTTEP AT)	Commonwealth of Australia	Petroleum	100	100
28. PTTEP Australasia (Operations) Pty Ltd (PTTEP AAO)	Commonwealth of Australia	Petroleum	100	100
29. PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AAA)	Commonwealth of Australia	Petroleum	100	100
30. PTTEP Australasia (Staff) Pty Ltd (PTTEP AAS)	Commonwealth of Australia	Petroleum	100	100
31. PTTEP International Holding Company Limited (PTTEP IH)	Cayman Islands	Petroleum	100	100
32. PTTEP Southwest Vietnam Pipeline Company Limited (PTTEP SVPC)	Cayman Islands	Gas pipeline transportation	100	100
33. PTTEP FLNG Holding Company Limited (PTTEP FH) ⁶	Hong Kong	Petroleum	100	100
34. PTTEP Netherland Holding Limited (PTTEP NL)	Cayman Islands	Petroleum	100	100
35. JV Marine Limited (JV Marine)	Cayman Islands	Petroleum	100	100
36. PTTEP South Mandar Limited (PTTEP SMD)	Cayman Islands	Petroleum	100	100
37. PTTEP South Sageri Limited (PTTEP SS)	Cayman Islands	Petroleum	100	100
38. PTTEP Sadang Limited (PTTEP SD)	Cayman Islands	Petroleum	100	100

⁵ On June 29, 2018, PTTEP Rommana Company Limited (PTTEPR) received the approval of dissolution of the company from the registrar, as disclosed in Note 18.6 – Significant Transactions during the Year.

⁶ On August 24, 2017, the Company approved for the registration for the dissolution of PTTEP FLNG Holding Company Limited (PTTEP FH). It is currently in the process of the dissolution.

Company name	Registered country	Type of business	Participating interest (%) (including indirect holding)	
			Dec 31, 2018	Dec 31, 2017
Subsidiaries (continued)				
39. PTTEP Malunda Limited (PTTEP ML)	Cayman Islands	Petroleum	100	100
40. PTTEP Netherlands Coöperatie U.A. (PTTEP NC)	Netherlands	Petroleum	100	100
41. PTTEP Canada Limited (PTTEP CA)	Canada	Petroleum	100	100
42. PTTEP Canada International Finance Limited (PTTEP CIF)	Canada	Investment funding for the Group's business	100	100
43. Cove Energy Limited (Cove)	United Kingdom of Great Britain and Northern Ireland	Petroleum	100	100
44. Cove Energy Mozambique Rovuma Onshore Limited (CEMROL) ⁷	Republic of Cyprus	Petroleum	100	100
45. Cove Energy East Africa Limited (CEEAL)	Republic of Cyprus	Petroleum	100	100
46. PTTEP Mozambique Area 1 Limited (PTTEP MZA1)	Republic of Cyprus	Petroleum	100	100
47. Cove Energy Kenya Limited (CEKL) ⁸	Republic of Kenya	Petroleum	100	100
48. PTTEP Netherlands Holding Coöperatie U.A. (PTTEP NH)	Netherlands	Petroleum	100	100
49. PTTEP Brazil Investment B.V. (PTTEP BI)	Netherlands	Petroleum	100	100
50. PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL)	Federative Republic of Brazil	Petroleum	100	100
51. Sinphuhorm Holdings Limited (SHL)	Cayman Islands	Petroleum	100	100
52. PTTEP SP Limited (PTTEP SP)	United Kingdom of Great Britain and Northern Ireland	Petroleum	100	100
53. PTTEP G7 Limited (PTTEP G7)	Thailand	Petroleum	100	100
54. PTTEP HK Offshore Limited (PTTEP HKO)	Hong Kong	Petroleum	100	100
55. PTTEP MENA Limited (PTTEP MENA) ⁹	Hong Kong	Petroleum	100	-
56. PTTEP Mexico E&P Limited, S.de R.L. de C.V. (PTTEP MEP)	Mexico	Petroleum	100	100

⁷ On May 22, 2017, the Company approved for the registration for the dissolution of Cove Energy Mozambique Rovuma Onshore Limited (CEMROL). It is currently in the process of the dissolution.

⁸ On May 22, 2017, the Company approved for the registration for the dissolution of Cove Energy Kenya Limited (CEKL). It is currently in the process of the dissolution.

⁹ On September 19, 2018, the Group established and registered as a shareholder of PTTEP MENA Limited (PTTEP MENA), as disclosed in Note 18.6 – Significant Transactions during the Year.

Company name	Registered country	Type of business	Participating interest (%) (including indirect holding)	
			Dec 31, 2018	Dec 31, 2017
<u>Associates</u> ¹⁰				
1. Energy Complex Company Limited (Energy Complex)	Thailand	Property rental services	50	50
2. PTT Digital Solutions Company Limited (PTT Digital)	Thailand	Information technology and communication services	20	20
3. PTTEP AP Group's Associates ¹¹	Commonwealth of Australia	Air base services	50	50
4. PTT Global LNG Company Limited (PTTGL)	Thailand	Petroleum	50	50
5. Leismer Aerodrome Limited (LAL)	Canada	Air transportation	32	-
<u>Joint Ventures</u> ¹²				
Erawan 2 FSO Bahamas Limited (Erawan 2) ¹³	Bahamas	FSO rental services	13.11	13.11
<u>Joint Operations</u>				
1. Carigali – PTTEPI Operating Company Sdn Bhd. (CPOC)	Malaysia	Petroleum	50	50
2. Moattama Gas Transportation Company (MGTC)	Bermuda	Gas pipeline transportation	25.5	25.5
3. Taninthayi Pipeline Company LLC (TPC)	Cayman Islands	Gas pipeline transportation	19.3178	19.3178
4. Orange Energy Limited (Orange)	Thailand	Petroleum	53.9496	53.9496
5. B8/32 Partners Limited (B8/32 Partners)	Thailand	Petroleum	25.0009	25.0009
6. Hoang-Long Joint Operating Company	Socialist Republic of Vietnam	Petroleum	28.5	28.5
7. Hoan-Vu Joint Operating Company	Socialist Republic of Vietnam	Petroleum	25	25
8. Leismer Aerodrome Limited (LAL) ¹⁴	Canada	Air transportation	-	32

¹⁰ All investments in associates have been assessed as immaterial to the Group.

¹¹ PTTEP AP's group associates are Mungalalu Truscott Airbase Pty Ltd and Troughton Island Pty Ltd.

¹² All investments in joint ventures have been assessed as immaterial to the Group

¹³ Erawan 2 has a 100% shareholding in Asia Pacific Marine Services (EF) B.V.

¹⁴ During 2018, the Group revisited the classification of the investment according to current situations. As a result, the investment is classified as investment in associate, accounted for using the equity method.

Company name	Registered country	Type of business	Participating interest (%) (including indirect holding)	
			Dec 31, 2018	Dec 31, 2017
Joint Operations (continued)				
9. Groupement Bir Seba (GBRS)	People's Democratic Republic of Algeria	Petroleum	35	35
10. Andaman Transportation Limited (ATL)	Cayman Islands	Gas pipeline transportation	80	80
11. Natuna 2 B.V. (Natuna 2)	Netherlands	Petroleum	50	50
12. Mozambique LNG1 Company Pte. Ltd. (MZ LNG1) ¹⁵	Singapore	Petroleum	-	8.5

4.3 Net Book Value

As at December 31, 2018, PTTEP's net book value amounted to 12,020 MMUSD (equivalent to 390,063 MMTHB) or USD 3.03 per share (equivalent to THB 98.25 per share).

¹⁵ During 2018, the Group revisited the classification of the investment according to current situations. As a result, the investment is classified as other long-term investment, accounted for using the cost method.



▶▶ 5. Legal Dispute

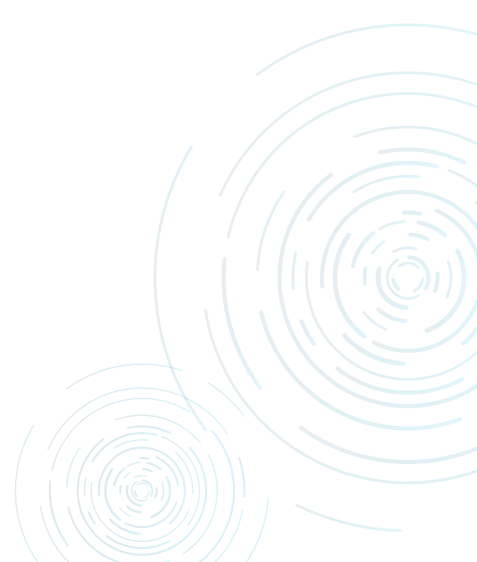
As of December 31, 2018, the outstanding legal dispute which PTTEP or one of the Company's subsidiaries is a party involved as well as which can significantly affect our operation or the subsidiary's, excluding dispute from the normal operation and circumstance, is as follows:

5.1 PTTEP Australasia (Ashmore Cartier) Pty Ltd ("PTTEP AAA") was sued for damages at the Federal Court of Australia by a group of Indonesian seaweed farmers.

On August 3, 2016, a group of Indonesian seaweed farmers filed a lawsuit against PTTEP AAA at the Federal Court of Australia, claiming for the damages caused by 2009 Montara incident in Australia. The lawsuit was filed after the lapsing of the period of prescription for claims. However, the Federal Court of Australia has granted an extension of the limitation period due to certain legal exceptions on November 15, 2017. As of December 31, 2018, the case was still under the court proceeding. This lawsuit did not state the amount of claim.

Regarding the lawsuit filed by the Ministry of Environment and Forestry of Indonesia against PTTEP and PTTEP AAA at the Central Jakarta District Court of Indonesia on May 3, 2017, the court has dismissed the case as per the plaintiff's request to revoke the lawsuit.

PTTEP and PTTEP AAA continue to maintain the position, based on independent scientific researches overseen by the Australian Government, that no oil from Montara reached the shores of Australia or Indonesia, that there is no lasting impact on the ecosystems and biodiversity in Australian waters in the areas immediate to Indonesian waters, and that there is no long-term damage to the environment in the Timor Sea.





▶▶ 6. General Information and Other Significant Information

6.1 Information of PTTEP

Company Name	PTT Exploration and Production Public Company Limited or PTTEP
Headquarters Address	555/1 Energy Complex Building A, 6 th and 19 th – 36 th floor, Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900, Thailand
Type of Business	Exploration and production of petroleum and investments in related businesses
Registration Number	0107535000206
Telephone	+66-2537-4000
Facsimile	+66-2537-4444
Website	www.pttep.com
E-mail	Independent Directors: independentdirector@pttep.com Investor Relations: ir@pttep.com Corporate Secretary: corporatesecretary@pttep.com
Registered Capital	3,969,985,400 ordinary shares with THB 1 per share (THB 3,969,985,400)
Paid-Up Capital	3,969,985,400 ordinary shares with THB 1 per share (THB 3,969,985,400) as of December 31, 2018

6.2 Subsidiaries' Information¹

As of December 31, 2018, there were 63 subsidiaries as follows:

- Subsidiaries with the same contact address, telephone and facsimile numbers as PTTEP as in 6.1. Details of the directors designated by the PTTEP Group for each subsidiary are disclosed in Attachment 2.

No.	Company Name	Abbreviation	Number of Shares Sold	Shareholders
E&P and Related Businesses				
1.	PTTEP International Limited	PTTEPI	2,000,000,000	PTTEP 100%
2.	PTTEP Siam Limited	PTTEPS	1,000,000	PTTEP 51% PTTEPO 49%
3.	Orange Energy Limited	Orange	1,000,000	PTTEPO 53.95% MOECO B.V. 36.05% KrisEnergy 10%
4.	PTTEP G7 Limited	PTTEP G7	7,238,741	PTTEPI 100%
5.	PTTEP Energy Holding (Thailand) Company Limited	PTTEPEH	53,282,230	PTTEP 100%
6.	PTTEP Energy Development Company Limited	PTTEPED	805,000	PTTEP EH 100%
7.	EP-Tech Ventures Holding Company Limited	EP-Tech	310,000	PTTEP EH 100%
8.	JV Marine Limited	JV Marine	50,000	PTTEP IH 100%
9.	PTTEP Algeria Company Limited	PTTEP AG	50,000	PTTEPO 100%
10.	PTTEP Africa Investment Limited	PTTEP AI	50,000	PTTEPH 100%
11.	PTTEP Holding Company Limited	PTTEPH	50,000	PTTEPO 100%
12.	PTTEP Hoang-Long Company Limited	PTTEP HL	50,000	PTTEPO 100%
13.	PTTEP Hoan-Vu Company Limited	PTTEP HV	50,000	PTTEPO 100%
14.	PTTEP Indonesia Company Limited	PTTEP ID	50,000	PTTEPH 100%
15.	PTTEP International Holding Company Limited	PTTEP IH	50,000	PTTEPH 100%
16.	PTTEP Kim Long Vietnam Company Limited	PTTEP KV	50,000	PTTEPO 100%
17.	PTTEP Malunda Limited	PTTEP ML	50,000	PTTEP ID 100%

¹ Notification of the Securities and Exchange Commission No. Kor Chor. 17/2551, Re: Determination of Definitions in Notifications relating to Issuance and Offer for Sale of Securities

No.	Company Name	Abbreviation	Number of Shares Sold		Shareholders	
18.	PTTEP South Asia Limited	PTTEP SA	50,000	Ordinary Share	PTTEPH	100%
19.	PTTEP Netherland Holding Limited	PTTEP NL	50,000	Ordinary Share	PTTEP IH	100%
20.	PTTEP Offshore Investment Company Limited	PTTEPO	6,667	Ordinary Share	PTTEP PTTEPI	75% 25%
21.	PTTEP Sadang Limited	PTTEP SD	50,000	Ordinary Share	PTTEP ID	100%
22.	PTTEP Semai II Limited	PTTEP SM	50,000	Ordinary Share	PTTEP ID	100%
23.	PTTEP South Mandar Limited	PTTEP SMD	50,000	Ordinary Share	PTTEP ID	100%
24.	PTTEP South Sageri Limited	PTTEP SS	50,000	Ordinary Share	PTTEP ID	100%
25.	PTTEP Southwest Vietnam Company Limited	PTTEP SV	50,000	Ordinary Share	PTTEPO	100%
26.	Sinphuhorn Holdings Limited	SHL	100	Ordinary Share	PTTEPO	100%
27.	PTTEP Australia Pty Ltd	PTTEP AU	50,000	Ordinary Share	PTTEPH	100%
28.	PTTEP Australia Offshore Pty Ltd	PTTEP AO	50,000	Ordinary Share	PTTEP AU	100%
29.	PTTEP Australia Perth Pty Ltd	PTTEP AP	50,000	Ordinary Share	PTTEPH	100%
30.	PTTEP Australia Browse Basin Pty Ltd	PTTEP AB	50,000	Ordinary Share	PTTEP AP	100%
31.	PTTEP Australasia (Staff) Pty Ltd	PTTEP AAS	10	Ordinary Share	PTTEP AB	100%
32.	PTTEP Australasia (Ashmore Cartier) Pty Ltd	PTTEP AAA	1,700,000	Ordinary Share	PTTEP AB	100%
33.	PTTEP Australasia (Operations) Pty Ltd	PTTEP AAO	106,686,517	Ordinary Share	PTTEP AB	100%
34.	PTTEP Australia Timor Sea Pty Ltd	PTTEP AT	50	Ordinary Share	PTTEP AB	100%
35.	PTTEP Netherlands Coöperatie U.A.	PTTEP NC	-	-	PTTEP IH PTTEP NL	0.00005% 99.99995%
36.	PTTEP Netherlands Holding Coöperatie U.A.	PTTEP NH	-	-	PTTEP HK PTTEPI	75% 25%
37.	PTTEP Brazil Investment B.V.	PTTEP BI	50,000	Ordinary Share	PTTEP NH	100%
38.	PTTEP Canada Limited	PTTEP CA	2,968,254,040	Ordinary Share	PTTEP NC	100%
39.	PTTEP FLNG Holding Company Limited	PTTEP FH	10,000	Ordinary Share	PTTEP IH	100%
40.	PTTEP HK Holding Limited	PTTEP HK	10,000	Ordinary Share	PTTEP PTTEPI	25% 75%

No.	Company Name	Abbreviation	Number of Shares Sold	Shareholders
41.	Cove Energy Limited	COVE	63,840,000	PTTEP AI 100%
42.	Cove Energy East Africa Limited	CEEAL	1,000	COVE 100%
43.	Cove Energy Mozambique Rovuma Onshore Limited	CEMROL	1,000	CEEAL 100%
44.	PTTEP Mozambique Area 1 Limited	PTTEP MZA1	1,000	CEEAL 100%
45.	Cove Energy Kenya Limited	CEKL	1,000	CEEAL 99.9% COVE 0.1%
46.	PTTEP Brasil Investimentos Em Exploração e Produção de Petróleo e Gás Ltda.	PTTEP BL	790,293,700	PTTEP BI PTTEP NH 99.99999999% 0.00000001%
47.	PTTEP SP Limited	PTTEP SP	2	SHL 100%
			61,279,585	
48.	PTTEP HK Offshore Limited	PTTEP HKO	10,000	PTTEP HK 100%
49.	PTTEP Mexico E&P Limited, S. de R.L. de C.V.	PTTEP MEP	3,000	PTTEP HK 99% PTTEP HKO 1%
50.	PTTEP MENA Limited	PTTEP MENA	500	PTTEP BC 100%
Service Business				
51.	PTTEP Services Limited (Personnel services support)	PTTEP Services	1,000,000	PTTEP PTTEPI 25% 75%
52.	Andaman Transportation Limited (Investments in gas pipeline projects in Myanmar)	ATL	62,500	PTTEPO MOGE 80% 20%
53.	PTTEP Southwest Vietnam Pipeline Company Limited (Investments in gas pipeline projects in Vietnam)	PTTEP SVPC	50,000	PTTEPH 100%
54.	PTTEP Canada International Finance Limited (Raise fund for PTTEP business)	PTTEP CIF	50,000	PTTEP NC 100%
55.	PTTEP Treasury Center Company Limited (Treasury center for PTTEP and subsidiaries)	PTTEP TC	10,000,000	PTTEP PTTEPI 25% 75%
56.	PTTEP Business Center Company Limited (Business center for PTTEP and subsidiaries)	PTTEP BC	521,572,300	PTTEP EH 100%

No.	Company Name	Abbreviation	Number of Shares Sold		Shareholders
Other Busiess					
57.	AI and Robotics Ventures Company Limited	ARV	300,000	Ordinary Share	EP-Tech 100%

- Subsidiaries with different contact address, telephone and facsimile numbers from PTTEP².

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
58.	Carigali-PTTEPI Operating Company SDN BHD	Petroleum Exploration and Production	CPOC	350,000	<ul style="list-style-type: none"> PTTEPI 50% PC JDA 50%
	Head Office: Level 8, Tower 2, PETRONAS Twin Towers Kuala Lumpur City Center, 50088 Kuala Lumpur, Malaysia				
	Telephone: +603-2782-2555 Facsimile: +603-2713-9877				
59.	PTT Global LNG Company Limited	Investment in LNG Business	PTTGL	10,421,446,000	<ul style="list-style-type: none"> PTT 50% PTTEP BC 50%
	Head Office: 555/1 Energy Complex Building A, 6 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand				
	Telephone: +66-2140-4599 Facsimile: +66-2140-4559				
60.	Energy Complex Company Limited	Property Leasing	EnCo	180,000,000	<ul style="list-style-type: none"> PTTEP 50% PTT 50%
	Head Office: 555/1 Energy Complex Building A, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand				
	Telephone: +66-2140-1000 Facsimile: +66-2140-1122				

² Details of directors designated by the PTTEP Group of each subsidiary are disclosed in Attachment 2.

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
61.	Mungatalu Truscott Airbase Pty Ltd	Air Base Operations	-	600	<ul style="list-style-type: none"> ● PTTEP AAO 50% ● Mr. Arthur Hamilton 41.667% ● Mr. Alex Wood 8.333%
	Head Office: Unit 8, 9 Swan Crescent, Winnellie, Northern Territory, 0820, Australia				
	Telephone: +61-8-8981-6981				
	Facsimile: +61-8-8918-8017				
62.	Troughton Island Pty Ltd	Air Base Operations (Secondary)	-	100	<ul style="list-style-type: none"> ● PTTEP AAO 50% ● Mr. Arthur Hamilton 44% ● Mr. Alex Wood 6%
	Head Office: Unit 8, 9 Swan Crescent, Winnellie, Northern Territory, 0820, Australia				
	Telephone: +61-8-8981-6981				
	Facsimile: +61-8-8918-8017				
63.	Natuna 2 B.V.	Petroleum Exploration and Production	Natuna	90,000	<ul style="list-style-type: none"> ● PTTEP NH 50% ● PHE OG 50%
	Head Office: Atrium Building, 8 th Floor, Strawinskylaan 3127, 1077 ZX, Amsterdam, The Netherlands				
	Telephone: -				
	Facsimile: -				

Remarks: Names of other shareholders in the subsidiaries

Abbreviation	Name
PTT	PTT Public Company Limited
PC JDA	PC JDA Ltd.
PHE OG	Pertamina Hulu Energi Oil and Gas Company
KrisEnergy	KrisEnergy (Gulf of Thailand) Ltd.
MOGE	Myanmar Oil and Gas Enterprise
MOECO B.V.	MOECO International B.V.

6.3 Associated Companies' Information³

As of December 31, 2018, PTTEP had 13 associated companies. Details of the directors designated by the PTTEP Group for each associated company are disclosed in Attachment 2.

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
1.	PTT Digital Solutions Company Limited	Information Technology and Communication Services	PTT Digital	15,000,000	Ordinary Share
	Head Office: 555/1 Energy Complex Building A, 4 th -5 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Telephone: +66-2537-3456 Facsimile: +66-2537-2935				
2.	Moattama Gas Transportation Company	Gas Pipeline in Myanmar	MGTC	1,000,000	Ordinary Share
	Head Office: No. 5 Sacred Tooth Relic Lake Avenue, Punn Pin Gone Quarter No. 5, Mayangon Township, Yangon, Myanmar Telephone: +95-1-650-977, 660-466 Facsimile: +95-1-650-478, 650-479				
3.	Taninthayi Pipeline Company LLC	Gas Pipeline in Myanmar	TPC	100,000	Ordinary Share
	Head Office: 16 Shwe Taung Kyar Bahan, Yangon, Myanmar Telephone: +95-1-526-411-4 Facsimile: +95-1-525-698				
4.	B8/32 Partners Limited	Petroleum Exploration and Production	B 8/32 Partners	110,000	Ordinary Share
	Head Office: 19 Siam Commercial Bank Park Plaza, East 3 rd Building, 5 th Floor, Ratchadaphisek Road, Chatuchak, Bangkok 10900, Thailand Telephone: +66-2545-5555 Facsimile: -				

³ Notification of the Securities and Exchange Commission No. Kor Chor. 17/2551, Re: Determination of Definitions in Notifications relating to Issuance and Offer for Sale of Securities

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
5.	Hoang Long Joint Operating Company	Petroleum Exploration and Production	HL JOC	- ⁴	<ul style="list-style-type: none"> ● PTTEP HL 28.5% ● PVEP 41% ● SOCO 28.50% ● OPECO 2.0%
	Head Office: Suite 2001, Me Linh Point Tower, 2 Ngo Duc Ke Street, District 1, Ho Chi Minh City, S.R. Vietnam				
	Telephone: +84-8-3829-9359				
	Facsimile: +84-8-3822-6106				
6.	Hoan-Vu Joint Operating Company	Petroleum Exploration and Production	HV JOC	- ⁵	<ul style="list-style-type: none"> ● PTTEP HV 25% ● SOCO 25% ● PVEP 50%
	Head Office: Suite 2006, Me Linh Point Tower, 2 Ngo Duc Ke Street, District 1, Ho Chi Minh City, S.R. Vietnam				
	Telephone: +84-8-3823-9525				
	Facsimile: +84-8-3823-9526				
7.	Groupement Bir Seba	Petroleum Exploration and Production	GBRS	- ⁶	<ul style="list-style-type: none"> ● PTTEP AG 35% ● PVEP 40% ● Sonatrach 25%
	Head Office: Zone d'activité Route Nationale N°3 BP 256 EURO JAPAN Hassi Messaoud, Ouargla, Algeria				
	Telephone: +213-29-79-71-66				
	Facsimile: +213-29-79-09-15				
8.	Erawan 2 FSO Bahamas Ltd.	Lease of FSO (vessel)	Erawan 2 FSO Bahamas	100	<ul style="list-style-type: none"> ● JV Marine 13.11% ● Chevron Global 65.91% ● MOECO 20.98%
	Head Office: Ocean Center, Montagu Foreshore, East Bay Street, Nassau, New Providence, Bahamas P.O. Box SS-19084				
	Telephone: -				
	Facsimile: -				

⁴ No share was issued. Percentage of shareholding is subject to participation interest in the concession.

⁵ No share was issued. Percentage of shareholding is subject to participation interest in the concession.

⁶ No share was issued. Percentage of shareholding is subject to participation interest in the concession.

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
9.	Leismer Aerodrome Limited	Air Base Operations	LAL	200	<ul style="list-style-type: none"> ● PTTEP CA 32% ● AOC Leismer Corner Partnership 48% ● FCCL 20%
	Head Office: 1200, 215 – 9 th Avenue SW				
	Calgary, AB T2P 1K3, Canada				
	Telephone: +1-403-237-8227				
	Facsimile: +1-403-264-4640				
10.	Mozambique LNG 1 Company Pte. Ltd.	Petroleum Exploration and Production	MZ LNG 1	250,000	<ul style="list-style-type: none"> ● PTTEP MZA1 8.5% ● ANADARKO 26.5% ● MITSUI 20% ● BPRL 10% ● BREML 10% ● ONGC Videsh 10% ● ENH 15%
	Head Office: 50 Raffles Place #60-00 Singapore				
	Land Tower Singapore 048623				
	Telephone: -				
	Facsimile: -				
11.	Sam Palung Social Enterprise Company Limited	Social Enterprise	SPSE	1,000,000	<ul style="list-style-type: none"> ● PTTEP 15% ● PTT 20% ● GC 15% ● ThaiOil 15% ● IRPC 15% ● GPSC 10% ● PTTOR 10%
	Head Office: 555/1 Energy Complex				
	Building A, 10 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand				
	Telephone: +66-2537-2971				
	Facsimile: -				
12.	Asia Pacific Marine Services (EF) B.V.	Lease of FSO (vessel)	Asia Pacific Marine Services	18,000	<ul style="list-style-type: none"> ● Erawan 2 FSO 100%
	Head Office: Naritaweg 165, Telestone 8, 1043 BW Amsterdam, The Netherlands				
	Telephone: -				
	Facsimile: -				

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
13.	PTTGL Investment Limited Head Office: 1401 Hutchison House 10 Harcourt Road, Hong Kong Telephone: - Facsimile: -	Investment in LNG Business	PTTGLI	309,825,000 Ordinary Share	● PTTGL 100%

Remarks: Names of other shareholders in the associated companies

Abbreviation	Name
PTT	PTT Public Company Limited
GC	PTT Global Chemical Public Company Limited
ThaiOil	Thai Oil Public Company Limited
Chevron	Chevron Block B8/32 (Thailand) Ltd.
ANADARKO	Anadarko Mozambique Area 1 Limited
BPRL	BPRL Venture Mozambique B.V.
BREML	BEAS Rovuma Energy Mozambique Limited
Chevron Global	Chevron Global Energy Inc.
Erawan 2 FSO	Erawan 2 FSO Bahamas Ltd.
ENH	Empresa Nacional De Hidrocarbonetos
FCCL	FCCL Partnership
GPSC	Global Power Synergy Public Company Limited
KrisEnergy	KrisEnergy (Gulf of Thailand) Ltd.
MITSUMI	Mitsui E&P Mozambique Area 1 Ltd.
MOGE	Myanmar Oil and Gas Enterprise
MOECO B.V.	MOECO International B.V.
MOECO	Mitsui Oil Exploration Co., Ltd.
Nippon	Nippon Oil Exploration (Myanmar) Ltd.

Abbreviation	Name
ONGC Videsh	ONGC Videsh Ltd.
OPECO	OPECO Vietnam Ltd.
PCML	Petronas Carigali Myanmar (Hong Kong) Ltd.
PCM III	Petronas Carigali Myanmar III Inc.
PTTOR	PTT Oil and Retail Business Public Company Limited
PTTGL	PTT Global LNG Company Limited
PVEP	PetroVietnam Exploration & Production Corporation
SOCO	SOCO Vietnam Ltd.
Sonatrach	Société Nationale pour la Recherche, la Production, le Transport, la Transformation et la Commercialisation des Hydrocarbures
AOC Leismer Corner Partnership	Athabasca Oil Corporation
Total E&P Myanmar	Total E&P Myanmar SAS
Unocal Myanmar	Unocal Myanmar Offshore Co., Ltd.

6.4 References

1) Share Registrar

1.1)	Name	Thailand Securities Depository Company Limited
	Address	93, 14 th Floor, Rachadaphisek Road, Dindaeng, Bangkok 10400, Thailand
	Telephone	SET Contact Center: +66-2009-9999
	Website	http://www.set.or.th/tsd

2) Registrar and Paying Agent

2.1) Registrar and paying agent for THB 5,000 million debentures issued in May 2009, and THB 5,000 million subordinated capital debentures issued in June 2012

	Name	TMB Bank Public Company Limited
	Address	Floor 5A, 3000 Phahon Yothin Road, Chatuchak, Bangkok 10900, Thailand
	Telephone	+66-2299-1824, +66-2299-1825
	Facsimile	+66-2242-3270

2.2) Registrar and paying agent for THB 11,400 million debentures issued in June 2014, and THB 8,200 million debentures issued in June 2014

	Name	Siam Commercial Bank Public Company Limited
	Address	17 th Floor, North Wing, G Tower Grand Rama 9, 9 Rama 9 Road, Huai Khwang, Huai Khwang, Bangkok 10310, Thailand
	Telephone	+66-2128-2316
	Facsimile	+66-2128-4621, +66-2128-4622

3) Debenture Holders' Representative

3.1) Debenture holders' representative for THB 5,000 million debentures issued in May 2009, and THB 5,000 million subordinated perpetual capital debentures issued in June 2012

	Name	Siam Commercial Bank Public Company Limited
	Address	17 th Floor, North Wing, G Tower Grand Rama 9, 9 Rama 9 Road, Huai Khwang, Huai Khwang, Bangkok 10310, Thailand
	Telephone	+66-2128-2316
	Facsimile	+66-2128-4621, +66-2128-4622

4) Trustee

- 4.1) Trustee for outstanding USD 700 million debentures issued in April 2011, outstanding USD 145 million subordinated perpetual capital debentures issued in June 2014, and outstanding USD 855 million subordinated perpetual capital debentures issued in July 2017

Name BNY Mellon Corporate Trust
Address #04-01 Millenia Tower, 1 Temasek Avenue, Singapore 039192
Telephone +65-6632-0473, +65-6432-0351, +65-6654-1037
Facsimile +65-6883-0338

- 4.2) Trustee for outstanding USD 490 million debentures issued in June 2012

Name Citicorp International Limited
Address 39th Floor, Champion Tower, Three Garden Road, Central, Hong Kong
Telephone +852-2868-7964
Facsimile +852-2323-0279

5) Registrar and Paying Agent

- 5.1) Registrar and paying agent for short-term bills of exchange with a total revolving credit of up to THB 50,000 million

Name TMB Bank Public Company Limited
Address Floor 5A, 3000 Phahon Yothin Road, Chom Phon, Chatuchak, Bangkok 10900, Thailand
Telephone +66-2299-1824, +66-2299-1825
Facsimile +66-2242-3270

6) Process Agent for Common Shares

- 6.1) **Name** CT Corporation System
Address 13th Floor, 111 Eighth Avenue, New York County (Manhattan), New York, New York, 10011
Telephone +1-212-894-8800, +1-212-894-8940
Facsimile -

7) Cross Currency Swap Counterparties

- 7.1) **Name** Deutsche Bank AG, Bangkok Branch
Division Corporate Treasury Sales
Address 63 Athenee Tower, 27th-29th Floor, Wireless Road, Lumpini, Pathumwan, Bangkok 10330, Thailand
Telephone +66-2646-5139
Facsimile +66-2651-5892

7.2) **Name** Siam Commercial Bank Public Company Limited
Division Financial Market Division
Address 12th Floor, Zone B, 9 Ratchadaphisek Road,
 Chatuchak, Bangkok 10900, Thailand
Telephone +66-2544-5741-9
Facsimile +66-2937-7968

8) FX Contracts Counterparties

8.1) **Name** Kasikornbank Public Company Limited
Division Capital Markets Business Division
Address 400/22 Phahon Yothin Avenue, Samsen-Nai, Phayathai,
 Bangkok 10400, Thailand
Telephone +66-2470-3006
Facsimile +66-2271-4486

8.2) **Name** Krung Thai Bank Public Company Limited
Division Corporate Sales, Global Markets Group
Address Building 1 (Nana Nua), 8th Floor, 35 Sukhumvit Road,
 Klongtoey Nua, Wattana, Bangkok 10110, Thailand
Telephone +66-2208-4644
Facsimile +66-2256-8398

8.3) **Name** Siam Commercial Bank Public Company Limited
Division Financial Market Division
Address 12th Floor, Zone B, 9 Ratchadaphisek Road,
 Chatuchak, Bangkok 10900, Thailand
Telephone +66-2544-5741-9
Facsimile +66-2937-7969

8.4) **Name** Bank of America, National Association, Bangkok Branch
Division Fixed Income Currencies and Commodities (FICC) Sales
Address 87/2 All Seasons Place, CRC Tower, 20th Floor,
 Wireless Road, Lumpini, Pathumwan, Bangkok 10330, Thailand
Telephone +66-2305-2988, +66-2305-2986
Facsimile +66-2685-3224

- 8.5) **Name** Citibank, N.A.
Division Corporate Sales & Structuring Thailand
Address Interchange 21 Building, 399 Sukhumvit Road,
Klongtoey Nua, Wattana, Bangkok 10110, Thailand
Telephone +66-2788-2785
Facsimile +66-2788-4825-8
- 8.6) **Name** CIMB Thai Bank Public Company Limited
Division Global Sales, Treasury Sales Division
Address 44 Langsuan Road, Lumpini, Pathumwan, Bangkok 10330, Thailand
Telephone +66-2670-4623, +66-2670-4658
Facsimile +66-2657-3282-3
- 8.7) **Name** Bank of Ayudhya Public Company Limited
Division Sales & Trading Division Global Markets Group
Address 550 Phloen Chit Road, Lumpini, Pathumwan, Bangkok 10330, Thailand
Telephone +66-2021-6380-1, +66-2021-6385, +66-2021-6207
Facsimile +66-2296-6908
- 8.8) **Name** Bangkok Bank Public Company Limited
Division Treasury Division
Address 333 Silom Road, Silom, Bangrak, Bangkok 10500, Thailand
Telephone +66-2021-1111
Facsimile +66-2636-4633
- 8.9) **Name** Oversea-Chinese Banking Corporation Limited
Division Global Markets
Address 1 Q.House Lumpini Building, 15th Floor,
South Sathon Road, Tungmahamek, Sathon, Bangkok 10120, Thailand
Telephone +66-2287-9852
Facsimile +66-2287-9898
- 8.10) **Name** TMB Bank Public Company Limited
Division Capital Markets
Address 3000 Phahon Yothin Road, Chatuchak, Bangkok 10900, Thailand
Telephone +66-2676-8008
Facsimile +66-2292-4690-2

8.11) **Name** Deutsche Bank AG, Bangkok Branch
Division Corporate Treasury Sales
Address 63 Athenee Tower, 27th-29th Floor, Wireless Road, Lumpini,
Pathumwan, Bangkok 10330, Thailand
Telephone +66-2646-5139
Facsimile +66-2651-5892

9) **Auditor**

9.1) **Name** State Audit Office of the Kingdom of Thailand
Address Soi Areesampan, Rama VI Road, Phayathai,
Bangkok 10400, Thailand
Telephone +66-2271-8025
Facsimile +66-2618-5800

10) **Legal Advisors**

10.1) **Name** Linklaters (Thailand) Ltd.
Address 20th Floor, Capital Tower, All Seasons Place,
87/1, Wireless Road, Bangkok 10330, Thailand
Telephone +66-2305-8000
Facsimile +66-2305-8010

10.2) **Name** Weerawong, Chinnavat & Partners Ltd.
Address 540 Mercury Tower 22nd Floor, Phloen Chit Road,
Lumpini, Pathumwan, Bangkok 10330, Thailand
Telephone +66-2264-8000
Facsimile +66-2657-2222

10.3) **Name** Siam Premier International Law Office Limited
Address 26th Floor, The Offices of Central World,
999/9 Rama I Road, Pathumwan, Bangkok 10330, Thailand
Telephone +66-2646-1888
Facsimile +66-2646-1919

10.4) **Name** Herbert Smith Freehills (Thailand) Limited
Address 1403 Abdulrahim Place, 990 Rama IV Road,
Silom, Bangrak, Bangkok 10500, Thailand
Telephone +66-2657-3888
Facsimile +66-2636-0657

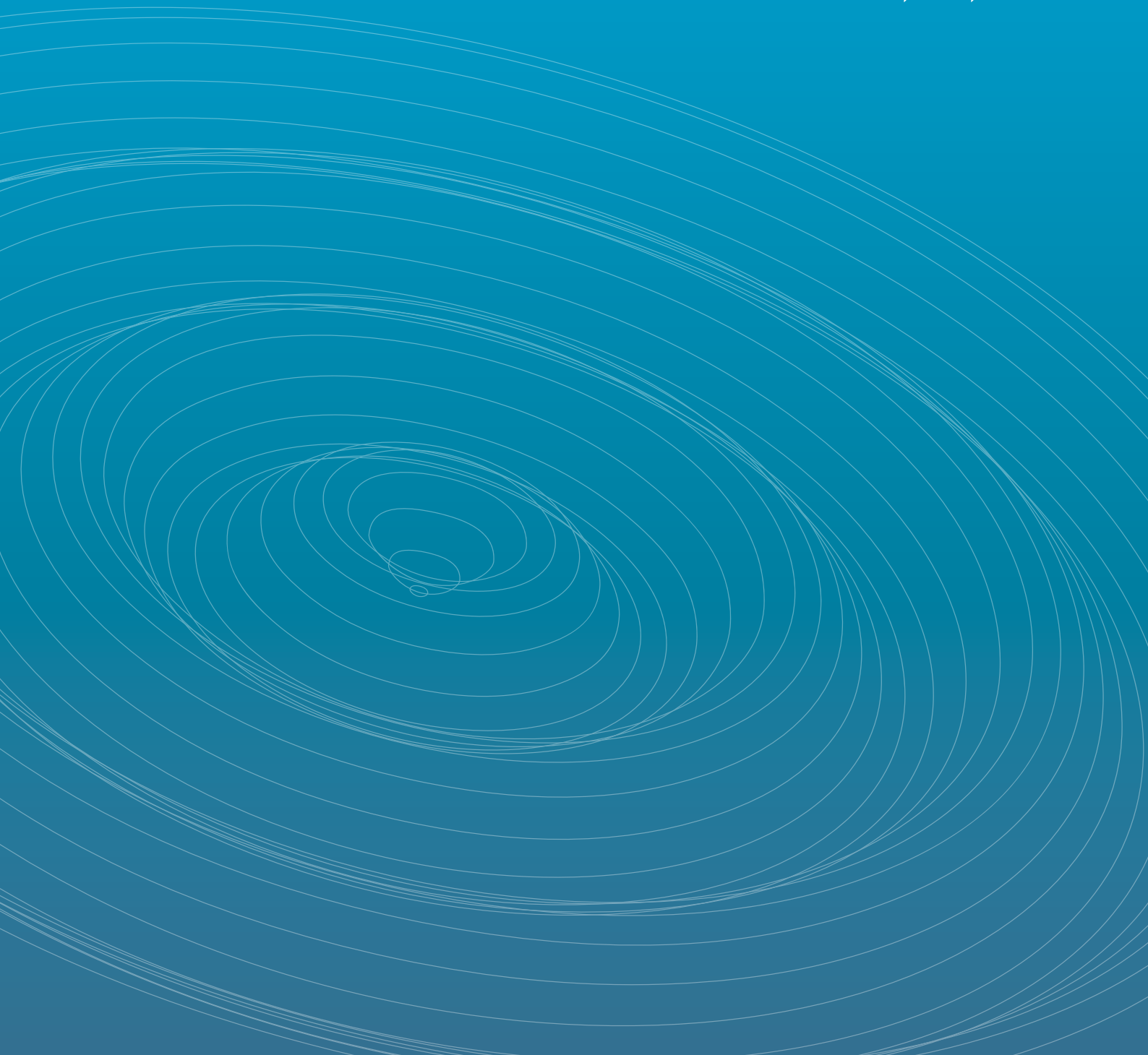
- 10.5) Name Allen & Overy LLP
Address Level 12, Exchange Tower,
2 The Esplanade, Perth WA 6000, Australia
Telephone +61-8-6315-5900
Facsimile -
- 10.6) Name Baker & McKenzie Abogados, S.C.
Address Edificio Virreyes, Pedregal 24, Piso 12,
Lomas Virreyes / Col. Molino del Rey
11040 México City, D.F.
Telephone +52-55-5279-2900
Facsimile +52-55-5279-2999
- 10.7) Name Fredrik J. Pinakunary Law Offices
Address Office 8 Building, 17th Floor,
Jl. Jenderal Sudirman Kav. 52-53
SCBD Lot. 28, Jakarta, Indonesia 12190
Telephone +62-21-2933-2990
Facsimile +62-21-2933-2992
- 10.8) Name Herbert Smith Freehills LLP
Address 50 Raffles Place, Singapore Land Tower #24-01, Singapore 048622
Telephone +65-6868-8000
Facsimile +65-6868-8001
- 10.9) Name Shearman & Sterling LLP
Address 6 Battery Road #25-03, Singapore 049909
Telephone +65-6230-3800
Facsimile +65-6230-3899
- 11) Advisor to the Board of Directors
- 11.1) Name Mr. Tongchat Hongladarom
Address 8 Room 8/48 Prasanmit Condominium, Sukhumvit 23,
Klongtoey-Nua, Wattana, Bangkok 10110, Thailand
Telephone +66-2258-4363
Facsimile +66-2258-4363

6.5 Other Significant Information

- None -

Section 2

Corporate
Governance





▶▶ 7. Securities and Shareholders

7.1 Capital Structure

As of December 31, 2018, PTTEP's capital structure comprised USD 1,946 million of interest-bearing debt and USD 12,021 million of shareholders' equity, amounting to an interest-bearing debt to shareholders' equity ratio of 0.16. Details of the capital structure are as follows:

7.1.1 Securities

Capital Stock

As of December 31, 2018, PTTEP's registered and paid-up capital was THB 3,969,985,400, consisting of 3,969,985,400 ordinary shares at a par value of THB 1 per share.

Debentures

PTTEP has investment-grade credit ratings of Baa1 and BBB+ from reputable international credit-rating agencies, namely, Moody's Investors Service ("Moody's") and Standard & Poor's Ratings Services ("Standard & Poor's"), respectively. In addition, the Company has also been given a rating of AAA, the highest credit rating, by TRIS Rating Co., Ltd. ("TRIS") which is a credit-rating agency in Thailand.

During 2018, PTTEP did not issue any domestic and international debentures. However, on March 27, 2018, PTTEP redeemed in full, the THB 2,500 million unsecured and unsubordinated debentures on the maturity date and on September 16, 2018, PTTEP fully redeemed our USD 323.45 million unsecured and unsubordinated debentures at the maturity.

As of December 31, 2018, PTTEP had the following outstanding debentures;

(1) Details of THB debentures (total outstanding amount: THB 24,600 million)

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding (Unit : THB Million)	Rate per annum	Credit Rating ¹	
							TRIS
THB debentures, unsecured, unsubordinated	May 29, 2009	May 29, 2019	10 years	5,000 ²	Fixed 4.80%, coupon payment: semi-annually		AAA
	June 6, 2014	June 6, 2019	5 years	8,200 ³	Fixed 3.91%, coupon payment: semi-annually		AAA
	June 6, 2014	June 6, 2029	15 years	11,400 ⁴	Fixed 4.82%, coupon payment: semi-annually		AAA

¹ The debentures were last rated by TRIS on March 29, 2018.

² In 2011, PTTEP entered into a CCS to swap THB 5,000 million for USD 161.81 million with an interest rate of 4.93% per annum.

³ In 2014, PTTEP entered into a CCS to swap THB 8,200 million for USD 251.07 million with an interest rate of 3.013% per annum.

⁴ In 2014, PTTEP entered into a CCS to swap THB 11,400 million for USD 349.05 million with an interest rate of 4.989% per annum.

(2) Details of USD debentures (total outstanding amount: USD 1,190 million)

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding (Unit : USD Million)	Rate per annum	Credit Rating ¹	
						Moody's	Standard & Poor's
USD debentures, unsecured, unsubordinated	April 5, 2011	April 5, 2021	10 years	700 ²	Fixed 5.692%, coupon payment: semi-annually	Baa1	BBB+
	June 12, 2012	June 12, 2042	30 years	490 ³	Fixed 6.350%, coupon payment: semi-annually	Baa1	BBB+

¹ The latest credit ratings were issued by Moody's on May 16, 2018 and Standard & Poor's on May 28, 2018.

² Issued by PTTEP CIF, and fully guaranteed by PTTEP.

³ Issued by PTTEP CIF, and fully guaranteed by PTTEP; and in 2013 repurchased in the amount of USD 10 million. As a result, the outstanding principal amount has been decreased from USD 500 million to USD 490 million.

(3) Details of THB Hybrid Bonds (total outstanding amount: THB 5,000 million)

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding (Unit : THB Million)	Rate per annum	Credit Rating ¹
THB Hybrid Bonds, unsecured, unconvertible, callable, subordinated debentures with single redemption upon liquidation which PTTEP can defer the distribution at its sole discretion	June 15, 2012	No maturity date ■ payment upon liquidation or ■ early redemption subject to terms & conditions	Perpetual	5,000 ²	<ul style="list-style-type: none"> ■ Year 1-10: 5.85% ■ Year 11-30: 6.10% ■ Year 31-60: 6.85% ■ Year 61 onwards: 7.85%, coupon payment: quarterly 	TRIS AA

¹ The latest credit rating was issued by TRIS on March 29, 2018.

² The accounting treatment of these hybrid bonds is such that they are recorded in shareholders' equity.

(4) Details of USD Hybrid Bonds (total outstanding amount: USD 1,000 million)

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding (Unit : USD Million)	Rate per annum	Credit Rating ¹	
						Moody's	Standard & Poor's
USD Hybrid Bonds, subordinated perpetual capital securities with the issuer's right to defer the distribution at its sole discretion	June 18, 2014	No maturity date <ul style="list-style-type: none"> ▪ payment upon liquidation or ▪ early redemption subject to terms & conditions 	Perpetual	145 ^{2,3}	<ul style="list-style-type: none"> ▪ Year 1-5: 4.875% ▪ Year 6-10: 5 Years UST+3.177% ▪ Year 11-25: 6M LIBOR+3.351% ▪ Year 26 onwards: 6M LIBOR+4.101%, coupon payment: semi-annually 	Baa3	BB+

¹ The latest credit ratings were issued by Moody's on May 16, 2018 and Standard & Poor's on May 28, 2018.

² The accounting treatment of these hybrid bonds is such that they are recorded in shareholders' equity.

³ PTTEP was the issuer and repurchased of USD 855 million in 2017, leaving the principal amount of USD 145 million from USD 1,000 million.

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding (Unit : USD Million)	Rate per annum	Credit Rating ¹	
						Moody's	Standard & Poor's
USD Hybrid Bonds, subordinated perpetual capital securities with the issuer's right to defer the distribution at its sole discretion	July 17, 2017	No maturity date <ul style="list-style-type: none"> ▪ payment upon liquidation or ▪ early redemption subject to terms & conditions 	Perpetual	500 ^{2,3}	<ul style="list-style-type: none"> ▪ Year 1-5: 4.60% ▪ Year 6-10: 5 Years UST+2.65% ▪ Year 11-25: 6M LIBOR+2.90% ▪ Year 26 onwards: 6M LIBOR+3.65% ▪ coupon payment: semi-annually 	Baa3	BB+
	July 26, 2017	No maturity date <ul style="list-style-type: none"> ▪ payment upon liquidation or ▪ early redemption subject to terms & conditions 	Perpetual	355 ^{2,3}	<ul style="list-style-type: none"> ▪ July 26, 2017 - June 2019: 4.875% ▪ June 2019 - June 2024: 5 Years UST+3.177% ▪ June 2024 - June 2039: 6M LIBOR+3.351% ▪ June 2039 onwards: 6M LIBOR+4.101% ▪ coupon payment: semi-annually 	Baa3	BB+

¹The latest credit ratings were issued by Moody's on May 16, 2018 and Standard & Poor's on May 28, 2018.

²The accounting treatment of these hybrid bonds is such that they are recorded in shareholders' equity.

³PTTEP TC was the issuer, fully guaranteed by PTTEP.

7.1.2 Number of Shares and the effects of NVDR Issuance on Shareholders' Voting Rights

An NVDR or Non-Voting Depository Receipt is a trading instrument issued by the Thai NVDR Company Limited, a wholly owned subsidiary of the Stock Exchange of Thailand (SET). NVDRs are treated as listed securities (Automatic Listing) on the SET. The objective of NVDRs is to promote trading activities in the Thai stock market by removing obstacles such as foreign investment limits and other impediments faced by international institutional investors investing in listed securities on the SET. NVDR investors are entitled to receive all financial benefits, such as dividends, right issues, and warrants, as if they invest in common shares. The major difference between investing in NVDRs and ordinary shares is the lack of voting rights of the former. NVDR holders generally are not allowed to participate and vote in shareholders' meetings except only in the case where the company wishes to delist itself from the SET. In addition, although NVDRs are designed mainly to ease foreign investment barriers; the SET does not prohibit Thai investors from investing in the instrument.

As of February 13, 2019, as published on the official website of the SET, PTTEP had a total of 268,554,894 NVDRs outstanding, representing 6.76% of the Company's total issued and paid-up capital of 3,969,985,400 shares.

7.2 Shareholders

7.2.1 Major Shareholders

As of February 13, 2019, the major shareholders of PTTEP (owning more than 0.50% of PTTEP's paid-up shares) were as follows:

Rank	List of Major Shareholders	Number of Shares	% of Total Number of Shares
1.	PTT PUBLIC COMPANY LIMITED ¹	2,591,860,489	65.29
2.	THAI NVDR COMPANY LIMITED	268,554,894	6.76
3.	SOUTH EAST ASIA UK (TYPE C) NOMINEES LIMITED	103,347,170	2.60
4.	STATE STREET EUROPE LIMITED	86,103,580	2.17
5.	THE BANK OF NEW YORK MELLON	41,281,687	1.04
6.	SOCIAL SECURITY OFFICE	39,992,477	1.01
7.	THE BANK OF NEW YORK (NOMINEES) LIMITED	31,994,043	0.81
8.	EGAT SAVING AND CREDIT COOPERATIVE LIMITED	24,613,400	0.62
	Total number of shares held by major shareholders	3,187,747,740	80.30
	Total fully-paid capital as of February 13, 2019	3,969,985,400	100

Remarks: ¹The Ministry of Finance, Thailand, is the major shareholder of PTT Public Company Limited.

7.2.2 NVDR Holders*

Rank	NVDR holders (as of February 13, 2019)	Number of NVDR issues	% of total outstanding shares in underlying stock
1.	STATE STREET BANK AND TRUST COMPANY	42,875,431	1.08
2.	STATE STREET EUROPE LIMITED	34,152,523	0.86
3.	SOUTH EAST ASIA UK (TYPE C) NOMINEES LIMITED	30,391,820	0.77
	Total shares	107,419,774	2.71

Source: <http://www.set.or.th/set/companyholder.do?symbol=PTTEP-R>

7.2.3 Major Shareholder with Significant Influence over PTTEP's Policies or Operations

PTT, a major shareholder of PTTEP, takes part in determining PTTEP's policy and operations under the Board's approval. As of December 31, 2018, three out of the Company's 14 directors were either directors or executives from PTT.

7.2.4 The Company Enters into Shareholders' Agreement with Effect to Security Offering and Issuance or Management Power of the Company

- None -

7.3 Dividend Payment Policy

Under normal circumstances, according to the Company's policy, PTTEP's Board of Directors generally recommends to the shareholders an annual dividend payment of not less than 30% of net income after tax. The Board of Directors, as appropriate, may also resolve to pay interim dividends and subsequently inform the shareholders in the next shareholders' meeting. For the Company's subsidiaries, dividend policy is subject to cash flow, future investment plans, and other factors necessary for the continuity of their operations, and must be in compliance with related laws and regulations.

However, under the terms and conditions therein, the Company will not declare or make any dividend payments if the Company defers an interest payment or has deferred interest payments outstanding on the subordinated perpetual capital debentures No. 1/2555 of THB 5,000 million, issued in June 2012, outstanding subordinated perpetual capital debentures of USD 145 million, issued in June 2014; and outstanding subordinated perpetual capital debentures of USD 855 million, issued by PTTEP Treasury Center Company Limited (PTTEP TC) in July 2017 and guaranteed by PTTEP.

Five-year dividend payment history of PTTEP is as follows:

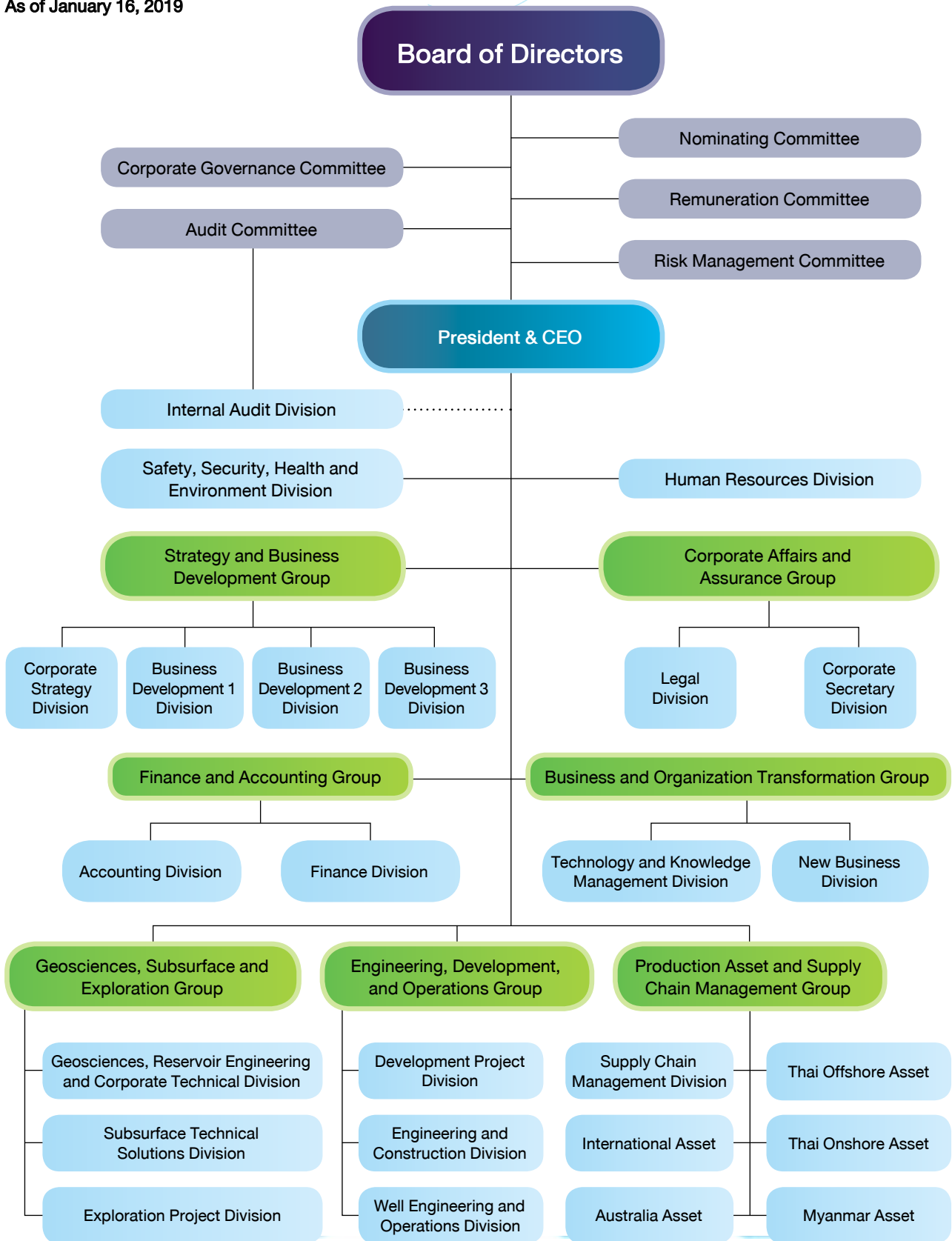
Year	2014	2015	2016	2017	2018
Earnings per Share (THB)	5.19	- 8.24	2.76	4.54	8.69
Dividend per Share (THB)	4.50	3.00	3.25	4.25	5.00
Dividend Payout Ratio	82%	N/A**	98%	90%	55.10%

* Since January 18, 2010, Thai NVDR Co., Ltd. has changed its rule to require a disclosure of names of NVDR holders having over 0.50% of paid-up capital of the underlying securities.

** Dividend Payout Ratio of 2015 is not available due to net loss.

▶▶ 8. Management Structure

As of January 16, 2019



Remarks: According to the organizational restructuring of PTTEP as of January 1, 2019, the work scope of President, Exploration and Production was combined with Chief Executive Officer and the title was renamed to President and Chief Executive Officer.

8.1 The Board of Directors

8.1.1 The Board's Structure

PTTEP's Board of Directors (Board) consists of qualified directors who possess a versatility of expertise with appropriate mix of skills suitable for the E&P industry. In 2018, PTTEP reviewed the Board's Skill Mix by classifying it to 12 subject matters under 2 categories.

(1) Core Skill: Basic expertise which is necessary for the directors to govern the Company, namely, business judgment, management skill & corporate governance, and business strategy

(2) Specific Skill: Specific expertise or experience which is useful for the directors to supervise and govern the Company, namely, industry knowledge, accounting, legal, international market, risk & crisis management, economics & finance, SSHE (Safety, Security, Health and Environment), technology, and organization change & development

The directors must not be over 70 years old and shall possess the qualifications according to the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE), laws relevant to public limited companies as well as those of the Securities and Exchange, and rules and regulations of the Securities Exchange Commission (SEC), the Capital Market Supervisory Board (CMSB), the Stock Exchange of Thailand (SET), and relevant resolutions of the Cabinet. The directors shall also commit and dedicate their time to fully perform the duties and responsibilities. The directors, for example, would be regarded as unqualified if absent from the Board's meeting for more than three consecutive times without a reasonable justification.

The Board structure consists of 15 directors, considered to be appropriate for the Company's operational size. The Board consists of non-executive and executive directors. In addition, the Board shall not comprise independent directors of less than half of the incumbent members. As of December 31, 2018, the Board consisted of 14 directors.

- 13 non-executive directors (92.86% of total members)
- 1 executive director: the President and Chief Executive Officer (CEO)
- 7 independent directors (50% of total members, a ratio which is not less than half of the incumbent members as required by law and the Company's CG&BE)

PTT is the only major shareholder of PTTEP, while the minor shareholders are dispersed. The aforementioned Board's component and proportion are therefore considered appropriate to maintain the balance within the Board for the best interests of the Company's shareholders.

Names, biography, qualifications, experience, and shareholding of the non-executive directors, executive directors, independent directors, and directors from PTT, are disclosed in the "Information of the Board of Directors, Management, Controlling Persons and Corporate Secretary" section as well as in PTTEP's annual report and website.

8.1.2 Authorities and Responsibilities of the Board

According to the principles of accountability, duty of care and duty of loyalty, the Board has been clearly defined of their roles and responsibilities and required to perform them strictly in line with those stipulated by the laws, objectives, Articles of Association of PTTEP, and resolutions of the shareholders' and Board's meetings. The scope of the authority and responsibilities of the Board is as follows:

- (1) To govern PTTEP's operations in compliance with the Company's CG&BE as well as to be a leader and role model in adopting, advising, communicating, and promoting the CG&BE among the employees and other organizations
- (2) To consider and approve of the statement of vision, mission, and corporate values of the PTTEP Group to ensure that they are effectively applicable and practical
- (3) To consider and approve of the PTTEP Group's strategic plan, business direction, targets, workforce structure, and other significant operations, including regularly monitoring and reviewing operation results to ensure that they are in line with the Company's strategy, operational direction, targets, and policies as planned with the emphasis on mobility and applicability to allow the management to effectively and efficiently manage the business, whilst considering the impacts on safety, security, health, environment, innovation and technology, as well as responsibility to the society.
- (4) To establish efficient and adequate internal control systems by having a clear set of regulations and work processes as well as having a standardized and reliable accounting system and financial reporting, appropriate and adequate risk management, effective compliance program, and monitoring system
- (5) To consider and approve significant matters as prescribed by the laws or in the Company's affidavits, policies or regulations, as well as matters that may result in corporate obligations
- (6) To consider the cases which are related to conflicts of interest in a prudent and transparent manner and to review the work process to ensure an appropriate check and balance for efficient internal control. In such case, reports of vested interests of oneself and/or those of related persons must be filed, including potential misuse of the Company's properties and execution of transactions with the Company's connected persons in an inappropriate way.
- (7) To ensure that the Company has clear and proper regulations, a standardized and reliable financial reporting, an efficient internal control system, and a proper risk management
- (8) To ensure that audits are performed effectively by internal and external auditors
- (9) To ensure that communication and disclosure of information to the Company's stakeholders are performed in an accurate, complete, appropriate, and timely manner
- (10) To ensure that the Company's stakeholders are treated with a fair and equal treatment
- (11) To consider, approve, and appoint specialists from different professional fields to provide the Company with insightful information as well as to act on the Company's behalf on significant matters which can significantly affect the financial standing and reputation of the PTTEP Group
- (12) To consider and approve the Board Performance Target as well as to evaluate performance of the Board, Chairman of the Board, and sub-committees
- (13) To consider and approve the Performance Agreement of the Chief Executive Officer (CEO) and the President of the Exploration and Production (PEP), as well as to evaluate performance and determine remuneration of the CEO and PEP. The Board is also responsible for ensuring that the Company has an effective performance evaluation process for the executives.
- (14) To consider and delegate appropriate authority to the CEO to manage the Company's operations according to the strategic plan, business direction, targets and policies of the organization, as well as to ensure that there is appropriate oversight and efficient monitoring and evaluation.

The Board is permitted to request for information and seek advices and services in regard to the Company's business operation from the management. In addition, if deemed necessary and appropriate, the directors may seek advices from external and independent advisors at the Company's expense.

8.1.3 Sub-Committees

8.1.3.1 The Corporate Governance Committee

PTTEP's Corporate Governance Committee has the duties and responsibilities according to its charter as follows:

- (1) To establish the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE) for the Board's approval for implementation throughout the organization
- (2) To promote the CG&BE to the Board, management, and employees to ensure that it is complied with in all areas of the Company's business operations
- (3) To review the Business Ethics of the Company as well as practices in regard to the Company's Good Corporate Governance to ensure that they are in line with relevant laws as well as practices of and recommendations from leading international organizations before proposing them to the Board for approval and corresponding them with the shareholders
- (4) To govern PTTEP to carry out an assessment of the Company's compliance with the CG&BE
- (5) To disclose information in regard to the Company's Good Corporate Governance to our stakeholders in the Company's annual report
- (6) To oversee and provide recommendations on the Corporate Social Responsibility (CSR) activities
- (7) To regularly review and update its own charter to ensure appropriateness
- (8) To disclose performance of the Corporate Governance Committee in the Company's annual report
- (9) To perform other duties relevant to the Good Corporate Governance of the PTTEP Group as assigned by the Board

The Corporate Governance Committee consists of at least three directors, in which the majority of the members must be independent directors. As of December 31, 2018, the Committee comprised three members as follows:

Admiral Tanarat Ubol	Chairman of the Committee and Vice Chairman of the Independent Directors Committee
Ms. Panada Kanokwat	Member and Independent Director
Mr. Pitipan Teparitargom	Member

According to its charter, the Committee must hold a meeting at least four times a year. In 2018, the Committee held 4 meetings, while all incumbent directors as well as the Company's Corporate Secretary, acting as the Committee's secretary, attended all the meetings. The Committee disclosed its annual performance in the Corporate Governance Committee Report for 2018.

8.1.3.2 The Audit Committee

PTTEP's Audit Committee has the duties and responsibilities according to its charter as follows:

- (1) To review the Company's financial reports with the external auditor on a quarterly basis to ensure accuracy and adequacy
- (2) To ensure that the Company's activities are performed in compliance with the securities and exchange laws, SET's regulations, and other laws related to the business
- (3) To review connected transactions or transactions that may lead to conflicts of interest to ensure that these transactions comply with the laws and SET's regulations and that they are reasonable as well as in the best interests of the Company
- (4) To ensure that the Company's internal control and internal audit systems are efficient and appropriate as well as that audit reports, audit approaches and results are performed and noted based on generally acceptable standards and relevant best practices, in addition to coordinating with the external auditor
- (5) To consider, select and propose an appointment of an external auditor^{*}, and to propose the audit's remuneration, as well as attend a non-executive meeting with the auditor at least once a year
- (6) To determine independence of the Internal Audit Division as well as to endorse appointments, transfers including removal, performance appraisal or punishments of the Head of the Internal Audit Division. The Audit Committee will appoint an Investigation Committee to investigate the Head of the division in case he or she is suspected of noncompliance to laws, the Company's rules and regulations, and the Good Corporate Governance and Business Ethics of the PTTEP Group.
- (7) To approve the annual audit plan
- (8) To endorse budget, division structure and manpower of the Internal Audit Division for the management to propose to the Board
- (9) To approve the charter of the Internal Audit Division
- (10) To approve the Conflict of Interest Declaration Form when the Head of the Internal Audit Division has to conduct the audit field work
- (11) To endorse the results from audits which were approved in the annual audit plan as well as special audit request
- (12) Chairman of the Audit Committee or a member has to attend the shareholders' meeting to answer questions in regard to the Committee's duties or the appointment of the external auditor
- (13) To annually review and update the Audit Committee Charter
- (14) To review the correctness of self-assessment and related documents in regard to the Anti-Corruption measures in reference to Thailand's Private Sector Collective Action Coalition Against Corruption (CAC)
- (15) To perform other duties as assigned by the Board upon its consent
- (16) To prepare and disclose the Audit Committee Report in the Company's annual report

Note: * The State Audit Act, B.E. 2561 (2018), Articles 4 and 53 prescribed that the Auditor General is authorized to audit the financial report and state its views on the audit results of the state enterprises including PTTEP which is regarded as a state enterprise under the definition of the Budget Procedures Act, B.E. 2561 (2018), Article 4.

The Audit Committee consists of at least three directors, but not more than five directors, all of whom must be independent directors. As of December 31, 2018, the Committee comprised three members, and all members are capable with knowledge, expertise, and experience in auditing financial statements. One of the members, Ms. Panada Kanokwat, holds a degree in accounting. Details are as follows:

Director Name	Position	Financial Statements Audit Experience
Mr. Achporn Charuchinda	Chairman of the Audit Committee	<ul style="list-style-type: none"> - 2013 - 2017 Board Member, The Bank of Thailand - 2013 - 2016 Director, Thai Smile Airways Co. Ltd. - 2013 - 2014 Member of the Audit Committee, Metropolitan Waterworks Authority - 2007 - 2013 Chairman of the Audit Committee, Bank of Thailand's Financial Institutions Development Funds
Ms. Panada Kanokwat	Member of the Audit Committee	<ul style="list-style-type: none"> - April 2018 - Present Member of the Audit Committee, TISCO Financial Group Plc. - April 2018 - Present Member of the Audit Committee, TISCO Bank Plc. - 2014 - April 3, 2018 Member of the Audit Committee, Global Power Synergy Plc. - 2015 - 2017 Chairman of the Audit Committee, Asia Biomass Plc. - 2013 - 2014 Member of the Audit Committee, TISCO Financial Group Plc. - 2013 - 2014 Member of the Audit Committee, TISCO Bank Plc.
Mr. Sethaput Suthiwart-Narueput	Member of the Audit Committee	<ul style="list-style-type: none"> - 2017 - Present Member of the Board of Directors, The Bank of Thailand Board - 2016 - Present Director, Osotspa Plc. - 2011 - 2012 Member of the Audit Committee, TMB Bank Plc. - Experiences in Financial Statement Analysis: <ul style="list-style-type: none"> (1) 2008 - 2009 President, SCB Asset Management Co., Ltd. (2) 2007 - 2008 Managing Director, Head of Research, SCB Securities Co., Ltd.

Mr. Achporn Charuchinda assumed the chairmanship and Mr. Sethaput Suthiwart-Narueput was appointed as a member of the Committee in replacement of Mr. Ampon Kittiampon on October 25, 2018.

According to the Audit Committee Charter, the Committee must hold a meeting on a quarterly basis. In 2018, the Committee held 16 meetings which include the meetings that were conducted together with the Risk Management Committee, and 69 agendas were considered. The majority of incumbent directors, including the Head of the Internal Audit Division who also acted as the Committee's secretary, attended all the meetings. The Committee disclosed its annual performance in the Audit Committee Report for 2018.

8.1.3.3 The Nominating Committee

PTTEP's Nominating Committee has the duties and responsibilities according to its charter as follows:

- (1) To select and nominate individuals who are qualified to be the Company's directors, the Chief Executive Officer (CEO) when there is a vacancy or to replace those whose term have expired, or an Acting CEO when there is a vacancy while the nomination process is still underway, for election by the Board or the shareholders, considering the Board composition, knowledge, capability, their useful experience to the Company, number of companies in which they are serving as a director, as well as their conflicts of interest
- (2) To consider the CEO's succession plan and appropriate executive-level management development system to ensure the skills and qualifications as required to achieve the Company's target growth
- (3) To approve the Skill Mix and prepare a list of possible candidates for the Company's directors, CEO, or Acting CEO in advance and/or when there is a vacancy
- (4) To accept opinions or suggestions from PTT Board of Directors to supplement the nomination selection decision before submitting to the Board for consideration and to the Annual General Shareholders' Meeting (as the case may be)
- (5) To consider the annual Board Performance Target and Performance Agreement of the CEO and President of the Exploration and Production (PEP), to propose them to the Board for approval, as well as to set the Performance Evaluation Form of the Chairman, directors, sub-committees, and the CEO and PEP
- (6) To consider and propose qualified directors to be a member or the chairman of the sub-committees when there is a vacancy as well as to propose restructuring of the sub-committees as deemed appropriate
- (7) To consider organization restructuring as to support corporate growth and changes in business environment
- (8) To regularly review and update its own charter to ensure its appropriateness
- (9) To disclose performance of the Committee in the Company's annual report
- (10) To perform other duties relevant to the nomination of directors, the CEO, or Acting CEO, as assigned by the Board

The Nominating Committee consists of at least three directors, in which the Chairman and the majority of the members must be independent directors. As of December 31, 2018, the Committee comprised three members who were all independent directors as follows:

Mr. Bundhit Eua-arporn	Chairman and Independent Director
Major General Nimit Suwannarat	Member and Independent Director
Mr. Sethaput Suthiwart-Narueput	Member and Independent Director

Mr. Bundhit Eua-arporn assumed the chairmanship in replacement of Mr. Ampon Kittiampon on October 25, 2018.

According to its charter, the Committee must hold a meeting at least two times a year. In 2018, the Committee held 9 meetings, and the majority of incumbent directors as well as the Company's Corporate Secretary, acting as the Committee's secretary, attended all the meetings. The Committee disclosed its annual performance in the Nominating Committee Report for 2018.

8.1.3.4 The Remuneration Committee

PTTEP's Remuneration Committee has the duties and responsibilities according to its charter as follows:

(1) To consider remuneration of the Board and sub-committees prior to proposing at the Annual General Shareholders' Meeting for approval, using fair and reasonable criteria or principles, while ensuring that the remunerations are in line with the individuals' performance, the Company's performance, the industry's practices, as well as the scope of the duties and responsibilities

(2) To consider remuneration of the Chief Executive Officer (CEO) and President of the Exploration and Production (PEP), and the salary structure of the Company's executives with fair and reasonable criteria or principles prior to proposing them to the Board for approval, whereas the remuneration of the CEO and PEP must be in line with duties and responsibilities as well as his or her performance.

(3) To evaluate performance of the Remuneration Committee and report to the Board for annual disclosure to the shareholders

(4) To regularly review and update the Remuneration Committee Charter to ensure its appropriateness

(5) To perform other duties as assigned by the Board

The Remuneration Committee consists of at least three directors, in which the Chairman and the majority of the members must be independent directors. As of December 31, 2018, the Committee comprised three members, two of which were independent directors as follows:

Mr. Achporn Charuchinda	Chairman and Independent Director
Admiral Tanarat Ubol	Member and Vice Chairman of the Independent Directors Committee
Mr. Patchara Anuntasilpa	Member

Mr. Patchara Anuntasilpa assumed the membership in replacement of Mr. Kulit Sombatsiri on November 1, 2018.

According to its charter, the Committee must hold a meeting at least two times a year. In 2018, the Committee held 3 meetings, and all incumbent directors as well as the Company's Corporate Secretary, acting as the Committee's secretary, attended all the meetings. The Committee disclosed its annual performance in the Remuneration Committee Report for 2018.

8.1.3.5 The Risk Management Committee

PTTEP's Risk Management Committee has the duties and responsibilities according to its charter as follows:

- (1) To define PTTEP's risk management policy and framework, and provide recommendation on corporate risk management to the Board and Management.
- (2) To consider risk appetite prior to proposing to the Board for approval as well as to determine Risk metrics and limit and regularly monitor the results
- (3) To oversee and support the implementation of risk management to achieve objectives at both corporate and asset/project levels (Enterprise-Wide Risk Management), with a focus on enhancing the level of risk awareness in order to support the decision making in using resources and selecting risk responses at an appropriate level.
- (4) To consider the entity's corporate risks in line with the corporate direction of which businesses PTTEP invests in, including E&P, related E&P, and other businesses, as well as to recommend mitigation strategy to manage the risks to keep them within the acceptable level according to clause (2) and to continuously monitor, assess and improve the mitigation strategy in responding to changing of the business environment
- (5) To support risk management function in assessing key risk factors and provide advice on other potential risks which may impact the Company for a continuous and efficient risk management comparable to other leading companies as well as to assign certain tasks related to PTTEP's risk management to the risk management function to perform
- (6) To report the risk management results to the Board on a regular basis. For any matter with a significant impact on PTTEP, it shall be reported immediately to the Board for consideration.
- (7) To disclose the Committee's performance in the Company's annual report
- (8) To regularly review and update its own charter to ensure its appropriateness
- (9) To perform other duties relating to PTTEP's risk management as assigned by the Board

The Risk Management Committee consists of at least three directors, while at least one member must be an independent director. As of December 31, 2018, the Committee comprised six members, two of which were independent directors as follows:

Mr. Sethaput Suthiwart-Narueput	Chairman and Independent Director
Major General Nimit Suwannarat	Member and Independent Director
Mr. Pitipan Teparimargorn	Member
Mr. Wirat Uanarumit	Member
Mr. Twarath Sutabutr	Member
Ms. Penchun Jarikasem	Member

Ms. Penchun Jarikasem assumed the membership in replacement of Mr. Piti Tantakasem on February 1, 2018.

According to its charter, the Committee must hold a meeting at least four times a year. In 2018, the Committee held 15 meetings, which include the meetings that were conducted together with the Audit Committee. The majority of incumbent directors attended all the meetings with the presence of the Committee's secretary, who was the Head of the Risk Management Unit. The Committee disclosed its annual performance in the Risk Management Committee Report for 2018.

8.1.3.6 Independent Directors Committee

PTTEP's Independent Directors Committee has the duties and responsibilities according to its charter as follows:

- (1) To propose to the Board and/or the Chief Executive Officer (as the case may be) on significant matters which are beneficial to the Company as well as major and minor shareholders
- (2) To advise the Board and independent directors on their roles and responsibilities for benefits of the Company as well as the major and minor shareholders
- (3) To review the Company's operations to ensure that they comply with the laws relevant to independent directors, as well as to review the definition of independent directors to be lawfully appropriate and complete
- (4) To perform other duties as assigned by the Board, provided that such duties do not affect the Committee's independence
- (5) To regularly review and update the Independent Directors Committee Charter to ensure its appropriateness

The directors who meet all of the qualifications of an independent director according to the CG&BE are considered as an independent director without any appointment approvals from the Nominating Committee. As of December 31, 2018, the Committee comprised seven members as follows:

Mr. Prajya Phinyawat	Chairman
Admiral Tanarat Ubol	Vice Chairman
Mr. Ampon Kittiampon	Member
Major General Nimit Suwannarat	Member
Mr. Sethaput Suthiwart-Narueput	Member
Ms. Panada Kanokwat	Member
Mr. Bundhit Eua-Arporn	Member

According to its charter, the Committee must hold a meeting at least four times a year. In 2018, the Committee held 4 meetings, and the majority of incumbent directors as well as the Company's Corporate Secretary, acting as the Committee's secretary, attended all the meetings. There was no compensation paid to the members of the Committee for their meeting attendance. The Committee disclosed its annual performance in the Independent Directors Committee Report for 2018.

PTTEP's Definition of Independent Directors

The Good Corporate Governance of PTTEP has defined the qualification of the Company's independent directors stricter than those defined by the Capital Market Supervisory Board, specifically in the area of shareholding as clarified in (1) below. The definitions of an independent director, whose qualification is annually reviewed, are as follows:

(1) Holding shares not exceeding 0.5 % of the total number of shares with voting rights of PTTEP, our parent company, subsidiary companies, associated companies, major shareholders, or controlling persons, including shares held by related persons of the independent director

(2) Neither being nor used to being an executive director, employee, staff, or advisor who receives salary, or a controlling person of PTTEP, our parent company, subsidiary companies, associated companies, same-level subsidiary companies, major shareholders, or controlling persons, unless the foregoing status has ended for not less than two years prior to his or her appointment as the Company's independent director, excluding the case where the independent director used to be a government official or advisor of a government unit, which is a major shareholder, or a controlling person of the Company

(3) Not being a person related by blood or legal registration as a father, mother, spouse, sibling, and child, including spouse of a child of the Company's directors, executives, major shareholders, controlling persons, or persons to be nominated as a director, executive, or controlling persons of PTTEP or one of the subsidiaries

(4) Neither having nor used to having a business relationship with PTTEP, our parent company, subsidiary companies, associated companies, major shareholders, or controlling persons, in the manner which may interfere with his or her independent judgment, and neither being nor used to being a significant shareholder, or controlling person of anyone having a business relationship with the Company, our parent company, subsidiary companies, associated companies, major shareholders, or controlling persons, unless the foregoing relationship has ended for not less than two years

The term 'business relationship' under the first paragraph shall include normal business transactions, rental or lease of immovable property, transactions relating to assets, services, and granting or receiving of financial assistance. For example, these include receiving or extending of loans, guarantee, collateral, and other similar actions which can potentially result in PTTEP or his counterparty being subject to indebtedness payable to the other party in the amount, whichever is lower, of between three percent or more of the net tangible assets of the Company or twenty million baht or more. The amount of such indebtedness shall be calculated according to the method for calculation of the value of connected transactions under the Notification of the Capital Market Supervisory Board's governing rules on connected transactions *mutatis mutandis*. The consideration of such indebtedness shall include indebtedness occurred during the period of one year prior to the date on which the business relationship with the person commences.

(5) Neither being nor used to being an auditor of PTTEP, our parent company, subsidiary companies, associated companies, major shareholders, or controlling persons, and not being a significant shareholder, controlling person, or partner of an audit firm which employs auditors of the Company, our parent company, subsidiary companies, associated companies, major shareholders, or controlling persons, unless the foregoing relationship has ended for not less than two years

(6) Neither being nor used to being a provider of any professional services, including those as a legal advisor or financial advisor who receives service fees exceeding two million baht per year from PTTEP, our parent company, subsidiary companies, associated companies, major shareholders, or controlling persons, and not being a significant shareholder, controlling person, or partner of the provider of the professional services, unless the foregoing relationship has ended for not less than two years

(7) Not undertaking any businesses in the same nature and in competition to the business of PTTEP or the subsidiary companies, or not being a significant partner in a partnership or an executive director, employee, staff, advisor who receives salary or holds shares exceeding one percent of the total number of shares with voting rights of any companies which undertake a business of the same nature and in competition to that of the Company or our subsidiaries

(8) Not being a director appointed as representative of the directors of PTTEP, the major shareholders or any shareholders who are related to the major shareholders

(9) Not having any other characteristics which cause an inability to express independent opinions in regard to PTTEP's business operations

After being appointed as an independent director with the qualifications under (1) to (9), the independent director may be assigned by the Board to take part in the business decision of PTTEP, our parent company, subsidiary companies, associated companies, same-level subsidiary companies, major shareholders, or controlling persons, provided that such decision shall be in the form of a collective decision.

The definition of each of the specific words mentioned is subjected to the Notification of the Capital Market Supervisory Board's RE: Determination of Definitions Relating to Issuance and Offer for Sale of Securities.

Business Relationship or Professional Services of Independent Directors for the Company During the Past Fiscal Year

– None –

8.1.4 Performance Appraisal of the Board

The Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE) stipulates that there should be an annual performance appraisal of the Board. In 2018, the appraisal of the Board derived from the score from the self-appraisal of the entire Board and the Board Performance Target, while the Chairman and sub-committees were evaluated by the Board using the corresponding appraisal forms. This allows the Company's directors to review their performance, key issues, and obstacles with which they had faced during the past year as well as to enhance their directorship efficiencies. The Nominating Committee determines the appraisal forms and considers the Board Performance Target prior to proposing to the Board for consideration and approval.

The Board's performance appraisal comprises the followings:

(1) Individual self-appraisal and individual cross-appraisal by other directors, including four evaluation topics, namely, (1) qualifications, (2) independence, (3) roles and responsibilities, and (4) training and self-development

(2) Appraisal of the entire Board, including six evaluation topics, namely, (1) corporate policies and strategic planning, (2) board performance, (3) management governance, (4) board meetings, (5) board structure and qualifications, and (6) training and development

(3) Appraisal of the sub-committees which includes questions on each of the sub-committees' performance efficiency according to the roles and responsibilities stated in their individual charter

(4) Appraisal of the Chairman which includes questions on the Chairman's performance efficiency according to the roles and responsibilities of the Chairman as stated in the SEC's new Corporate Governance Code for Listed Companies 2017 and the CG&BE of the PTTEP Group under Section 6.3: Roles of the Board of Directors and Management. This includes topics, such as acting as the Chairman of the Board's meetings and the Annual General Shareholders' Meeting, setting agendas for the Board's meetings, and enhancing relationship between the Board and the management.

The 2018 appraisal included four parts as aforementioned with a scoring scale of 1 to 3 (1=need improvement, 2=meet standard, and 3=good). While the scoring scale remained unchanged from 2017, however, questions were adjusted under the Risk Management Committee Appraisal to be in line with Company's operation by adding a question about important strategic assets, i.e., Algeria Hassi Bir Rekaiz, Mozambique Rovuma Offshore Area 1 and Mariana Oil Sands of which risks should be monitored regularly.

The Board Performance was evaluated from the four elements according to the Board Performance Target 2018 as follows:

(1)	Corporate KPI	50%
(2)	Meeting attendance and meeting effectiveness	15%
(3)	Appraisal of the entire Board	10%
(4)	CG Perception	25%

Details of the 2018 Board's performance appraisal can be summarized as follows:

(1) The self-appraisal score averaged at 2.84, increased from 2.79 in 2017 (total score = 3). The individual cross-appraisal by other directors score averaged at 2.90, same as 2017 (total score = 3).

(2) The 2018 appraisal score of the Board derived from score from the Board Performance Target 2018, which was 4.00, decreased from 4.28 in 2017 with total score of 5 due to the stricter evaluation measures. (1=urgent improvement needed, 2=improvement needed, 3=fair or achieved as planned, 4=good, 5=very good). In 2018, the self-appraisal of the entire Board was also combined into the Board Performance Target 2018 with a weight of 10%. The score from the self-appraisal of the entire Board averaged at 2.92, increased from 2.87 in 2017 (total score=3).

In addition, the 2018 self-appraisal of the entire Board included an assessment part on the relationship between the Board and the management, provided that the latter was also evaluated by the same set of questions, to further develop their relationships and to promote two-way communication.

(3) The 2018 appraisal scores of the five sub-committees were within the highest range as follows:

(3.1) The appraisal score of the Audit Committee was 3.00, same as 2017 (total score = 3).

(3.2) The appraisal score of the Remuneration Committee was 2.92, decreased from 2.94 in 2017 (total score=3).

(3.3) The appraisal score of the Nominating Committee was 2.94, increased from 2.86 in 2017 (total score=3).

(3.4) The appraisal score of the Corporate Governance Committee was 2.87, decreased from 2.93 in 2017 (total score=3).

(3.5) The appraisal score of the Risk Management Committee was 2.98, increased from 2.97 in 2017 (total score=3).

(4) The 2018 appraisal of the Chairman by the Board was 2.98, increased from 2.94 in 2017 (total score=3).

PTTEP reports the score results to the Board for acknowledgement before disclosing them in the annual report. Recommendations from the Board's appraisal will then be used in the future for efficiency improvement of the Board, sub-committees, Chairman, and management in several aspects, such as time management in the Board's meetings, review of human resource management, and succession plan development for critical positions. The directors will also put more emphasis towards self-development by attending trainings relating to the Board's performance efficiency and initiation to further enhance the Company's medium-term and long-term strategic planning.

8.1.5 Performance Appraisal of the Chief Executive Officer and President, Exploration and Production

The Board specifies that the Remuneration Committee is responsible for conducting of the Chief Executive Officer (CEO) and the President of the Exploration and Production (PEP)'s performance appraisal whereas the Nominating Committee is responsible for the CEO and PEP's Performance Agreement as measured by the Company's KPI to be used in the determination of his or her remuneration in the given year. The appraisal result must also be approved by the Board to ensure the check and balance as well as to allow the Company to monitor the performance of the CEO and PEP. The appraisal result essentially provides the transparency and justification in consideration of the CEO and PEP's remuneration, in addition to promoting the Company's Good Corporate Governance and a greater operational efficiency in the future.

8.1.6 The Board's Meeting

The Board's monthly meetings and agendas are scheduled and predetermined in advance each year by the Board itself, while there are normally 12 meetings being held annually on the last Thursday of every month. The Board members have been informed of the 2019 meeting schedule since September 2018. Meetings related to the Company's strategic planning, in which the Board has greatly committed its time and priority, are commonly held as an off-site meeting, whereas additional meetings will be held when deemed appropriate. In 2018, there were 18 of the Board's meetings. The Board usually receives meeting invitations from the Corporate Secretary, along with agendas and important documents related to the meetings, to consider at least for five working days prior to the meeting date, except in those urgent cases or insufficient information. In addition, the agenda documents are delivered to the directors through a software to facilitate the convenience and timeliness as well as to promote a paperless process.

Generally, the Company's Chairman, the and Chief Executive Officer (CEO), the Secretary to the Board of Directors, and the Corporate Secretary are responsible for agenda proposals in the Board's meetings; however, in practice, the Company's directors are also eligible to make the proposals as well.

The Board's meeting agendas are clearly classified, namely, agendas for approval, agendas for acknowledgement, and monthly agendas of performance review as well as budget execution. In 2018, there were 76 and 199 agendas proposed for approval and acknowledgement, respectively, while the other important standing agendas are as follows:

Month	Standing Agendas
January	<ul style="list-style-type: none"> - Annual General Shareholders' Meeting Documents Preparation, including: <ul style="list-style-type: none"> (1) Unaudited Annual Financial Statements (2) Dividend Payment (3) Auditor Appointment and Auditor's Fees Consideration (4) Board of Directors' and Sub-committees' Remuneration - PTTEP's Board Performance Target
February	<ul style="list-style-type: none"> - Annual Registration Statement and Annual Report
March	<ul style="list-style-type: none"> - Annual General Shareholders' Meeting Preparation
April	<ul style="list-style-type: none"> - Appointment of Sub-committee Members - Assessment of the Annual General Shareholders' Meeting
May	<ul style="list-style-type: none"> - Strategic Direction and Annual Manpower Planning
July	<ul style="list-style-type: none"> - Interim Dividend Payment (If any)
August	<ul style="list-style-type: none"> - Board Meeting Schedule
November	<ul style="list-style-type: none"> - Business Plan, 5-Year Investment Plan, and Annual Expenditure Budgeting - CEO's Key Performance Indicator (KPI) and Performance Agreement - Annual Procurement Plan
December	<ul style="list-style-type: none"> - Annual Performance Appraisal of PTTEP's Board of Directors, Sub-committees, and the Chairman - PTTEP Corporate Key Performance Indicator (KPI) and Employees' Merit Increase and Annual Special Payment

In 2018, there were also agendas for consideration relating to the business impacts in both short and long term. Such topics were for instance, exploration bidding in countries around the globe, progress on bid round for Thailand expiring concessions, progress on capital investment projects, organization restructuring to support long-term growth, investment opportunities, and revisions of the Risk Management Committee and Nominating Committee charters.

During each of the meetings, which usually lasted approximately three to four hours, the Chairman would allocate an adequate period of time to each agenda to provide an opportunity for the directors to express their opinions independently. The Company's executives were also invited to attend the meetings to provide necessary information as well as to acknowledge the policies and issues being raised. The Secretary to the Board of Directors and the Corporate Secretary attended every meeting to administer and provide advices to the Board on related rules and regulations for proper practices, to take minutes of the meetings, as well as to keep a complete filing of all the necessary meeting information and documents.

The Board's resolution is based on the majority vote, whereas one director is eligible for one vote. Shall a director have a stake in one of the issues, he or she will not be allowed to attend the meeting and/or to exercise his or her vote in the particular issue. In the circumstance where the voting is tied, the Chairman of the meeting is entitled to the one additional and therefore final vote.

The issues which are required to receive an approval of no less than three-fourth of the total number of the Company's eligible shareholders attending the meeting are as follows:

- (1) Selling or transferring, in whole or a significant part, of the Company's business
- (2) Purchasing or accepting of transfer of business of other companies or private companies by PTTEP
- (3) Making, amending or terminating of contracts related to hiring of the Company's business, in whole or a significant part, including entrustment of the management to or consolidation of the business with other entities with the purpose of profit and loss sharing
- (4) Amending of the Company's Memorandum of Association or the Articles of Association
- (5) Increasing and decreasing of the Company's capital, issuance of debentures, merger and acquisition, and business dissolution
- (6) In case where the Company or one of the subsidiaries agrees to enter connected transactions, or sales or acquisition of the Company's or the subsidiaries' assets, as determined by the Stock Exchange of Thailand's announcement on connected transactions of listed companies (as the case may be)

Minutes of the Board's meetings cover all significant matters in completion. For the issues seeking approval, the resolutions are unanimous. Name of the persons attending or absented from the meetings, name of the meetings' attendants, and name and content of those who state his or her opinions, questions, answers, or clarifications are recorded in details, while reports of the minutes are systematically filed and kept safety. All directors of the Board usually attend all of the meetings unless an absence deemed necessary. In which case, the director must provide the Board's Chairman with an absent letter which must be informed to all of the Board members prior to the meeting and will be subsequently recorded in the report of individual directors' meeting attendance.

In 2018, non-executive directors held one meeting without presence of the management. The purpose of the meeting was to discuss and clarify ongoing issues from year 2018 corporate performance as well as to receive additional comments on CEO's 6-month performance evaluation according to the Nominating Committee's proposal. The results were summarized for and acknowledged to the CEO for further evaluation.

8.1.7 Meeting Attendance of PTTEP Directors in 2018

Director's Name	Board of Directors	Independent Directors Committee	Non-Executive Directors Committee	Corporate Governance Committee	Audit Committee	Remuneration Committee	Nominating Committee	Risk Management Committee	Annual General Shareholders' Meeting 2018
	Total number of meetings: 18 times	Total number of meetings: 4 times	Total number of meetings: 1 time	Total number of meetings: 4 times	Total number of meetings: 16 times	Total number of meetings: 3 times	Total number of meetings: 9 times	Total number of meetings: 15 times	Total number of meetings: 1 time
1. Mr. Prajya Phinyawat ¹	18/18	4/4	1/1	-	-	-	-	-	1/1
2. Mr. Achporn Charuchinda ²	18/18	3/4	1/1	-	15/16	3/3	-	-	1/1
3. Admiral Tanarat Ubol ¹	16/18	4/4	1/1	4/4	-	3/3	-	-	1/1
4. Major General Nimit Suwannarat	15/18	4/4	1/1	-	-	-	9/9	9/15	1/1
5. Mr. Sethaput Suthiwat-Narueput ²	18/18	4/4	1/1	-	3/3	-	9/9	15/15	1/1
6. Mr. Wirat Uanarumit	17/18	-	1/1	-	-	-	-	13/15	1/1
7. Mr. Twarath Sutabutr	14/18	-	1/1	-	-	-	-	10/15	1/1
8. Mr. Pitipan Tepartimargorn ¹	18/18	-	1/1	4/4	-	-	-	15/15	1/1
9. Ms. Panada Kanokwat ¹	18/18	4/4	1/1	4/4	16/16	-	-	-	1/1
10. Mr. Bundhit Eua-Arporn ²	12/18	3/4	1/1	-	-	-	2/2	-	1/1
11. Ms. Penchun Jarikasem ³	16/16	-	1/1	-	-	-	-	12/13	1/1

¹ Directors who retired by rotation in 2018 Annual General Shareholder's Meeting were re-elected as directors and assumed positions on April 2, 2018 as follows.

- Mr. Prajya Phinyawat assumed Chairmanship of the Board of Directors.
- Admiral Tanarat Ubol assumed membership of the Corporate Governance Committee and membership of the Remuneration committee.
- Mr. Pitipan Tepartimargorn assumed membership of the Risk Management Committee and membership of the Corporate Governance Committee.
- Ms. Panada Kanokwat assumed membership of the Audit Committee and membership of the Corporate Governance Committee.

² From October 25, 2018

- Mr. Achporn Charuchinda assumed Chairmanship of the Audit Committee.
- Mr. Sethaput Suthiwat-Narueput assumed membership of the Audit Committee.
- Mr. Bundhit Eua-Arporn assumed Chairmanship of the Nominating Committee.

³ Ms. Penchun Jarikasem was elected as director and assumed membership of the Risk Management Committee on February 1, 2018.



Director's Name	Board of Directors	Independent Directors Committee	Non-Executive Directors Committee	Corporate Governance Committee	Audit Committee	Remuneration Committee	Nominating Committee	Risk Management Committee	Annual General Shareholders' Meeting 2018
	Total number of meetings: 18 times	Total number of meetings: 4 times	Total number of meetings: 1 time	Total number of meetings: 4 times	Total number of meetings: 16 times	Total number of meetings: 3 times	Total number of meetings: 9 times	Total number of meetings: 15 times	Total number of meetings: 1 time
12. Mr. Chansin Treenuchagron ⁴	4/5	-	-	-	-	-	-	-	-
13. Mr. Patchara Anuntasilpa ⁵	2/2	-	-	-	-	1/1	-	-	-
14. Mr. Phongsthorn Thavisin ⁶	3/3	-	-	-	-	-	-	-	-
Former Directors Retiring by Rotation or Resigning During 2018⁷									
1. Mr. Tevin Vongvanich ⁸	12/13	-	1/1	-	-	-	-	-	1/1
2. Mr. Kulit Sombatsiri ⁹	12/13	-	1/1	-	-	2/2	-	-	1/1
3. Mr. Somporn Vongvuthipornchai ¹⁰	15/15	-	-	-	-	-	-	-	1/1
4. Mr. Ampon Kittiampon ¹¹	15/15	2/3	1/1	-	12/12	-	6/6	-	1/1

⁴ Mr. Chansin Treenuchagron was elected as director on September 1, 2018.

⁵ Mr. Patchara Anuntasilpa was elected as director and assumed membership of the Remuneration Committee on November 1, 2018.

⁶ Mr. Phongsthorn Thavisin was elected as director on October 1, 2018.

⁷ Mr. Piti Tantakaseem resigned from directorship, membership of the Nominating Committee, and membership of the Risk Management Committee on January 1, 2018.

⁸ Mr. Tevin Vongvanich resigned from directorship on August 31, 2018.

⁹ Mr. Kulit Sombatsiri resigned from directorship and membership of the Remuneration Committee on September 10, 2018.

¹⁰ Mr. Somporn Vongvuthipornchai resigned from directorship and retired from Chief Executive Officer position on September 30, 2018.

¹¹ Mr. Ampon Kittiampon resigned from directorship, Chairmanship of the Audit Committee, and Chairmanship of the Nominating Committee on October 1, 2018.

8.1.8 Number of PTTEP Shares Held by the Directors, Their Spouse/Cohabiting Couple and Minor Child as of December 31, 2018

Director's Name		Number of Ordinary Shares		
		As of December 31, 2017	As of December 31, 2018	Increase / (Decrease) During the Year
1. Mr. Prajya	Phinyawat	15,000	15,000	-
2. Mr. Achporn	Charuchinda	-	-	-
3. Admiral Tanarat	Ubol	-	-	-
4. Major General Nimit	Suwannarat	-	-	-
5. Mr. Sethaput	Suthiwart-Narueput	-	-	-
6. Mr. Wirat	Uanarumit	-	-	-
7. Mr. Twarath	Sutabutr	-	-	-
8. Mr. Pitipan	Tepartimargorn	-	-	-
9. Ms. Panada	Kanokwat	30,000	30,000	-
10. Mr. Bundhit	Eua-arporn	-	-	-
Spouse/Cohabiting Couple		4,587	4,587	-
11. Ms. Penchun	Jarikasem ¹	N/A	10,000	-
12. Mr. Chansin	Treenuchagron ²	N/A	-	-
13. Mr. Patchara	Anuntasilpa ³	N/A	-	-
14. Mr. Phongsthorn	Thavisin ⁴	70,909	81,037	10,128
Former Directors Retiring by Rotation or Resigning During 2018⁵				
1. Mr. Tevin	Vongvanich ⁶	146,543	146,543	-
2. Mr. Kulit	Sombatsiri ⁷	-	-	-
3. Mr. Somporn	Vongvuthipornchai ⁸	263,677	263,677	-
Spouse/Cohabiting Couple		3,500	3,500	-
4. Mr. Ampon	Kittiampon ⁹	-	-	-

¹ Ms. Penchun Jarikasem was elected as director and assumed membership of the Risk Management Committee on February 1, 2018.

² Mr. Chansin Treenuchagron was elected as director on September 1, 2018.

³ Mr. Patchara Anuntasilpa was elected as director on November 1, 2018.

⁴ Mr. Phongsthorn Thavisin was elected as director on October 1, 2018.

⁵ Mr. Piti Tantakasem resigned from directorship, membership of the Nominating Committee, and membership of the Risk Management Committee on January 1, 2018.

⁶ Mr. Tevin Vongvanich resigned from directorship on August 31, 2018.

⁷ Mr. Kulit Sombatsiri resigned from directorship and membership of the Remuneration Committee on September 10, 2018.

⁸ Mr. Somporn Vongvuthipornchai resigned from directorship and retired from Chief Executive Officer position on September 30, 2018.

⁹ Mr. Ampon Kittiampon resigned from directorship, Chairmanship of the Audit Committee, and Chairmanship of the Nominating Committee on October 1, 2018.

8.2 The Management

As of January 1, 2019, PTTEP's management, according to the definition of management as defined by the Capital Market Supervisory Board (CMSB), consists of 19 members. Details of their biography, qualification, and past experience are disclosed in the "Information of the Board of Directors, Management, Controlling Persons and Corporate Secretary" section.

List of Names and Number of Shares Held by the Management, Their Spouse/Cohabiting Couple and Minor Child

Name	Number of Ordinary Shares		
	As of January 1, 2018	As of January 1, 2019	Increase/(Decrease) During the Year
1. Mr. Phongsthorn Thavisin ¹	70,909	81,037	10,128
2. Mr. Montri Rawanchaikul	43,214	19,550	(23,664)
3. Mr. Vuthiphon Thuampoomngam ²	58,889	58,889	-
4. Mr. Kanok Intharawijitr ³	N/A	40,231	N/A
5. Mr. Chayong Borisuitsawat ⁴	55,096	55,096	-
6. Mr. Sumrid Sumneing ⁵	N/A	2,500	N/A
7. Mr. Chatchawal Eimsiri	58,205	40,078	(18,127)
8. Mrs. Suchitra Suwansinpan	105,290	106,465	1,175
Spouse/Cohabiting Couple	300	300	-
9. Mr. Yongyos Krongphanich ⁶	105,367	106,445	1,078
10. Mrs. Natruedee Khositaphai ⁷	N/A	107,457	N/A
Spouse/Cohabiting Couple	N/A	10,000	N/A
11. Mr. Suksant Ongvises ⁸	N/A	27,681	N/A
12. Ms. Jaroonsri Wankertphon	77,410	73,228	4,182

* The number of shares held by the management may also include shares purchased under the Employee Joint Investment Program (EJIP) which commences from 2013 to 2018 to motivate the staff, create alignment between the employees, management and shareholders, as well as to establish long-term loyalty and a sense of ownership.

¹ Appointed as Chief Executive Officer in replacement of Mr. Somporn Vongvuthipomchai, and Acting President, Exploration and Production on October 1, 2018. Since January 1, 2019, the work scope of President, Exploration and Production was combined with Chief Executive Officer and the title was renamed to President and Chief Executive Officer.

² Appointed as Chief Operating Officer, Production Asset and Supply Chain Management Group on January 1, 2019.

³ Appointed as Executive Vice President, Geosciences, Subsurface and Exploration Group on October 1, 2018.

⁴ Appointed as Executive Vice President, Business and Organization Transformation Group on November 1, 2018.

⁵ Appointed as Executive Vice President, Finance and Accounting Group on January 1, 2019.

⁶ Appointed as Executive Vice President, attached to Finance and Accounting Group, seconded as Executive Vice President, Group Corporate Finance and Strategy, PTT Public Company Limited on January 1, 2019.

⁷ Appointed as Acting Executive Vice President, Corporate Affairs and Assurance Group on October 1, 2018.

⁸ Appointed as Acting Executive Vice President, Engineering, Development and Operations Group on November 1, 2018.

Name	Number of Ordinary Shares		
	As of January 1, 2018	As of January 1, 2019	Increase/(Decrease) During the Year
13. Mrs. Chanamas Sasnanand ⁹	N/A	45,411	N/A
14. Mrs. Netrsuda Pokkasorn	79,857	86,005	6,148
15. Mr. Anutra Bunnag	-	-	-
16. Ms. Kanchanan Panananda	59,081	56,604	(2,477)
17. Mrs. Maneeya Srisukhumbowornchai	-	-	-
18. Ms. Pratamaporn Deesrinthum	52,846	53,249	403
19. Mr. Sermsak Satchawannakul ¹⁰	N/A	45,215	N/A
Management Who Retired or Rotated During 2018			
1. Mr. Prapat Soponpongpipat ¹¹	69,320	70,589	1,269
2. Mr. Sakchai Sarawek ¹²	31,475	32,012	537
Spouse/Cohabiting Couple	4,000	4,000	-
3. Mr. Somporn Vongvuthipornchai ¹³	263,677	263,677	-
Spouse/Cohabiting Couple	3,500	3,500	-
4. Mrs. Pranot Tirasai ¹⁴	172,341	173,657	1,316
5. Mr. Thiti Mekavichai ¹⁵	94,392	95,843	1,451
6. Ms. Pannalin Mahawongtikul ¹⁶	35,505	36,587	1,082
7. Mr. Waranon Laprabang ¹⁷	144,168	110,521	(33,647)
8. Mrs. Sirirat Sararattanakul ¹⁸	223,490	224,139	649
9. Mrs. Thanyaporn Vangvasu ¹⁹	155,147	155,147	-

⁹ Appointed as Senior Vice President, Finance Division, Finance and Accounting Group on January 1, 2019.

¹⁰ Appointed as Vice President, Financial Accounting Department, Accounting Division, and Acting Vice President, Office Facility Management Department, Finance and Accounting Group on January 1, 2019.

¹¹ Resigned from employment before retirement from the position of Executive Vice President, Geoscience and Exploration Group on July 1, 2018.

¹² Appointed as Vice President, attached to International Asset and Seconded as Senior Manager, Business Support Division, Carigali-PTTEPI Operating Company Sdn. Bhd. (CPOC), Malaysia on July 1, 2018.

¹³ Retired from the position of Chief Executive Officer on September 20, 2018.

¹⁴ Retired from the position of Executive Vice President, attached to Chief Executive Officer on January 1, 2019. She currently holds the position of Secretary to the Board of Directors, appointed on October 1, 2018.

¹⁵ Resigned from employment before retirement from the position of Executive Vice President, attached to Chief Executive Officer on October 1, 2018.

¹⁶ End of secondment at PTTEP as Executive Vice President, Finance and Accounting Group on October 1, 2018.

¹⁷ Retired from the position of Senior Advisor, reported to Chief Executive Officer from October 1, 2018.

¹⁸ Resigned from employment before retirement from the position of Vice President, attached to Finance and Accounting Group on November 1, 2018.

¹⁹ Resigned from employment before retirement from the position of Specialist, attached to Finance and Accounting Group on March 1, 2018.

8.3 Secretary to the Board of Directors and Corporate Secretary

8.3.1 Secretary to the Board of Directors

The Board of Directors resolved to appoint Mrs. Pranot Tirasai, Executive Vice President, attached to the Chief Executive Officer, and assigned as Secretary to the Board of Directors, effective from October 1, 2018. The Secretary of the Board of Directors serves as the focal point for the Board and the management, and is responsible for providing advice to the Board on legal compliance regarding the duties and responsibilities of the Board and the management. The Secretary of the Board of Directors is also accountable for reviewing the agenda and minutes of the Board's meetings prior to their submission to the Board, and managing documentation of the Shareholders' meeting as well as making preparation for the Board for the Shareholders' meeting. Mrs. Tirasai holds a degree in law and is highly knowledgeable, capable and experienced, allowing her to appropriately support the Board in carrying out of its fiduciary duties.

8.3.2 Corporate Secretary

The Board of Directors resolved to appoint Mr. Yongsith Kosawititkul, Acting Senior Vice President, Corporate Secretary Division, as the Corporate Secretary and the Corporate Governance Committee's secretary, the Nominating Committee's secretary, the Remuneration Committee's secretary, and the Independent Directors Committee's secretary since October 1, 2018. Mr. Kosawititkul holds a degree in law. He is highly knowledgeable, capable and experienced in corporate secretarial functions. In addition, he attended seminars and completed trainings which were beneficial to his performance. Details of the Corporate Secretary are disclosed in the "Information of the Board of Directors, Management, Controlling Persons, and Corporate Secretary".

The Corporate Secretary has performed roles with fiduciary duties by having responsibility, and duties of care and loyalty, as required by the Securities and Exchange Act, including preparing and safeguarding the Company's important documents, namely the director registry, notice of the Shareholders' meetings, notice of the Board's meetings, minutes of the Shareholders' meetings, minutes of the Board's meetings, and Annual Reports; safeguarding the Conflicts of Interests Report submitted by the members of the Board and the management as well as sending a copy of the report to the Chairman of the Board and Chairman of the Audit Committee, as stipulated by law.

The Corporate Secretary is also responsible for the following duties as required by the Board:

- Overseeing and advising the Board to ensure that the directors perform their roles in compliance with relevant applicable laws, rules and regulations as well as the Company's objectives, Articles of Association, resolutions from the Board's and shareholders' meeting
- Organizing meetings of the Board, sub-committees, and shareholders.
- Providing induction and giving advices to new members of the Board.
- Recommending necessary and appropriate training programs to members of the Board.
- Coordinating with the Company's functional units to ensure that the Company's business operations are in line with the direction set by the Board and shareholders and with external regulatory bodies overseeing listed companies
- Governing the Company's subsidiaries, including preparing and safeguarding their important documents

- Promoting and educating the directors, management, and employees about the Good Corporate Governance and Business Ethics of the PTTEP Group, which is regularly being revised to be in compliance with related laws and in line with international practices of leading organizations
- Ensuring that all shareholders are treated fairly, ethically and lawfully as well as promoting good relationship with minority shareholders
- Acting as a Case Coordinator, which is responsible for managing reports or complaints submitted through the Whistleblowing System of PTTEP Group
- Performing other duties as required by the Company

8.4 Remuneration of Directors and Executives

8.4.1 Remuneration of the Board and Members of the Sub-Committees

PTTEP has a sound and transparent policy in regard to remuneration of the Company's directors of the Board and sub-committees. The Remuneration Committee, who is responsible for the policy, reviews the remuneration with prudence by taking into consideration remuneration of listed and comparable companies in the industry, performance of PTTEP, duties and responsibilities of the directors, overall economic situation, and the shareholders' opinions. The 2018 Annual General Shareholders' Meeting (AGM) approved the following remunerations for members of the Board and sub-committees, as proposed by the Remuneration Committee.

Remuneration Rates for Members of the Board

- (1) Monthly allowance of THB 40,000 per person per month in a full-month payment
- (2) Meeting allowance of THB 40,000 per person per a meeting attendance
- (3) Bonus for the Board if there is a dividend in that year, totaling 0.1% of the Company's consolidated net profit in that year, but no more than THB 60 million per year, and proportionally to the directors' period in the position
- (4) 25% increase in all of the above for the Chairman

Remuneration Rates for Members of the Sub-Committees

This is in association to the Company's five standing sub-committees, namely, the Corporate Governance Committee, the Audit Committee, the Remuneration Committee, the Nominating Committee, and the Risk Management Committee.

- (1) Meeting allowance of THB 40,000 per person per a meeting attendance
- (2) 25% increase for the sub-committee's Chairman
- (3) No remuneration in case of circulation
- (4) Excluding the sub-committees' members who are also in the management from the top executive level down

Other Remuneration for PTTEP Directors

- None -



Remuneration of Members of the Board and Sub-Committees in 2018

Director's Name	Remuneration										2018 Bonus Paid in 2019	Total	
	Board of Directors		Audit Committee	Corporate Governance Committee	Remuneration Committee	Nominating Committee	Risk Management Committee						
	Meeting Allowance	Monthly Allowance	Meeting Allowance	Meeting Allowance	Meeting Allowance	Meeting Allowance	Meeting Allowance	Meeting Allowance	Meeting Allowance	Meeting Allowance			
1. Mr. Prajya Phinyawat	900,000	600,000	0	0	0	0	0	0	0	0	0	2,967,728.72	4,467,728.72
2. Mr. Achporn Charuchinda	720,000	480,000	620,000	0	150,000	0	0	0	0	0	0	2,374,182.97	4,344,182.97
3. Admiral Tanarat Ubol	640,000	480,000	0	200,000	120,000	0	0	0	0	0	0	2,374,182.97	3,814,182.97
4. Major General Nimit Suwannarat	600,000	480,000	0	0	0	0	0	0	360,000	360,000	0	2,374,182.97	4,174,182.97
5. Mr. Sethaput Suthiwat-Narueput	720,000	480,000	120,000	0	0	0	0	0	360,000	750,000	0	2,374,182.97	4,804,182.97
6. Mr. Wirat Uanarumit	680,000	480,000	0	0	0	0	0	0	0	520,000	0	2,374,182.97	4,054,182.97
7. Mr. Twarath Sutabutr	560,000	480,000	0	0	0	0	0	0	0	400,000	0	2,374,182.97	3,814,182.97
8. Mr. Pitipan Teparitmagorn	720,000	480,000	0	160,000	0	0	0	0	0	600,000	0	2,374,182.97	4,334,182.97
9. Ms. Panada Kanokwat	720,000	480,000	640,000	160,000	0	0	0	0	0	0	0	2,374,182.97	4,374,182.97
10. Mr. Bundhit Eua-arporn	480,000	480,000	0	0	0	0	0	0	100,000	0	0	2,374,182.97	3,434,182.97
11. Ms. Penchun Jarikasem	640,000	440,000	0	0	0	0	0	0	0	480,000	0	2,172,540.04	3,732,540.04
12. Mr. Chansin Treenuchagorn	160,000	160,000	0	0	0	0	0	0	0	0	0	793,562.53	1,113,562.53
13. Mr. Patchara Anuntasilpa	80,000	80,000	0	0	40,000	0	0	0	0	0	0	396,781.26	596,781.26
14. Mr. Phongsthorn Thavisin	120,000	120,000	0	0	0	0	0	0	0	0	0	598,424.20	838,424.20
Former Directors Retiring by Rotation or Resigning During 2018													
1. Mr. Tevin Vongvanich	480,000	320,000	0	0	0	0	0	0	0	0	0	1,574,115.83	2,374,115.83
2. Mr. Kulit Sombatsiri	480,000	360,000	0	0	80,000	0	0	0	0	0	0	1,639,161.94	2,559,161.94
3. Mr. Somporn Vongvuthipornchai	600,000	360,000	0	0	0	0	0	0	0	0	0	1,769,254.16	2,729,254.16
4. Mr. Ampon Kittiampon	600,000	360,000	600,000	0	0	0	0	0	300,000	0	0	1,775,758.77	3,635,758.77
Total	9,900,000	7,120,000	1,980,000	520,000	390,000	1,120,000	3,110,000	35,054,974.18				59,194,974.18	

Remarks: (1) The 2018 Annual General Shareholders' Meeting (AGM) approved bonus for the Board if there is a dividend in that year, totaling 0.1% of the Company's consolidated net profit in that year, but no more than THB 60 million per year.
 (2) Mr. Tevin Vongvanich and Mr. Chansin Treenuchagorn have returned their PTTEP directorship remuneration in 2018 to PTT Public Company Limited (PTT) according to PTT's President and Chief Executive Officer management contract.
 (3) PTTEP provides the Chairman with a corporate car to carry out corporate-related purposes while in the chairmanship.

8.4.2 Remuneration of the Directors of Subsidiaries and Associated Companies

PTTEP's subsidiaries and associated companies are functional units of the Company in carrying out E&P and related businesses in order to optimize the Company's benefits, taking into account of the business and investment conditions. PTTEP assigns the Company's executives to hold a directorship position in our subsidiaries and/or associated companies in order to ensure that they are managed in compliance with the business direction and strategy of PTTEP.

The Company's executives who are assigned to be directors of the subsidiaries and associated companies either in the E&P business or related business, such as PTTEP Siam Limited, PTTEP Services Limited, and B8/32 Partners Company Limited, do not receive any additional remunerations. However, the executives who are assigned to be directors of subsidiaries or associated companies engaged in other businesses, for example, PTT Digital Solutions Company Limited, Ltd. and Energy Complex Company Limited, are entitled to an additional remuneration with subject to the remuneration policy of such subsidiaries or associated companies.

8.4.3 Remuneration of the Chief Executive Officer

Remuneration of the Chief Executive Officer (CEO) is determined using fair and appropriate procedures and defined under the principles which are unbiased, reasonable, justifiable, and transparent. PTTEP's Remuneration Committee is responsible for reviewing remuneration of the CEO prior to proposing for the Board's approval. The approval from the Board is based on his or her performance, duties and responsibilities, the Company's performance, remuneration of listed companies comparably in size and industry, and overall economic situation.

The ratio of annual compensation of the CEO compared to the average annual compensation of the Company's executives is approximately 1.5:1, while the ratio of annual compensation of the CEO compared to the average annual compensation of the Company's employees is approximately 10:1.

8.4.4 Remuneration of the Executives

PTTEP's Remuneration Committee is responsible for the salary structure of the Company's executives. The key principles are to establish an unbiased and reasonable structure which reflects, not only the Company's own business nature and its performance, but also some of the variables which can be compared to and justified by those of other leading companies in the industry. The Board must give an approval to the structure prior to the implementation.

The Chief Executive Officer meanwhile is responsible for reviewing the appropriateness of the remuneration of each of the executives as well as their annual salary increase, taking into consideration his or her overall target-based performance and the Company's performance.

To maintain the Company's remuneration competitiveness, PTTEP conducts an annual survey on remuneration of leading companies in the industry. The information gathered through the survey allows the Remuneration Committee to better understand the current market situation to further increase the Company's competitiveness in the job market as well as to be able to provide the Board with thorough explanations particularly when the changes in the salary structure and payment method are drastic.

The ratio of the average annual compensation of the executives compared to the average annual compensation of the Company's employees is approximately 7:1.

Remuneration of the Executives

	2017		2018	
	Number	Total Amount (THB)	Number	Total Amount (THB)
Salary	12 ¹	92,112,950	16 ¹	105,475,290
Bonus		56,137,890 ²		75,388,087 ³
Other compensation ⁴		12,310,683		14,474,373
Total		160,561,523		195,337,750

In 2018, compensation (salary, bonus, and contribution to the provident fund) of PTTEP's and the subsidiaries' employees, including wages of the seconded employees, totaled THB 8,147,346,747.

8.5 Personnel

As of December 31, 2018, PTTEP and our subsidiaries had a total workforce of 3,861 employees.

Number of Employees*

Employee Type	Total (Persons)
Thai Permanent Employees	2,076
Thai Contracted Employees	1,269
Non-Thai Contracted Employees	46
Local Employees in Overseas Subsidiaries	465
Seconded Employees from PTT Group Companies and Joint Venture Partners	5
Total	3,861

Remarks: * Based on the Company's database as of December 31, 2018

¹ Executives consisted of the Chief Executive Officer, President of the Exploration and Production, Executive Vice Presidents and equivalent, and PTT's executives who have been seconded to PTTEP.

² Bonus for 2017 was paid in January and February 2018.

³ Bonus for 2018 was paid in January and February 2019.

⁴ Provident Fund

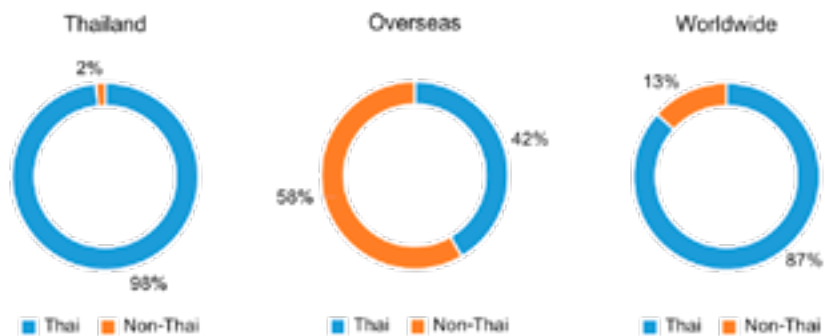
Number of Employees in Each Function Group¹

Function Group ²	Thai Permanent Employee	Thai Contracted Employee	Non-Thai Contracted Employee	Local Employee	Seconded Employee
Chief Executive Officer	12	2	0	0	0
Business and Organization Transformation Group	67	21	1	0	0
Corporate Affairs and Assurance Group	90	22	0	0	0
Engineering and Development Group	239	128	3	21	0
Finance and Accounting Group	133	88	0	0	0
Geosciences and Exploration Group	217	43	18	24	0
Operations Support Group	287	282	18	21	0
Production Asset Group	820	612	1	399	5
Strategy and Business Development Group	79	12	2	0	0
Internal Audit Division	24	1	0	0	0
Safety, Security, Health and Environment Division	48	15	2	0	0
Human Resources Division	60	43	1	0	0
Total	2,076	1,269	46	465	5

Remarks: ¹ Based on the Company's database as of December 31, 2018

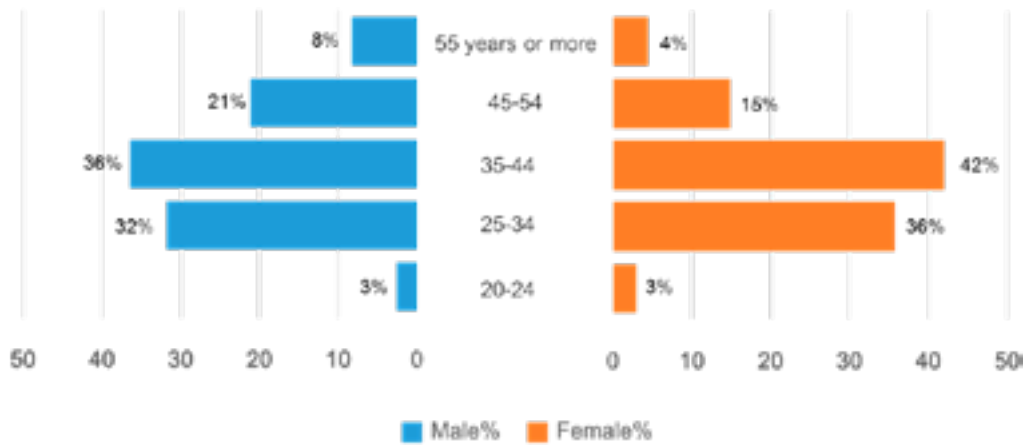
² Based on the Company's organization structure as of December 31, 2018

Staff Demography by Nationality and Work Location¹



Remarks: ¹ Based on the Company's database as of December 31, 2018

Staff Demography by Gender and Age¹



Remarks: ¹ Based on the Company's database as of December 31, 2018

Employee Turnover

	IN ¹	OUT ¹
Thai Permanent Employees	51	69
Thai Contracted Employees ²	56	63
Non-Thai Contracted Employees	9	18
National Employees	131	34
Seconded Employees	0	3

Remarks: ¹ Based on the Company's database as of December 31, 2018

² The turnover was exclusive of outsourced staff hired through services contracts, e.g., maid, drivers, etc. and third party service providers.

In 2018, the Company's total employee turnover rate¹ was 4.62%, while the voluntary resignation rates in 2014 through 2018 were as shown below.

Voluntary Turnover Rate

2014	2015	2016 ²	2017 ²	2018
6.6%	6.3%	5.9 %	3.9 %	3.7%

Remarks: ¹ Including voluntary resignation, dismissal, early retirement, retirement, death

² Resignation and early retirement in 2016 and 2017

8.5.1 Human Resources Development Policy

To increase the organization's capability and accelerate the competency development of the Company's staff for continuous expansion of the business domestically and internationally, PTTEP has developed and improved the capability development system and process by implementing a competency-based 70:20:10 model of on-the-job training, coaching and mentoring, and formal training, respectively. In 2018, the Company provided training and development programs to employees through the following channels.

(1) In-House and External Training

The Company provides in-house and external trainings, domestically and overseas, to staff and management at all levels. These trainings comprise a wide variety of courses, including technical and functional training, Safety, Security, Health and Environment (SSHE) training such as ISO 14001 Environment Awareness Course, organizational knowledge training, as well as other skills required to increase their day-to-day work efficiency, such as computer skills training, foreign language training, business administration, and leadership skills training. Moreover, in 2018 PTTEP has started transforming the company towards digital organization, changing the way of working to be more agile, more efficient, faster, and exploring for new business opportunities in preparation for future growth. In preparation for these, the Company has developed and implemented the new learning and development programs, namely digital literacy, agile way of working, etc.

(2) Long-term Training and Development Programs

Long-term training and development programs are aimed to prepare our employees for roles and assignments in the Company's current and future projects. The programs are generally provided to selected employees based on their Individual Development Plan (IDP) in 1-3 years. Under the approach, the employees are required to undertake on-the-job trainings through various assignments relating to the Company's projects or to be temporarily assigned to work with the Company's business partners or services companies in Thailand and overseas. In the technical areas, mentors are also assigned to assist and coach the employees along their development journey.

(3) Master's Degree Scholarship Programs for Employees

The Company provides scholarships to employees to help them pursue master's degrees in world-class universities all over the world in the following fields.

- (1) Petroleum Geosciences
- (2) Petroleum Engineering
- (3) Engineering
- (4) Drilling and Well Engineering

The Company also provides master's degree scholarships for employees to study in Thailand's reputable institutes as follows:

- (1) Business Administration (Executive), SASIN Graduate Institute of Business Administration of Chulalongkorn University
- (2) Petroleum Geoscience (International Program), Chulalongkorn University

In 2018, the Company invested in human capital development programs at the total amount of THB 193,754,044 and provided more than 200,000 training and development hours for our employees with the average of 55 training and development hours per person per annum. 80% of employees took development actions to fulfil their Individual Competency Development Plan (ICDP). As a result, our employees' competency increased by approximately 5% which was higher than the set target of 3%.

The Company calculates the Human Capital Return on Investment (HCROI) in several dimensions. These include man-hours and cost spent on development activities against total revenue and production, time to autonomy of young technical professionals, and readiness of immediate successors for senior management positions, as well as a continuous development of additional measurements to evaluate the HCROI more efficiently. The results are subsequently used to evaluate and elevate the efficiency and effectiveness of the development activities for further and future improvement.



▶▶ 9. Corporate Governance

9.1 Good Corporate Governance Policy

PTTEP's Board of Directors (Board) recognizes how crucially significant it is to successfully implement Good Corporate Governance and Business Ethics of PTTEP Group (CG&BE). The Board is confident that strict adherence will successfully lead the Company to achieving its goals of "Growth, Prosperity, Stability, Sustainability and Dignity" as well as to enhancing the confidence of our shareholders and other stakeholders. The Board has assigned the Corporate Governance Committee to oversee, supervise, and monitor implementation of the necessary measures (CG&BE Program) to assure that the Company's operations are in line with the CG&BE Principles and that good corporate governance is maintained at the level of international standards. Also, compliance to CG&BE is periodically monitored to ensure that CG&BE has been integrated into everyone's work. In 2018, the Company earned various recognitions for our good corporate governance, domestically and internationally. Details are disclosed in the "Awards and Recognitions for Good Corporate Governance" section.

The Board has reviewed the implementation of the Corporate Governance Code 2017 (CG Code), which was established by the Securities and Exchange Commission through means that are suitable to the company's business. The Board fully understands the CG Code's leadership role and the overall usefulness in business applications. The Board assigned the Corporate Governance Committee to ensure CG Code compliance and its appropriate implementation, so as to maximize value in regard to the Company's future and sustainable growth.

PTTEP has continued to develop and apply the CG Code principles together with internationally recognized best practices as follows.

9.1.1 Shareholders' Rights and Equal Treatments

PTTEP's understanding of the importance of shareholders' rights and equal treatments has given rise to the enactment of the Company's Good Corporate Governance principles. They include a number of guidelines to assure the Company's shareholders of their basic rights which, among others, allow them to trade and transfer shares, declare share ownership, and attend shareholders' meetings in person or through their proxies. In addition, the shareholders and their proxies are allowed to participate and vote in significant issues at the Company's shareholders' meetings. These issues could be, for example, election of new members of the Board in replacement of those retired by rotation, determination of the Board's remuneration, in all forms, appointment and approval of the external auditor and the auditor's fees, approval of connected transactions, acquisition or disposition of assets which, based on relevant laws, could be sizeable, and other issues which are of significance to the Company. The shareholders are also entitled to profit sharing in the form of dividends as well as to receiving adequate and timely information from the Company. The Company has only one class of shares, namely, ordinary shares, where one share is equal to one vote. Our efforts to ensure and enhance the shareholders' rights also include the following:

(1) **Annual General Meeting of Shareholders:** In 2018, PTTEP respected and promoted shareholder's rights in its Annual General Meeting of Shareholders (to be known hereafter as AGM or the Meeting) through the following actions.

Before the Meeting

(1.1) Shareholders were invited to propose agenda items and nominate qualified candidates for the election of PTTEP directors prior to the AGM from September 15 to December 15, 2017. The criteria were announced publicly through the SET's portal and the Company's website. The shareholders' proposals would be considered based on the Company's established criteria to ensure that the proposed agenda items were relevant and truly beneficial to the business. The Nominating Committee was to be responsible for short-listing the nominated candidates to the Board for consideration. Afterwards, the Board would inform the shareholders of the resolution, together with the rationale for each of the proposals at the AGM. In 2018, none such agenda items or any candidates were proposed at the AGM.

(1.2) PTTEP disclosed the AGM date approximately two months prior to the Meeting through the SET and the Company's website. The disclosure was made immediately when the Board determined the date on January 26, 2018. In addition, the Company disclosed the date on which the shareholders would have the right to attend the Meeting as well as to receive dividends on February 9, 2018.

(1.3) The AGM invitation letter and supplementary documents, both in Thai and English, were published on the Company's website more than 30 days prior to the Meeting, on February 26, 2018. The invitation letter included necessary details of each agenda item, which clearly stated the types of agenda items, be they for acknowledgement or approval. The Board's opinions on each agenda item are clearly stated, along with other rules and regulations related to the Meeting. A proxy form, which was stipulated by the Ministry of Commerce, was also attached to the invitation letter. A comprehensive list of required documents that the shareholders were required to bring to the Meeting, on the other hand, was provided to preserve their rights to attend, while other attachments included instructions of the Meeting and map of the venue. The AGM invitation letter and supplementary documents were distributed to the shareholders by post 21 days prior to the Meeting.

(1.4) PTTEP provided names of the three independent directors in the proxy form to provide the shareholders with an option to appoint one of them as their proxy. The Company also informed the shareholders about the stake of the independent directors in each of the agenda items; for instance, to elect new directors in replacement of those retired by rotation, an independent director whose term was completed, but then re-nominated for another term, would be considered as having vested interests (but not a special one). However, in the agenda item to approve remuneration of the Board, all of the directors would be considered as having a special interest and therefore were excluded from the voting regardless of the percentage of their shareholding. The Company also recommended that the shareholders use the proxy form, in which they could specify their votes for each agenda items.

(1.5) The Company also invited the shareholders to submit questions related to the Meeting or other information relevant to the Company prior to the Meeting. This action helped to make the meeting more efficient and beneficial to the shareholders. Such questions were consolidated and answered at the AGM as well as recorded in the minutes of meeting.

At the Meeting

(1.1) The Meeting was held on April 2, 2018 at 9.30 hrs. at the Bangkok Convention Center, 5th Floor, Central Plaza Ladprao, Bangkok. The Meeting date, time, and venue were determined by considering convenience for the shareholders. Barcode and electronic systems were used for the registration, vote counting, compilation, and display of

resolutions to ensure that the Meeting was carried out with full efficiency and accuracy. Assistants were adequately arranged to facilitate the process. To accelerate the registration process, the registration was opened to the shareholders four hours prior to the Meeting. The Company also provided duty stamps to the shareholders who intended to vote through a proxy.

(1.2) All 15 PTTEP directors attended the Meeting. The Company's Chairman presided over the Meeting, while the sub-committee chairmen, Chief Executive Officer, senior executives from the Finance and Accounting Group, and senior executives from other function groups also participated to respond and provide clarifications to inquiries from the shareholders. The auditor, external legal advisors (inspectors) from Weerawong, Chinnavat & Partners Ltd., shareholders' right protection volunteers from Thai Investors Association, and volunteers from shareholders to witness vote counting, also participated in the Meeting. The Chairman ensured that the Meeting was carried out in accordance with the Company's Articles of Association (AoA) and the agenda items were as stated in the invitation letter. The Chairman efficiently allocated time to each agenda item and provided adequate time and opportunity for the shareholders to share their views and make in-depth inquiries in regard to those subjects relating to the Company's operations and the Meeting's agenda items prior to the vote casting and resolution.

(1.3) PTTEP clearly provided information on the number and ratio of the shareholders who attended the Meeting in person and via proxies, including the procedures, vote casting, vote counting before the commencement as stipulated in the Articles of Association. The shareholders and proxies were required to use voting ballots to vote on each agenda item scheduled for the Meeting whether to agree, disagree, or abstain. For each agenda item, a barcode system was used to tally the votes, and each agenda item was treated and voted on separately, to ensure an accurate and effective vote-counting procedure. The resolution was clearly reported and displayed in the Meeting as required by relevant laws and the Company's Articles of Association, and volunteers who were selected from the shareholders and independent inspectors, were to be appointed to witness the vote-tallying and sign off on all the ballot cards collected, counted, and signed. These cards were for the internal reviews that took place after the Meeting adjourned.

The Company permitted shareholders who arrived at the Meeting after it had commenced to cast their votes in the agenda item that was in the consideration process or had not been considered or voted at the time of their arrival. The Company were also to count these shareholders as participants in the Meeting starting from the agenda item when they arrived.

(1.4) All information presented at the Meeting was available in both Thai and English, while a translator translating from Thai to English for foreign shareholders who attended the Meeting was also provided to ensure fairness and equality among the shareholders.

(1.5) External independent legal advisors, acting as inspectors as well as witnesses, were engaged to oversee the Meeting to ensure the Meeting's transparency and that it was conducted lawfully in accordance with the Articles of Association. Responsibilities of the inspectors included verification of the documents and the proxy examination process, ensuring a quorum as well as assuring that none of shareholders with potential conflicts of interest cast voted on such agenda items, and making sure that the voting procedure and voting count were in line with the Articles of Association or as stated by the Chairman of the Meeting. The inspectors were also responsible for ensuring ballot collection from the attending shareholders and auditing of the vote-tallying. In addition, volunteers, who represented the shareholders at the Meeting, were appointed to act as witnesses for the vote-counting procedure for each agenda item.

After the Meeting

(1.1) PTTEP disclosed the Minutes of the Meeting together with the vote-tallying results from each agenda item to the SET and also in the Company's website on the same day immediately after the Meeting.

(1.2) Minutes of the Meeting, in both Thai and English, were accurately and completely recorded. They covered explanations of the Meeting's voting and vote-tallying procedure, contents, questions, and opinions related to PTTEP's business operations and the Meeting's agenda, as well as clarifications of each agenda item made by the Company's directors and top executives. The Company also recorded the resolution of each agenda item, categorized as agreed, disagreed, abstained, and voided (if any) as well as names and positions of the directors and executives who attended the meeting. Furthermore, within 14 days after the Meeting, the final version of the Minutes of the Meeting were delivered to the Ministry of Commerce, SET, and the Office of the Securities and Exchange Commission (SEC). The Minutes of the Meeting were also be delivered to the Company's shareholders for their reference and consideration, and determining whether there were any shareholders who wished to make objections did so within the timeframe enforced by relevant laws. In 2018, the Company did not receive any objections or inquiries from the shareholders in regard to vote tallying results and minutes of meeting. The approved minutes, video and audio clips of the Meeting were also published, both in Thai and English, on the Company's website.

(2) **Disclosure of Significant Material Information:** PTTEP ensures that information communicated to the shareholders is timely and accurate, not only for the information that is required by related regulations, but also for other information which the Company considers as necessary for the shareholders to have. These disclosures are publicized through various channels, such as the SET and the Company's website, and media or printed media.

The Company clearly discloses the shareholding structures in our subsidiaries and associated companies as well as with the controlling shareholder, namely PTT, to ensure the shareholders that our organization's structure is transparent, verifiable, and does not comprise any form of cross or pyramidal shareholding structures.

(3) **Fostering Understanding of Business Operations and Long-Term Engagement with Shareholders:** PTTEP continuously organizes various activities for the benefits of shareholders and society. The Company provided equal opportunities for all shareholders to participate. In 2018, such main activities were as follows:

(3.1) PTTEP organized activities for 100 shareholders to visit our supported CSR project at the Vidyasirimedhi Institute of Science and Technology (VISTEC) and the Kamnoetvidya Science Academy (KVIS) at Wangchan in Rayong Province to enhance understanding of PTTEP's objectives in CSR activities and our priority on being responsible to society. In addition, this particular activity aims to boost engagement and long-term relationships between the Company and its shareholders.

(3.2) PTTEP organized trips to visit our Sirikit Oil Field in Kampheng Phet Province for 249 shareholders including representatives from the Thai Investors Association, so that they could gain understanding of the Company's operations, learn facts about exploration and production and ensure increased confidence in the Company. The participants of the trips included not only shareholders who had never joined such visits, but also shareholders who previously had joined the visit and were willing to be responsible for the travelling expenses themselves. This is in accordance with the suggestion given by the shareholders at the 2018 Annual General Meeting of Shareholders.

(3.3) PTTEP published a quarterly newsletter to provide an additional means of communication between the Company and the shareholders or investors or any other persons interested in the Company's performance. The newsletter included information on operational performance, progress of key projects, Corporate Social Responsibility (CSR) activities, and corporate governance activities. The Company also published other useful information; for example, details on the "Contribution from Bongkot and Erawan", and "PTTEP's commitment to Thailand," explaining the way Bongkot field secures an energy supply to Thailand, which is also our key mission. PTTEP provided a regular update regarding the bidding for Bongkot and Erawan. Information regarding anti-corruption measures was also disclosed. The quarterly newsletter was publicized on the Company's website as well as sent to the shareholders upon request.

(4) **Equal Treatments to Shareholders:** PTTEP provides a direct communication channel between our shareholders and independent directors through e-mails at IndependentDirector@pttep.com. The Company's shareholders, for example, are able to access more information from or make inquiries to independent directors in regard to their activities, corporate governance, and audit-related issues. In addition, the shareholders are allowed to directly contact the Corporate Secretary at CorporateSecretary@pttep.com or Investor Relations Unit at IR@pttep.com for additional information. The Company operates businesses with optimal efficiency, with a focus on sustainability of the organization, appropriate and consistent returns to the shareholders, and long-term relationships with the stakeholders, ensuring that all are managed and assessed by the use of modern and well-accepted management tools.

(5) **Prevention of Insider Trading**

PTTEP puts a great emphasis on controlling the use of our internal information by including this matter in the CG&BE, under Insider Trading and Use of Inside Information Section. In addition to being in line with securities laws, policies relating to use of the internal information are regularly reviewed to preserve the integrity and equality among all of the Company's stakeholders. Key approaches are as follows:

(5.1) The Board assigned the Compliance Department¹ as the center for monitoring the insider trading prevention program and preparing an Insider List, a list of personnel who bear material and nonpublic information; this mainly includes directors, related management and employees.

(5.2) The directors, management, and employees are always informed of PTTEP's regulations and policies with regards to the prevention of insider trading through various communication channels as well as trainings for employees to ensure that they understand and strictly follow relevant regulations and policies to prevent anyone from misusing such information directly or indirectly for personal interests. Disciplinary actions are clearly specified, while the supervisors, regarded as the CG leaders, are responsible for advising and encouraging their subordinates to follow suit. In 2018, there was no reports of breaches of insider trading.

(5.3) PTTEP requires a group of personnel in an Insider List to abstain from trading of the Company's securities during the blackout periods, such as when important information which may affect the securities' prices are going to

¹ Since January 1, 2019, the Compliance Department has been renamed to the Governance, Compliance, and Internal Control Department, as part of the organizational restructuring of PTTEP to centralize all compliance works into the same function.

be disclosed. Such instances include the release of the Company's financial statements or operating results as well as accomplishment of new project acquisitions. The Compliance Department¹ will announce such a blackout in advance to the aforementioned personnel including all directors, Executive Vice Presidents (EVPs), Senior Vice Presidents (SVPs), Vice Presidents (VPs) of the Finance and Accounting Group (FNA) as well as other management and employees bearing important nonpublic information. This prohibition applies to direct and indirect selling and/or buying of PTTEP's securities during the blackout periods of such individuals, including their spouses or cohabiting couples and minor children and juristic persons, who are the aforementioned persons who possess shares exceeding 30% of the total voting rights of such entities. Violation of this prohibition is considered to be a disciplinary offense.

In addition, the Board requires all of the Company's directors, management holding position of SVPs and above, VPs of FNA as well as their spouses and minor children to refrain from direct and indirect trading of PTTEP's securities at all times and to inform the Compliance Department¹ two days in advance if they deem it necessary to trade.

(5.4) The directors, management holding position of SVPs and above, and VPs of FNA are to disclose complete information regarding their possession of securities as well as related activities to the Compliance Department¹, and not only to the SEC, to further report to the Board on a monthly basis for CG&BE compliance monitoring purposes. Shareholding by the directors and EVPs, VPs and above of FNA is also disclosed in the Company's annual report as required by the SEC.

(6) PTTEP requires the directors, EVPs, and VPs and above of FNA to immediately report their conflicts of interest to the Company should there be concerns, either by himself or herself or a related person. The Corporate Secretary must then send a copy of the report to the Chairman of the Board and the Chairman of the Audit Committee for their acknowledgement within seven working days after receiving it, as stipulated by the Board, the Securities and Exchange Act, and the Capital Market Supervisory Board.

(7) PTTEP compiles a set of guidelines to handle conflicts of interest in the CG&BE for the directors, management, and employees to strictly follow. These guidelines require all personnel to report on an annual basis to the Company every possible conflict of interest, both of their own and of their related persons. Should there be a conflict of interest, the individual must immediately report to the Company and be excluded from participation or abstain from voting in those certain related issues.

9.1.2 Roles of Stakeholders

The Board has approved PTTEP's mission which puts an emphasis on the rights of and value creation for stakeholders. The Company's mission is to operate globally to provide a reliable energy supply and sustainable value to all stakeholders. On the other hand, the Company's stakeholders, whether they are internal or external parties, have always been taken into account when decisions are made. Major stakeholders of the Company are, including but not limited to, shareholders, customers, employees, governments, joint venture partners, communities, societies and environment, suppliers, creditors, competitors, customs and traditions groups, and human rights groups. The importance of the Company's

¹ Since January 1, 2019, the Compliance Department has been renamed to the Governance, Compliance, and Internal Control Department, as part of the organizational restructuring of PTTEP to centralize all compliance works into the same function.

stakeholders is clearly written in the CG&BE in which practical guidelines with respect to business ethics are established in an effort to maintain the balanced duties and responsibilities between the Company and our stakeholders. Details of the CG&BE, contact details, whistleblowing channels are disclosed in the Company's website.

9.1.2.1 Anti-Corruption Efforts

Importance

PTTEP's Board of Directors (Board) recognizes the importance of corporate governance and how we need to be transparent and have zero tolerance for all forms of direct and indirect corruption, which is primarily through mechanisms which are in line with the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE) and which have been developed to regulate every vital area of the businesses. Everyone in the organization and related parties, including directors, management, employees, and vendors is strictly obligated to sign and conform to our CG&BE Commitment of Compliance with the highest standards. The Board has determined to apply CG&BE to our subsidiaries as well. The Company continues to encourage other related parties such as joint venture partners to uphold these best practices in regard to all matters.

The Board firmly believes that effective anti-corruption measures require good corporate governance with clear management and governance structures, adequate and appropriate risk management, internal controls, close supervision, and independent audits. Clear guidelines in all relevant issues as stipulated in the CG&BE, in turn, require the Board and management to function as exemplary role models and Corporate Governance Leaders (CG Leaders), while the Corporate Governance Committee is to remain responsible for monitoring of this compliance. The Company's CG&BE is written and based on our internal control principles and published in traditional formats as well as in digital and downloadable formats in our website for the stakeholders and those interested, in Thai, English, and Burmese. In addition, the Company established its "Standard of Practices for Anti-Corruption" which is one of the Company's internal control measures for our management and employees to adopt in order to prevent and minimize corruption risk.

Furthermore, in order to ensure transparency within PTTEP Group operations, the Company has insisted on the "No Gift Policy" whereby accepting gifts and other benefits from external parties is prohibited. PTTEP has also clearly communicated this policy to external parties. PTTEP has adopted "Integrity & Ethics" as PTTEP values and is instilling them into all employees across the organization.

Scope of PTTEP Group's Anti-Corruption Policy

PTTEP's CG&BE has been considered as an integral part of the Company's anti-corruption policy as it also covers all principles, practical guidelines, and clear examples of the issues relating to anti-corruption measures. These include a good corporate governance structure as stipulated in the Corporate Governance component, practical guidelines and treatments of the following subjects: conflicts of interest, procurement and contract, anti-money laundering, political neutrality, the use and maintenance of data and assets, and anti-corruption as part of Business Ethics. The CG&BE also has mandatory conditions with regard to the Company's directors, management, employees, subsidiaries, the PTTEP Group's vendors, who are required to sign agreements to conduct their business in accordance with our CG&BE. PTTEP encouraged joint ventures to uphold the standard of our CG&BE as appropriate.

The Company defines corruption, based on related principles and both domestic and international laws, applicable to our operation. The Company primarily considers that no action is to inappropriately entail any form of an individual's use of authority or another person's use, for undeserved exploitation to gain benefits. Besides, such an act is deemed a violation of the laws and/or the PTTEP Group's regulations. Our anti-corruption policy covers all forms of corruption whether conducted as a giver, receiver, or through a designated representative or agent. The Company also recognizes that certain activities, such as not-for-profit donations, sponsorships, or facilitation payments may be determined as risky as these can potentially be used as a channel for corruption. The definition of "corruption" therefore also extends to include such activities and extra precaution must be taken to ensure all activities are conducted without any corruption. PTTEP does not make donations to support political parties for election campaigns, both at the local and national levels.

Measures and Principles for Implementation

Implementation of anti-corruption measures reflects the company's strength of its internal control system, risk management, compliance and auditing channels in addition to enhancing the cultural and ethical values of the organization. Each aforementioned area falls under the responsibility of a designated unit. PTTEP implements its governance structure by adopting the Three Lines of Defense Model which enhances the effectiveness of internal control and risk management system as follows:

(1) First Line of Defense: The departments who will determine whether internal controls and appropriate risk management are to be conducted; these departments also ensure compliance with applicable laws and regulations. A person is required to pass rigorous training to ensure that he or she has an adequate level of knowledge and is ready to carry out their duties and responsibilities as well as be able to handle a variety of circumstance.

(2) Second Line of Defense: The units who are responsible for overseeing the general laws, regulations and policies of the organization, establish and ensure compliance with regulations, and mainly consist of the Corporate Governance Unit, Risk Management Unit, Internal Control Unit, and Compliance Unit which are all under the function group called the "Corporate Affairs and Assurance Group". Our Governance, Risk, Compliance Management System (GRC MS) has been established for integrating management that would be able to achieve stated objectives, in compliance with the legal requirements and under adequate risk management. The GRC MS is divided into nine elements: (1) Leadership and Commitment, (2) Policies, Objectives, and Plans (3) Organization and Resources, (4) GRC Assessment, (5) Controls and Response, (6) Monitoring and Assurance, (7) Audit, (8) Continual Improvement, (9) Communication and Culture.

(3) Third Line of Defense: The Audit Unit works together with PTTEP's external auditors to independently audit the overall implementation of both the First Line and Second Lines of Defense.

The units which are responsible for the GRC to regularly conduct internal control assessment on potential fraud risks, which include risks of asset misappropriation, corruption, and fraudulent financial reporting, and following adequacy evaluation of the internal control system. All this ensures that the Company remains in accordance with the Office of the Securities and Exchange Commission (SEC) regulations. The Company's Vice Presidents, from each of the function groups, assess our fraud risks on the basis of 3 considerations, namely, pressure, opportunity, and rationalization. The results of the assessment indicate that PTTEP has an adequate and appropriate level of internal control. The majority of the function groups have carefully assessed these 3 considerations and adjusted their measures so that they are timely and appropriate.

The Company also has other tools to prevent corruption. These include review and incorporation of anti-corruption risks to the 2018 Risk Profile: Legal Division, as well as to specify key risk indicators and mitigation plans that will closely monitor these risks and promote awareness and anti-corruption practice to employees.

Continuous Communication and the Provision of Knowledge and Training

Our Corporate Governance Committee has a clear plan to foster the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE), together with anti-corruption policies, among everyone at the Company as well as all related parties of the organization, through continuous trainings and activities. The activities are designed to accommodate interests and knowledge levels of all target groups and expand to cover those of the external parties such as vendors as well. Achievement indicators for both internal and external parties are subsequently established and reported to the Corporate Governance Committee and the Board on a quarterly basis. These steps are taken to ensure that all of the parties adhere to the policies thoroughly and efficiently. In 2018, the following operations related to anti-corruption measures were implemented:

Measures for internal parties

(1) Induction of the principles of Governance, Risk Management & Compliance (GRC) for the Company's new Board members, executives, and employees, in order to foster understanding and strict adherence.

(2) Organization of "Integrity Forum : Let's create the society with zero tolerance to corruption" on June 14, 2018 at Energy Complex Building B for the management and employees to foster awareness on the importance of being part of the mechanism that drives national strategy on anti-corruption and encourages integrity values among PTTEP employees. Honorable speakers in the forum included Assoc. Prof. Dr. Manee Chaiteeranuwatsiri, Advisor to the President of National Anti-Corruption Commission, Dr. Bandid Nijathaworn, Councilor and Secretary of Thailand's Private Sector Collective Action Coalition Against Corruption (CAC), and Dr. Somporn Vongvuthipornchai, the incumbent CEO of PTTEP.

(3) Promotion of GRC among the Company's Board members on a quarterly basis to provide related information and case studies that are beneficial to the Board of Directors, before the start of Board meetings, whereby the chairman of each meeting would emphasize the importance of GRC and encourage all directors and management to put what they had learned into practice. Topics presented in 2018 are as follows:

- The Key success factor to drive ethical culture in the organization
- The matters in the draft Organic Act on Counter Corruption (anti-corruption law) that are significant to PTTEP
- The disclosure of changes to possession of securities and derivatives of the directors, executives, and auditors, and their assets declaration in accordance with the Organic Act on Counter Corruption, B.E. 2561 (2018)
- The details of the Notification of the Office of the National Anti-Corruption Commission (NACC) regarding criteria and procedures for declaration of assets

(4) Organization of GRC full-day refreshment courses for employees who had passed the induction course, covering the policies and application of CG&BE, risk management, internal control, and compliance, with a focus on anti-corruption and related issues to ensure understanding and effective application to daily operations.

(5) Organization of half-day 2018 CG&BE Workshops for the Company's management and employees at the PTTEP head office to promote a better understanding and effective implementation of the CG&BE. The workshop started with an opening speech by the top management of each function group to underline the importance of the CG&BE. Exchanges of ideas and discussions were encouraged, also through enjoyable activities, to make the workshop effective.

(6) Organization of GRC Workshops for employees at S1 Project, PTTEP Petroleum Development Support Base (PSB), and Sinphuhorm Project to increase their understanding and awareness on the significance of CG&BE and GRC, including its application to their roles and responsibilities.

(7) Organization of GRC Troop on July 24, 2018 at PTTEP Head Office, with the Troop led by CEO and the management. This was to encourage the management and employees to pledge on "Being Genuine PTTEP, Dare to say and keep your word" to enhance awareness and understanding of GRC, promote application of GRC Principles, and emphasize Integrity and Ethics culture in PTTEP.

(7) Organization of Anti-Corruption training, continued from 2017, for the management and employees to increase their understanding of causes, impacts, regulations, risk management, internal control, and standards of practice for anti-corruption whereby 99.63% of the targeted management and employees participated and passed the training.

(8) Organization of the annual "PTT Group CG Day 2018" under the title of "PTT Group CG Day 2018: Born to be REAL" on August 24, 2018, focusing on transparency in the PTT Group at all levels, as well as among the vendors, customers, and society, to sustainably create a transparent and corruption-free culture in the country.

(9) Establishment of a whistleblowing communication system to promote the Company's whistleblowing channels and to create greater understanding of protection and process, including disclosure of these cases and penalties on an annual basis (details are shown under "Whistleblowing Reporting and Protection Procedures" part.) to promote not only anti-corruption, but also transparency values within the Company

(10) Continuation of the Company's communication channels, such as standee/notice boards, and newsletters to provide continuous flows of knowledge among the employees at the headquarters and at all of our operating sites.

Measures for external parties

PTTEP has a clear intention to become a leading company in the realm of Corporate Governance (CG) internally and externally. This includes implementation of a policy which also covers external parties, for example, vendors, partners, and representatives of the PTTEP Group. The Company has continued to encourage these external parties to conduct businesses that are ethical and corruption-free through the following activities.

(1) Promotion of PTTEP's anti-corruption policy together with its Whistleblowing policy in the 2018 PTTEP SSHE Contractor Forum, so that the policies are continually communicated and emphasized to vendors.

(2) Clear communication directed at PTTEP's vendors regarding the Company's "No Gift Policy", under which vendors are requested to refrain from giving gifts or other benefits to the Board of Directors, management, and employees regardless of the occasion. The PTTEP's anti-Corruption VDO clip has been placed on the Company's website to further emphasize the need to conform.

(3) Clear communication directed at external parties regarding the Company's "No Gift Policy" on the Company's website and in advertisement posters at PTTEP office buildings, especially near the guest reception areas where the posters are easily noticed.

(4) Promotion of corporate governance and anti-corruption values in society by participating in various public activities in 2018 (details are shown under "Collective Efforts with the Public to Counter Corruption" section.)

(5) Organization of "Driven Proactive Sustainability" seminar, in conjunction with Money Channel and Money & Wealth magazine, on Wednesday 8th August, 2018 at Professor Sangvian Indaravijaya Conference Hall, the Stock Exchange of Thailand, where Dr.Somporn Vongvuthipornchai, the incumbent CEO of PTTEP, participated as one of the speakers under the topic "Governance, Risk Management and Compliance (GRC) for business sustainability" together with other honorable speakers, specifically, Khun Oranuch Apisaksirikul - Chairperson of Thai Listed Companies Association, Khun Prasan Chuaphanich - Chairman of the Board of the Thai Institute of Directors Association (IOD), and Dr. Waitune Pokachaipat – President of TRIS Corporation Limited to share opinions regarding driven GRC for business sustainability.

(6) Organization of "GRC Sharing" session for the private sector, The Securities and Exchange Commission (SEC), and Bank of Thailand on October 25, 2018 to exchange knowledge, experience, and implementation of GRC.

In addition, the Company provided channels for the external parties to contact and make inquiries with regard to the CG&BE by emailing directly to the Corporate Secretary Unit at corporatesecretary@pttep.com.

Whistleblowing Reporting and Protection Procedures

PTTEP's Board of Directors has established its Reporting and Whistleblowing Regulation for the PTTEP Group to ensure that the complaint handling process is effective, transparent, fair, and equal to international standards. This regulation is meant to provide protection for whistleblowers and those cooperating with the Company in good faith. This mechanism allows an opportunity for both internal and external parties of the organization to report any suspicious misconduct or wrongdoing that might be in violation of laws, CG&BE, anti-corruption policies, and other related regulations, as committed by the Board, management, employees, or representatives of the PTTEP Group.

Investigations of the complaints are conducted strictly and in an orderly way, in a proper manner, and within the timeframe and procedure as prescribed in the regulation to ensure the transparency and fairness of the complaint handling process. For this matter, the following key measures are carried out.

- The Corporate Governance Section of Corporate Secretary Division evaluates the information and adequacy of the preliminary evidence before forwarding the complaint to the Company's investigator within seven working days. If this period must be extended, the extension can only be made with the approval from the CEO. Each extension must not exceed seven working days.

- The review procedure and conclusion of the complaints can be categorized into 2 types, i.e., non-complex cases and complex cases. Non-complex cases will normally be completed within 30 working days, while complex cases will be completed within 60 working days. If the period is extended due to necessity, the extension can only be made with the approval from the CEO. Each extension must not exceed 30 working days. The case investigators cannot be

individuals who are stakeholders of the complaint. Every complaint coming through from the whistleblowing channels is summarized and reported to the Corporate Governance Committee and/or Audit Committee, depending on the case, in addition to the Company's Board of Directors.

Whistleblowing channels of the PTTEP Group are as follows:

- (1) Mail to PTTEP director, supervisor, or the Corporate Governance Section of the Corporate Secretary Division:
PTT Exploration and Production Plc.
555/1 Energy Complex Building A, 33rd Floor,
Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900
- (2) E-mail to supervisor or the Corporate Governance Section of the Corporate Secretary Division (cg hotline@pttep.com)

(3) Report through the whistleblowing system which is available on PTTEP's website (www.pttep.com). The system will assign an individual Report Number and PIN to the whistleblowers to ensure security and prevent forbidden access by unauthorized personnel, as well as to allow the whistleblowers to perform a follow-up on the progress of the reported complaint and request further details and make inquiries. This system serves as a necessary tool for preventing and monitoring the risks of corruption.

In 2018, PTTEP received a total of ten complaints through the Whistleblowing Channels. After reviewing the clarity and adequacy of these complaints, six cases were accepted and processed for further investigation. Investigation of five complaints was completed while another complaint is still under investigation process (completed in January 2019). A summary of complaints in 2017 and 2018 is shown in the table below.

Topic	2017	2018	Change
Number of whistleblowing cases	8	10	25% (↑)
Whistleblower			
- External reporter	4	2	50% (↓)
- Internal reporter	2	7	250% (↑)
- Anonymous reporter	2	1	50% (↓)
Number of accepted cases after considering evidence and witnesses	7	6	14% (↓)
Number of wrongdoing cases	3	3	-

Investigation results of the five completed cases are as follows:

- Wrongdoings were investigated for three of the cases while the other two cases were determined to have no grounds for any wrongdoings.
- The admitted wrongdoings were related to a breach of CG&BE and/or corruption, and the company has resolved the inappropriate circumstances or has proceeded with disciplinary actions base on Human Resources Regulations as follows:

1. Failure to disclose a conflict of interest related to employee recruitment – the recruitment process has ceased. The supervisor was asked to provide the wrongdoer with the correct practices and assign the wrongdoer to attend a CG&BE training session.

2. Use of internal information for personal businesses - the wrongdoer was punished with a written warning and was then advised of the appropriate and correct action.

3. Corruption related to low-value procurement (values that are less than THB 500,000) for which the total value of related transactions stood at approximately THB 1.2 million - The Company punished the wrongdoer by employment termination without compensation. In addition, the Company has improved the internal control measures to be more efficient, e.g., expansion of using electronics tender (E-Tender) system for low-value procurement throughout the organization.

The three aforementioned cases did not result in any financial impact on the Company. The Corporate Governance Section reported the results of the complaint investigations to the complainants, the Audit Committee or the Corporate Governance Committee (depending on the case), as well as to the Board. The findings of the case were used to carry out further improvements of the Company's internal control measures.

In 2018, there was a revision of the Reporting and Whistleblowing Regulation for better coverage and more efficiency in terms of the whistleblowing management process and to become in line with good practices; for example, addition of remedy and reporting to a government office as specified by law, which has already come into effect, on January 1, 2019. Also, there was an enhancement of the whistleblowing system, so that it would become more effective two-way communication. There was also an amendment of the process to align with the revision of the Reporting and Whistleblowing Regulation.

For more details of the Reporting and Whistleblowing Regulation and Whistleblowing System, please visit the PTTEP website at <https://www.pttep.com/th/Aboutpttep/Corporategovernance/Reportingandwhistleblowingregulations.aspx>.

Monitoring the Implementation of Anti-Corruption Measures

The Board has assigned the Corporate Governance Committee to monitor the implementation of the Company's anti-corruption policy, which is an important part of our CG&BE. The Corporate Secretary is responsible for gathering of the information and reporting of the results to the Corporate Governance Committee at meetings on a quarterly basis. Implementation of PTTEP Group's anti-corruption measures also requires cooperation from several other units which serve as the Second and Third Lines of Defense. Each unit has its own individual reporting system; for example, reporting to the Risk Management Committee and/or the Audit Committee. In addition, all results must be reported to the Board of Directors and the Company's shareholders through the Annual Report.

The Corporate Governance Committee also monitors performance of the measures on a yearly basis based on the CG&BE and evaluates the performance by using Key Performance Indicators (KPIs) to ensure that the goals are met.

Audit

PTTEP designates the Internal Audit Division to perform auditing tasks, which include investigation of corruption, and undertaking further examination when complaints or issues appear. Currently, the Internal Audit Division has a comprehensive set of practical guidelines on fraud investigation that covers risk assessment, prevention and detection of corruption, as well as practical guidelines used in the investigation process for complaints of fraud.

PTTEP has implemented its Continuous Control Monitoring System to monitor and inspect any irregular issues that occur in PTTEP's work processes. The system has initially been conducted on the Procure to Pay process, targeting the risk of non-compliance to regulations or work procedures that may possibly lead to fraud. When an issue has been detected, the system will send a notice directly to management, enabling them to promptly resolve the matter. In 2018, PTTEP has expanded the scope to include low-value procurement transactions, or transactions less than 500,000 Baht for the most inclusive coverage of monitoring.

Collective Efforts with the Public to Counter Corruption

PTTEP acknowledges the significance of our role as a listed company by assuring our shareholders and stakeholders with the confidence that the Company's management is transparent, fair, and corruption-free. The Company, whose major shareholder is the government, has a responsibility to lead by example and to encourage society to adopt better anti-corruption standards. In 2018, the Company proactively took several measures and participated in several activities to counter corruption. These were, for instance, Thailand's National Anti-Corruption Day which was organized at BITEC phase 2, BITEC Bangna by the Anti-Corruption Organization of Thailand (ACT) on September 6, 2018, where our CEO, management, and employees pledged to combat corruption; and International Anti-Corruption Day (Thailand) which was organized by the Thai government, Office of the National Anti-Corruption Commission (NACC), the Office of Public Sector Anti-Corruption Commission (PACC), the Anti-Corruption Organization of Thailand (ACT), and other anti-corruption networks at Impact Exhibition Hall 2, Impact Exhibition and Convention Center, Muang Thong Thani on December 7, 2018.

PTTEP became an "Active Level" member of the United Nations Global Compact (UNGC) in 2011, and, on April 1, 2015, the Company was promoted by the UNGC to the "Advanced Level" for our compliance to the UNGC's principles in the areas of human rights, labor, environment, and anti-corruption. The Company considers such international recognition as one of our proudest achievements. In addition, in 2016, the Company also became a founding member of the Global Compact Network Thailand.

PTTEP was re-certified as a member of Thailand's Private Sector Collective Action Coalition Against Corruption (CAC) on May 17, 2018. This re-certification confirms our dedication and commitment to fight all forms of corruption, as well as affirming our effort to expand and encourage anti-corruption measures among subsidiaries, joint venture partners, vendors, and business partners.

9.1.2.2 Policy on Treatment to Stakeholders

(1) Shareholders

PTTEP respects the shareholders' rights and treats them with equality, while adhering to carrying out the Company's business with the CG&BE to achieve sustainability and create optimal value for shareholders. Details are disclosed in the "Shareholders' Rights and Equal Treatments" section.

(2) Employees

(2.1) PTTEP complies with the UN principles by not employing illegal workforce and child labor in every area in which we operate. The following guidelines are described in the Company's CG&BE.

(1) To understand and comply with all laws applicable to the PTTEP Group's operations in the locations where we conduct our business

(2) To understand the local customs, cultures and traditions of the locality in which we operate

(3) To respect the local traditions, cultures and cultural differences, and not to behave in any ways which contradict them

(4) Not to discriminate against any individuals based on our personal relationship with that individual, his or her ethnicity, nationality, gender (including pregnancy, and sexual preference), age, religion, disability, personal views, or any other conditions or characteristics which are not concerned with work

(2.2) PTTEP recruits, selects, and employs employees based on their qualifications, experience and abilities to work in the target positions. According to the Good Corporate Governance and Business Ethics of the PTTEP Group, both internal and external candidates shall be fairly treated during our transparent recruitment process. Our employees are given an opportunity to develop and grow in their professional career as well as to join external activities under the Company's policy.

(2.3) PTTEP sets up and regularly reviews compensation and benefits packages to ensure fairness to both the Company and the employees according to our short-term and long-term business performance, pay positioning in petroleum industry in each of the countries, types of work, required skills and expertise, difficulties of work, responsibility and accountability of each position, and the individual employees' performance results to attract and retain competent and capable employees.

(2.4) PTTEP provides and regularly reviews welfare and benefits packages to ensure fairness to both the Company and the employees according to our ability to pay at the present and in the long run, focusing on the welfare and benefits which help to enhance the quality of life of the employees and their families. These are, for example, housing interest subsidy program, and healthcare benefits for employees and their families which are comparable to those provided by other petroleum companies in each of the countries. The Company regularly reviews welfare and benefits program to suit the changing social, economic, and other obligatory conditions of the business. In addition, the Company also provides psychological and legal consultation services through our "Sabaijaidee" program to the employees, their spouses and children to help them guard against anxiety from their family, private life, and work concerns. The services are provided by psychologists and professionals from one of our consulting companies.

The Company establishes a provident fund program for our employees to ensure their financial security after resignation and retirement. The fund consists of contributions from both the Company and the employees. The Company makes a monthly contribution at a rate of 15 percent of our employees' basic monthly salary, while the employees contribute 2 to 15 percent of their basic monthly salary. Receiving this fund is subject to the Company's regulations.

In addition, the Company also establishes the Long Service Awards Program to celebrate and commemorate the long-term commitment and loyalty of our employees who have achieved significant milestone

years of service, namely, 5, 10, 15, 20, and 25 years of employment with the Company. The award recipients are honored at the special event held at our headquarters in June of every year. The purpose of the program is to strengthen our corporate employee engagement through recognizing and honoring the commitment and dedication of long-term employees, while promoting long-standing careers within the Company.

(2.5) PTTEP gives priority to human resources development to increase the organization's capability to drive the business performance as the Company always believes that human resources hold a key to our success. The Company provides opportunities for the employees to develop and enhance their knowledge, skills and experience through both short-term and long-term training and development programs. Apart from professional capability and necessary skills building, the Company also embeds the working values to all employees, so they can work with the same standard of expected behaviors to attain the Company's vision and mission. In 2018, our employees attended training and development programs such as ISO 14001 Environment Awareness Course at an average of 55 hours per person per year. Details are disclosed in the "Management Structure" section under "Human Resources Development Policy" part.

(2.6) PTTEP realizes the value and importance of a regular consultation between the Company's employees and their supervisors to solve the problems incurred in the day-to-day operation as fast as possible as well as to maintain a good working relationship between them. Shall any conflicts arise between the employees and their supervisors, the employees may file a complaint through one or more communication channels provided. The employees, including relevant witnesses, who comply with the provided measure and procedure and act in good faith shall be protected, without facing a penalty, termination, or any other negative consequences. The CG Hotline channels are also established for the employees to raise the issues relating to frauds. The reports received through these channels will be investigated confidentially and made known only to relevant persons to protect the whistleblowers.

(2.7) PTTEP conducted the Employee Engagement Survey for the seventh time in 2018 with an objective to understand the factors relating to our employees' engagement with the Company to improve the policies and practices. The result showed that 66% of the employees had engaged with the Company, which was 1% higher than last year. The Company also conducted focus group interview sessions to gather information to establish the improvement plan at both the organization and the function group levels. The Company continues to regularly monitor the progress of such plan and continue to conduct the annual Employee Engagement Survey.

(3) Clients

PTTEP is committed to our mission to be a leading producer and supplier of crude oil, natural gas, condensate and LPG at fair and competitive prices. The Company sells the products under short-term to long-term contracts as well as in the spot markets. The Company assesses clients' suitability by the following four criteria, namely, economic return of the product prices, financial stability, safety standards, and compliance to local laws and regulations of each client. The Company treats all buyers equally for the optimal benefit of all and is also committed to strictly complying with the contracts and regularly coordinating with the buyers so that we can produce and deliver quality products as specified in the contracts on time and according to their demand.

(4) Governments

PTTEP conducts the business by adhering to the Good Corporate Governance and Business Ethics and dedicates to explore and supply petroleum domestically and internationally. The Company strictly complies with the laws applicable to our operations in all locations where we operate.

(5) Joint Venture Partners

Joint venture projects between PTTEP and the Company's domestic and foreign joint venture partners operate under mutual working agreements according to the international standards. These agreements include details in regard to the rights and duties of joint venture partners such as the right to become a member of a project's management committee. The committee is responsible for establishment of the guidelines on the procurement of products and services as well as for development of the strategic planning and annual budgeting with a clear scope and approach. The partners also have the right to audit annual financial and accounting records, also to set appropriate and clear measures, for example, penalty imposed on partners for failures to honor an agreement. The Company meanwhile remains focused on distribution of information to joint venture partners and external parties with transparency.

(6) Communities and Societies

PTTEP Corporate Social Responsibility Policy emphasizes sustainable social development and stakeholder engagement at all levels. Social responsibility has been integrated with each business decision-making and execution process. This Corporate Social Responsibility Policy is adopted at all PTTEP operations areas.

In this regard, PTTEP uses the Issue and Stakeholder Management System (ISMS) as a tool to analyze social risks and mitigate impact as well as to promote good relationship with communities in every operating areas. ISMS KPI has been set for the relevant managers and External Relations staff to ensure the effective implementation. In 2018, ISMS workshops were conducted to cater for the executives and staff of all domestic and international projects of PTTEP.

(7) Environment

To align with PTTEP's new vision, "Energy Partner of Choice", by creating the shared values and benefits to all stakeholders, PTTEP will engage with stakeholders for mutual benefits, leading us to become a part of business collaboration. The Company continually strives to achieve the excellence and become a leadership in Safety, Security, Health and Environment (SSHE). The Company's SSHE Policy, SSHE Management System, standards, procedures, guidelines and tools, as well as KPIs are developed and implemented throughout all of the operations in order to achieve our vision and commitment in SSHE. The Company continues to publicly disclose the SSHE performances indexes, such as lost time injury frequency rate, total recordable injury rate, and hydrocarbon and chemical spill rates in the website. The information is routinely communicated with the Company's external and internal stakeholders, including the staff and the Department of Mineral Fuels, through the annual Sustainability Report.

PTTEP implements the environmental management system according to the ISO 14001 Standard to improve the efficiency of the environmental management system. Currently, The Company receives the ISO 14001:2015

Certification, issued by AJA Registrars under the United Kingdom Accreditation Services (UKAS). The certified sites include the Arthit Project, Greater Bongkot North and South fields of Bongkot Project, S1 Project, PTTEP 1 Project, L53/43 & L54/43 Project, Sinphuhorm Project, Petroleum Core Research Center, and PTTEP Petroleum Development Support Base (Songkhla and Ranong provinces), and in Australia for PTTEP Australasia Project's support base at Darwin and office of PTTEP Australasia (Ashmore Cartier) Pty Ltd., as well as in the Republic of the Union of Myanmar for Block M9, Zawtika Operation Center in Dawei and the office of the Zawtika Project in Yangon.

PTTEP determines to continue the Green Practice Roadmap which is aimed to mitigate environmental impacts from the operations. The roadmap also aims to increase efficiency and create value added processes to the Company's business by reducing greenhouse gas emission, studying energy consumption efficiency, increasing the biodiversity of our operating sites, CO₂ sequestration by reforestation, reducing operating costs through improving resource efficiency, and reducing wastes. The Company also continues to follow the 5S program throughout our offices similarly to those implemented within the PTT Group as well as to continue with the Group's green supply chain practices which involve green procurement, green logistic, green office and carbon neutral event to use green and environmentally friendly products in the operations. In addition, the Company encourages all employees, both operational and management levels, to understand our environmentally friendly business practices by regularly organizing fundamental and intensive environmental awareness training courses for them in compliance with the laws.

(8) Vendors

According to the Procurement Regulation and the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE), vendors play a crucial part in the sustainability of our business. We therefore employ a policy which aims to treat our vendors as equal business partners. PTTEP's procurement system is based on fair competition, compliance with the laws and regulations as well as other legal obligations, and taking into account the Safety, Security, Health, and Environment (SSHE). The vendors must follow the Company's work safety standards. Their employees meanwhile are also required to have good business ethics and respect for human rights.

PTTEP Vendor Guide

PTTEP developed the Vendor Guide to provide our vendors with the necessary information for contacting and conducting business with PTTEP. The information contained includes CG&BE, procurement process, contract management, and PTTEP Vendor Sustainable Code of Conduct and compliance, as well as several vendor communication channels for enquiries and complaints. Details of the PTTEP Vendor Guide are available on our website at www.pttep.com > E-Service > Procurement and Contract > PTTEP Vendor Guide.

Vendor Registration

PTTEP is deeply committed to free and fair business competition without trade barriers. There are 3 channels for interested vendors to register with the Company.

(1) PTTEP website: Vendors can register their profiles through our website at www.pttep.com > E-Service > Procurement and Contract > Vendor Registration.

(2) The Category & Vendor Management Section: Vendors can contact the Category & Vendor Management officers or Procurement & Contract officers during the business hours to register their profiles.

(3) PTTEP Users: Vendors can directly register their profiles with PTTEP users who may, in turn, provide the vendors' names to the Category & Vendor Management Section to preliminary review of their qualifications.

New Vendor Pre-qualification

PTTEP pre-qualifies suppliers by screening and evaluating them according to their product and service categories. The evaluation process is performed by a special procurement committee and comprised of three functional areas:

- (1) Technical and QA&QC
- (2) Safety, Security, Health and Environment (SSHE)
- (3) Commercial, Legal and Social

Independently, with equality and transparency, each function of the committee has the authority to consider and evaluate the vendors to ensure that they possess the qualifications to deliver the products or provide the services needed. In addition, we also carry out background checks concerning any wrongdoings related to bribery and corruption. If the record shows any involvement in such practices and the vendor is not able to clarify the matter, the selection process will be terminated.

Vendor SSHE Contractor Management Procedure and Plan

PTTEP introduced new measures to monitor and improve the management of vendors regarding SSHE which is one of our core values. The SSHE Contractor Management Procedure and Plan was issued to ensure better understanding as well as to encourage appropriate operational planning. The SSHE Contractor Forum with the vendors is organized annually to promote better understanding about our policies, standards, manuals, operational procedures, and work safety plans on the petroleum exploration and production operations in all of the locations in which we operate.

Government Procurement and Supplies Management Act B.E. 2560

As a state enterprise, PTTEP must comply with the Government Procurement and Supplies Management Act B.E. 2560. PTTEP has communicated to all vendors to be prepared for the new process should they wish to submit a supply proposal to PTTEP. The communication draws their attention to, for example, study the procurement process under the Act; register themselves on the e-Government Procurement (e-GP) system; be aware of the vendor registration requirement by the Comptroller General's Department; and be aware of the anti-corruption policy and the requirement to put in place appropriate anti-corruption directions in relation to procurement. This is to ensure that our procurement procedure conforms to the objectives of the Act, namely value for money, transparency, efficiency and effectiveness, and verifiability.

Procurement Sourcing Strategy

PTTEP prepares an analysis to review the overall procurement performance by using the historical procurement data. This data is used to analyze the operational and market risks, classify products and services into categories (Category Management), and analyze spending by regions, in order to identify critical product categories based on their values and risks.

Upon identifying the critical product categories based on their values and risks, we use the information to prepare a procurement strategy, contract of each product and service category, market analysis in support of future procurement planning, supplier relationship management plan. The procurement strategy and contract, including a list of bidders, will then be submitted to the Procurement Committee (PC) and joint venture partners (if any) for approval prior to proceeding with the bidding. (For transparency, the procurement strategy, contract, list of bidders must be internally approved by the three functions, namely, operations, assets, and procurement prior to being submitted to the PC and joint venture partners, in order to ensure checks and balances as well as verifiability.)

Vendor Selection

In the process of vendor selection for high-value and high-risk procurement, two sealed envelopes are required (one for a technical proposal, another for a price proposal). The technical envelope is opened first for technical and SSHE evaluation, followed by the opening of the price envelope. Subsequently, the result of the bidding process will be submitted to the Procurement Committee (PC), joint venture partners (if any), and the Board (for high-value procurement) for endorsement prior to the stage of contract drafting with the selected vendor. The Company only selects vendors with the required technical and SSHE qualifications, and which offer the lowest price or on the basis of the best interest of the PTTEP Group.

In 2018, we have adopted a weighted technical and price score method in the vendor selection process for critical or high-risk categories, with a view to engaging qualified vendors at a competitive price through a process that is transparent and verifiable.

Contract Management and Assessment

Contract Management and Supplier Relationship Management (SRM) is an important component for the petroleum exploration and production business. A contract holder coordinates between vendors and all relevant parties, to ensure that they fully understand and comply with PTTEP's work plan, contract objectives, SSHE standards, and risk mitigation plan, as well as critical key performance indicators (KPIs). The contract holder also needs to assess and follow up periodically on the performance to ensure that the vendors operate according to the contractual terms. At the end of the contract, the contract holder also must complete the Contract Closed-out Report to identify areas of improvement regarding the operations and long-term sustainable relationship with the vendor.

Vendor Collaboration Initiatives

In 2018, PTTEP has continued to develop an effective supply chain management and supported vendor collaboration initiatives to maintain a good relationship with the vendors. The "Vendor Symposium" was held under the theme "Facing the future with PTTEP global supply chain challenges". The objectives of the event were training on sustainable development based on good governance, and social and environmental responsibility, sharing information on how PTTEP entered into the "Integrity Pact", apprising our vendors of relevant laws and regulations, communication on PTTEP Group's CG&BE, green procurement, and digitalization and transformation. More than 41 vendors participated in the event.

We organized the “2018 SSHE Contractor Forum” with the key objective of demonstrating PTTEP’s strong commitment to continuously improving Safety, Security, Health, and Environment in our operations. Practical guidelines for reducing supply chain risk in social, environmental, and governance (ESG) were also communicated to our key vendors at workshops, to build understanding and encourage them to adopt the same approach.

In addition, the Company, together with our vendors and contractors, carried out a number of key Corporate Social Responsibility (CSR) activities, including an environmental conservation project on making salt licks to provide mineral supplements for wildlife at the Pong Chom Rom Peun, Khao Yai National Park, Nakhon Nayok Province, and a cultural promotion project on traditional Thai arts and culture at the Baan Tai Yuan Local Cultural Center, Saraburi Province. We recognize the importance of society and the environment to sustainable development. We strive to create value for our stakeholders through green and social responsibility, to forge unity and a lasting relationship between the organization and vendors, with the goals of sustainable growth and safely working together for the world.

Local Content

To enhance the capability of domestic vendors to compete internationally, PTTEP supports sourcing of local products and services. Not only does it promote domestic employment and income distribution, it also reduces the outflow of capital to other countries. As a result of our commitment to building a long-term relationship with the communities where we operate, we have been entrusted by the respective communities with licenses to operate. Meanwhile, we also encourage our vendors to operate with care and responsibility wherever they are, and to increase their local sourcing to save on costs as well as to support the local communities.

Vendor Sustainability Management

PTTEP is committed to operating our business to achieve a sustainable growth and adhering to good corporate governance for the community, society and environment. To achieve these goals, we give priority to the supply chain management and the monitoring of our vendors.

“PTTEP Vendor Sustainable Code of Conduct” was drafted with its contents and scope adhering to the relevant rules, regulations and laws. The vendors are encouraged, in all of their activities, to be ethical, respect human rights, comply with the SSHE standard, and prioritize environmental management. An example of PTTEP’s environmental management plan is the ‘Green Procurement Roadmap’ that we have collaborated with the Thailand Environment Institute since 2017. The Company also encourages our vendors to apply the Vendor Sustainable Code of Conduct with their vendors to scale up the sustainable supply chain management.

Vendors’ Environmental, Social, and Governance (ESG) Assessment

For more effective supply chain management in vendor management, in 2018 PTTEP and PTT Group of Companies conducted a Supplier On-site Audit by External Party for seven of our key suppliers in 4 categories, namely, (1) Onshore Drilling Rig, (2) Wellhead Platform Construction, (3) Mechanical Construction, and (4) Crew Boat. All suppliers passed the ESG assessment. Consistent with our policy and that of PTT Group of Companies, a workshop held by an external party was organized to promote better understanding among our vendors about the sustainability assessment criteria and to encourage improvement in the sustainability capability in their respective organizations.

Whistleblowing

To give confidence and protection to vendors and related parties from possible retaliation as a result of reporting in good faith of suspicious misconduct or wrongdoing of the directors, management, employees, or persons acting on behalf of the Company which might be in violation of the law, CG&BE, or other regulations of the PTTEP Group, the Company establishes the CG Hotline to handle the matters. Vendors can email the cghotline@pttep.com or report through “PTTEP Whistleblowing System” at www.pttep.com.

Digital Transformation in Vendor Management

PTTEP leverages digital technology in managing our vendors, in order to enhance the efficiency and comprehensively managing the risks. Various operations have been digitized under the Transformation strategy, covering the entire supply chain from the procurement process, contract management, purchasing, to goods and service delivery:

- (1) Vendor Management System: to facilitate vendors and reduce potential errors in the vendor registration process
- (2) e-RFX in the procurement process
- (3) Shipment Tracking: to monitor the shipment status from the point of manufacturer to destination for better risk management

(9) Creditors

PTTEP recognizes the importance of the Company’s internal and external stakeholders including creditors. This is based on our policy of equitable treatment for all stakeholders, and an integral part of the CG&BE.

Emphasis is placed on accurate, complete, timely, and transparent information disclosure to all of the stakeholders. Information disclosed by the Company consists of financial and non-financial information. Financial information particularly the financial statements is reviewed and audited by an independent auditor in compliance with the Generally Accepted Accounting Principles (GAAP). This information is also endorsed by our Audit Committee as well as the Board of Directors prior to public disclosure.

Regarding creditors, PTTEP’s debenture issuance and all relevant processes are in compliance with the laws, policies and regulations stipulated by the SEC as well as the policies, purposes, and resolutions set forth at the Company’s shareholders’ meeting. The Company agrees to fulfill the obligations stated in the terms and conditions of the debenture and loan agreements and to ensure that the information is accurately and adequately disclosed to all of the stakeholders. The Company also maintains all of the necessary measures to remedy incidents or other types of impairments which may arise as a result of non-compliance.

(10) Competitors

PTTEP treats our competitors with professionalism, equality, and transparency. The Company, in our greatest effort, tries to avoid all unethical manners and ill-intentions to defame the reputation of our competitors through false, unfair statements, or acts. The Company is also committed to complying with local laws and regulations in regard to trade competition. Details of the Trade Competition Policy are disclosed in the CG&BE.

(11) Customs and Traditions

PTTEP adheres to local customs and traditions of all the areas and locations in which we operate. Orientations and trainings are provided by knowledgeable and experienced instructors as well as representatives from the Ministry of Foreign Affairs or the local embassies who are capable to provide suggestions and information in regard to customs, traditions, sensitive issues, and local practices to the employees who will be transferred there to understand and behave appropriately.

(12) Human Rights

PTTEP has a human rights policy where the Company is committed to respecting fundamental human rights by complying with all applicable legal requirements, cultures, customs and values in dealing with all of our stakeholders, avoiding complicity in human rights abuses, and strictly prohibiting ourselves from direct and indirect employment of child and forced labor. The Company's Human Rights Policy fully complies with the UN Universal Declaration of Human Rights, and the UN Guiding Principles on Business and Human Rights and its corresponding covenants, including the international principles relating to labor practices and the United Nations Declaration on the Rights of Indigenous Peoples where applicable to the business. The Company also actively participates in the United Nations Global Compact (UNGC) while our UNGC Communication on Progress Report meets the criteria required for the "Advanced Level" status for the fourth consecutive year.

Currently, PTTEP is a member, in fact one of the founding members since 2016, of the Global Compact Network Thailand together with 14 other Thai organizations who have placed high priority on sustainable development. The objective of the network is to encourage Thai business sector to recognize the importance of conducting their business under the UN Global Compact principles.

The Company is also committed to providing fair employment, while ensuring that the employees have a safe and hygienic working environment, whether or not the country in which we invest has local laws on human rights. The Company ensures that no threats exist to employees or those related to the Company's operations. Only ethical partners without any infringements of human rights are considered and be partnered with. The Company also provides the interaction between the executives and employees by allowing the latter to have their representatives in the welfare committee while exchanges of views and suggestions are encouraged for improvements of welfare and other benefits to improve our employees' well-being.

(13) Laws

PTTEP respects the laws that are applied in the countries or regions we operate in. The Board sets the matters relating to compliance with applicable laws in the Business Ethics of the PTTEP Group. The directors, management, and employees are required to understand as well as strictly abide by the laws relating to the Company's operations in all areas to enable the PTTEP Group to operate with accuracy and efficiency.

The Compliance Department¹ is the center of compliance performance and supervision within PTTEP Group. This Department has a direct reporting line to the Senior Vice President of the Legal Division, the Executive Vice President of the Corporate Affairs and Assurance Group, and the Chief Executive Officer, respectively. In 2013, the Company

¹ Since January 1, 2019, the Compliance Department has been renamed to the Governance, Compliance, and Internal Control Department, as part of the organizational restructuring of PTTEP to centralize all compliance works into the same function.

announced its Compliance Policy to express our commitment to full legal compliance as well as to define the roles of all managers and employees in promoting such compliance. The Compliance Program, on the other hand, has continuously been developed to enhance awareness of compliance-related matters among the employees.

9.1.3 Information Disclosure and Transparency

9.1.3.1 Disclosure of Financial and Non-Financial Information

Information disclosure is a key aspect of good corporate governance. PTTEP gives importance to the information disclosed to the Stock Exchange of Thailand (SET) as well as to the shareholders. At the very least, the information must be accurate, sufficient, timely, and equally available to all parties. The information is prepared according to the Company's Business Ethics Guidelines. The departments which are responsible for providing information and replying to external queries from the SET and general public are the Investor Relations Section (IR) and the Communications Department.

Our information disclosure consists of financial information and non-financial information. Financial information is disclosed through financial statements which are reviewed and audited by the external auditor to confirm that they are presented accurately, in all material respects, according to the Thai Financial Reporting Standards. The financial statements are subsequently approved by the Audit Committee and the Board prior to being disclosed to the public. The Board reports their responsibilities with respect to the financial statements in the PTTEP Annual Report. In addition to the SET's requirements, the Company also releases unreviewed quarterly and unaudited annual financial statements in advance to allow timely access to the financial information for the shareholders and investors. Unless stated otherwise, the information before and after the review and audit usually and generally does not contain any significant changes. The Company also discloses non-financial information, such as acquisition and disposal of assets, related party transactions, dividend payments, the management discussion and analysis, risk management, invitation letter for the shareholders' meetings, minutes of meetings, as well as other information which is important for investment decisions according to the SET's and the Securities and Exchange Commission (SEC)'s requirements. The Company also disclosed annual corporate governance report in the annual report and annual registration statement (Form 56-1),

Information that PTTEP discloses to SET, the Company's shareholders, investors and the general public is disseminated in both Thai and English in the Company's website which also features other up-to-date information considered to be of interest to the aforementioned parties. Key information available in the website comprises petroleum exploration and production projects, investment projects, quarterly and annual analyst meeting presentations, webcasts, roadshow presentations, historical and latest stock performance, analyst coverage, and news releases. The Company also reports our safety, security, health and environment (SSHE) performance which is included in the annual Sustainability Report. The Company also makes available on the website videos and infographics presenting the financial information and operating results for those interested.

The Company also publishes a quarterly investor newsletter, the Explorer's Journal, which includes information which may be beneficial to our shareholders and investors, such as quarterly performance highlights, project updates, good corporate governance practices, topics on sustainable development, and knowledge-sharing on the fundamentals of the exploration and production business. The newsletter is bi-lingual, Thai and English, and is available in both hardcopy

and electronic formats. The latter can also be downloaded from the Company’s website and subscribed to receive our e-newsletter, effectively serving as another communication channel between the Company and shareholders for news and updates.

In 2018, PTTEP disclosed a total of 41 articles through the SET portal and organized the following activities for the shareholders and analysts.

Activities	Amount (Times)
Domestic and overseas roadshows/conferences	18
Analyst meetings	4
Opportunity day (by SET)	4
Shareholders’ and investors’ site visits	5
Knowledge sharing events for investor	5
Company visits and conference calls	37

Apart from the activities above, the Company also participated in a number of events organized by the SET for retail investors, such as “SET in the City”, and interacted with the investors through daily telephone correspondence. The IR team also sets up a booth at the Company’s AGMs, and readily provides information and answers to questions raised by the Company’s shareholders.

The Company understands that disclosure of the information which is accurate, complete, timely and transparent is a key to the CG&BE and therefore is committed to performing our best in this area.

9.1.3.2 Investor Relations

The Investor Relations Section (IR) is responsible for communication of relevant information and news which reflect PTTEP’s fair value to analysts, the Company’s shareholders, and general investors according to the SET’s and SEC’s requirements to foster confidence within the analysts and investment community. IR is also entrusted with upholding the corporate image and perception among analysts and investors, while also relied upon to coordinate and to advise over IR related issues to the Company’s executives.

PTTEP’s IR can be contacted through the following three channels.

- (1) By phone: +66-2537-7171, +66-2537-4868, +66-2537-5779, +66-2537-5873, +66-2537-5843
and +66-2537-5983
- (2) By e-mail: ir@pttep.com
- (3) By fax: +66-2537-4444

9.1.4 Board’s Responsibilities

The followings are major responsibilities of the Board. Details are disclosed in the “Management Structure” section, “Duties and Responsibilities of the Board” part.

(1) Policy-Making and Operational Direction

The Board is responsible for making decisions in regard to PTTEP's operational policies and determination of the corporate vision, mission, and values. The Board is also assigned to be directly involved in the Company's budgetary and planning, and organizational development strategy to accommodate continuous changes in the business environment, as well as to provide the management with advices to lead the Company towards our five ultimate goals, being "Growth, Prosperity, Stability, Sustainability, and Dignity".

(2) Good Corporate Governance and Business Ethics

The Board is responsible for the establishment of PTTEP Group's CG&BE for all of the directors, management, and employees to adhere to, while operating businesses for the PTTEP Group. This is to ensure that our businesses are operated under good standards, and justification and ethics with transparency and efficiency. In addition, the rights of the Company's stakeholders are preserved proportionately to their fair share to maintain the general confidence and acceptance in the Company. The Corporate Governance Section meanwhile has been established to be responsible for matters regarding the CG&BE.

(3) Internal Control and Auditing

The Board is responsible for assuring that the PTTEP Group is equipped with an effective internal control system which is comparable to the acceptable risk levels. The Audit Committee and the Internal Audit Division are assigned to periodically and regularly review and monitor the internal controls as well as to submit the results directly to the Audit Committee to ensure that they are in line with the operational objectives of the PTTEP Group, in compliance with relevant laws and regulations, and in trust of the management, investors, and other stakeholders.

The Company's internal control system is comparable to those accepted by the international standards, considering the control environment, risk assessment relative to objectives, effective control plans, internal and external provisions of adequate and reliable information and communications, as well as routine monitoring and evaluation procedures.

(4) Risk Management

The Board is responsible for regulating and overseeing management of the risks which can potentially deter PTTEP from achieving our strategic goals. The Board appoints the Risk Management Committee which is a standing sub-committee to monitor and ensure an efficient and effective risk management for the PTTEP Group as defined by the Risk Management Charter. The Risk Management Committee is also assigned to determine and assess key risks which are of significance at the organizational and project levels, evaluate and monitor operational plans, oversee the implementation and revision of risk mitigation to allow for a continuous evaluation of risks to ensure that the risks are at acceptable levels, as well as to report the results to the Board on a regular basis.

(5) Prevention of Conflicts of Interest

The Board establishes various management measures to ensure that the management is efficient and transparent and acts in the best interest of the PTTEP Group, by assuring that the Company and our management are without any conflicts of interest. Shall anyone of the Company's directors, executives, or employees have a stake potentially leading to

a conflict of interest, he or she must withdraw from participation or be abstained from voting, and subsequently inform the authority of the stake, in the given issue according to the CG&BE.

(6) Compliance

The Board values importance of full legal compliance in all of the areas in which the PTTEP Group operates. The Board also provides the Group with the supports required to conform to the applicable laws as well as to properly manage compliance risks. Compliance is considered one of the keys which allow the Group to function discretely as well as to be able to operate according to our strategy towards the business goals. The Compliance Department¹ is assigned by the Board to be responsible for this matter.

9.2 Sub-Committees

The PTTEP Board is responsible for the appointment of the directors who have expertise and knowledge in certain areas as members of the sub-committees as specified by the Company's Articles of Association. Each of the Company's sub-committees is responsible for a specific set of tasks as determined by its respective charters. Qualifications, responsibilities, and service terms of the sub-committee members are prescribed by the Company's regulations through the designated charter. All members of the Audit Committee must be independent directors, while the majority of the members of the Nominating Committee, Remuneration Committee and the Corporate Governance Committee must be independent directors. The Chairman of the Board, however, is not allowed to assume any chairmanship or directorship in the sub-committees. In addition, the Chairman of each sub-committee, with only the exception of the Risk Management Committee, must be an independent director.

Applying to every meeting, the sub-committees are required to report the results to the Board for acknowledgement as well as to disclose them in the 56-1 Form and PTTEP Annual Report as the duties to be completed over the year.

Currently, the Company has five sub-committees, namely, (1) the Corporate Governance Committee, (2) the Audit Committee, (3) the Remuneration Committee, (4) the Nominating Committee, and (5) the Risk Management Committee. Names of the directors, duties and responsibilities, numbers of meetings, meeting attendance, and remuneration policy are disclosed in the "Management Structure" section. Reports of the Company's sub-committees meanwhile are disclosed in the "Reports of the Sub-Committees" section.

9.3 Nomination of Directors, Chief Executive Officer, and Management

9.3.1 Nomination of Directors

When there is a vacancy of a director position or when a director's term limit is due, it is a duty of the Nominating Committee to select the candidates who fit with the required skill, experience, and are in line with the Company's Target Skill Mix and strategic directions to ensure that the Board's composition is complete, well-rounded, and for the optimal benefit to PTTEP. The Company thoroughly and transparently places high importance on the Board's diversity, gender, independency and conflicts of interest. This is evidential from the welcoming of one new female director in 2018 which consequently added to a total of two female directors from 14 directors.

¹ Since January 1, 2019, the Compliance Department has been renamed to the Governance, Compliance, and Internal Control Department, as part of the organizational restructuring of PTTEP to centralize all compliance works into the same function.

Moreover, the Nominating Committee conducts Gap Analysis of the Board's current Skill Mix and Target Skill Mix are taken into account, where Target Skill Mix of the Board during 2018 – 2019 consisted of the followings.

(1) Organization Change and Development: To support PTTEP's reorganization which emphasizes on the preparation of strategic long-term growth in E&P related businesses and new businesses in parallel with development of the succession plan.

(2) Technology: In the rapid changes of technology, PTTEP has to adapt and be ready to cope with Disruptive Technology by developing its own enterprise technology capability to support the operations not only in E&P core business but also the investment opportunity in new businesses that may arise with the aim to become Digital Transformation excellence organization.

(3) Legal: To support legal risk management and compliance which are corporate-level risks with direct impact to the Company's license to operate. New laws in responding to new technologies and dynamic environment change especially for new businesses investment needed to be monitored regularly.

The process begins with the Committee considering the alignment between the aforementioned Target Skill Mix and the candidates', where the Board has been able to fulfill the Target Skill Mix in Organization Change & Development and Technology in 2018 while still placing importance in future candidate nomination with the skill mix in Legal. In addition, the Nominating Committee also hold the process of searching through PTTEP's pool as well as the State Enterprise Policy Office (SEPO)'s directors' pool which comprises a list of directors from state-owned enterprises who are regarded as highly-qualified in state-enterprising. The Company also seeks advices from our major shareholder, PTT, as well as from the Company's minor shareholders (if any) according to the rules in regard to nomination of a person to fill in the positions which are due to retire by rotation. A list of qualified candidates must be endorsed by the State Enterprise Policy Committee according to the Regulations of the Office of the Prime Minister on State Enterprise Policy and Governance Determination B.E. 2557.

Election of directors to replace those who are due to retire by rotation must obtain an approval from the AGM by the majority vote which is based on the number of the Company's shareholders with voting eligibility at the Meeting. The election process is as follows:

(1) Should the number of the director candidates be less than the number of those to be elected, PTTEP will propose at the Meeting to elect those candidates as the directors by voting for the individual candidates, under which each of them must receive majority votes.

(2) Should the number of the director candidates exceeds the number of those to be elected, a ballot is to be held. Each shareholder may vote for as many director candidates as the number of the opened positions, while the voting will then be carried out for each of the individuals. Those with the highest ballots will be elected, as many as the number of the opened positions. Each of them must receive majority votes.

When a director position becomes vacant for reasons other than rotation, the Board, with approval from the State Enterprise Policy Committee, may elect a new director, using the three-fourths majority voting rule. The elected director is permitted to remain in his or her directorship for only as long as the remaining term of the predecessor.

9.3.2 Nomination and Succession Plan of the Chief Executive Officer

The Nominating Committee has included in its Charter the role to consider the Chief Executive Officer's succession plan and appropriate executive-level management's development system to ensure a candidate list with the skills and qualifications in line with the Company's target growth.

The Nominating Committee is responsible for considering the candidates' skills, experience, and various other specific qualifications to bring about the best of interests to the Company, looking into their probable conflicts of interest.

The Company formulates a succession plan for the Chief Executive Officer to prepare the Company for the time when the Chief Executive Officer is unable to perform his or her duties or when the serving term is completed. The plan helps to minimize the risks and the impacts, potentially resulting from the discontinuity, on the management. The succession planning procedure is as follows:

(1) PTT Group Management Committee (PTTGMC), a committee in which the Company's Chief Executive Officer is a director, forms the Group Leadership Development Program (GLDP). The program's primary focus is to enhance the capability of the PTT Group's executives, Senior Vice Presidents and above to prepare them for a possible nomination to become the Chief Executive Officer in one of PTT Group of companies.

(2) PTTGMC, with PTT being the Company's major shareholder, reviews the shortlisted executive names from (1) and proposes them to PTT's Board of Directors who is responsible to select PTTEP's next Chief Executive Officer.

(3) After receiving the candidate names, accompanied by opinions of PTT's Board from (2), and comparing them with the Company's potential candidates in the executive vice president level, the Company's Nominating Committee will reassess the individual's knowledge, capability, and experience relating to the business, conflicts of interest, and his or her vision to lead the Company to grow according to the strategic plan.

(4) The Nominating Committee proposes the name of the final candidate, together with the opinions and a fair and reasonable package proposed by the Remuneration Committee, to the Board for approval and appointment of the Company's new Chief Executive Officer.

9.3.3 Nomination of Management and Succession Plan

The Board grants the Chief Executive Officer an authority to select and appoint the individuals who possess the knowledge, capabilities, and experience to management positions in consultation with the Career Review Board Committee (CRB) and the presence of PTTEP Rules and Regulations for Human Resources Management. The nomination must then be acknowledged by the Board. Exceptions are made to the appointment of the Executive Vice President and above, where the Board's approval is required. If the nominee is from outside of the organization, an interview with the interview committee is required, while nomination of the Head of Audit Function requires an approval from the Audit Committee.

PTTEP has a systematic 5-year succession plan for the vacant management positions which are resulted from retirement and from reorganization to support the Company's business expansion domestically and internationally. The Career Review Board (CRB) Committee is authorized to select and appoint successors for management positions using the Company's

Management Success Profile of each business area (Asset Management, Business Development, Technical Support, and Business Support) as screening criteria. These profiles comprise competency, personal attribute, organization knowledge, as well as experience required for the target positions, while Currently Estimated Potential (CEP) is also taken into consideration. Once the successors are identified, their individual short-term and long-term development plans will be established with focus on technique and functional knowledge, managerial skills, and soft skills required according to the corporate values and organizational culture to ensure that the successors are readily qualified for the target positions by the time of the requirement.

9.4 Development of Directors

Orientation of New Directors

The orientation which is provided to the Company's new directors consists of the followings.

(1) Presentation by the Chief Executive Officer, President of the Exploration and Production, and executives: This briefing involves the nature and operational guidelines of the business, knowledge and techniques in regard to the petroleum exploration and production business of the PTTEP Group, relevant rules and regulations, the CG&BE, and essential information for the directors to perform the duties with efficiency.

(2) Director Manual: This contains essential information, including the strategic plan, relevant rules and regulations, and the CG&BE, which will be beneficial for the directors to perform the duties. The Manual is regularly reviewed and updated for the directors to use as a reference.

(3) Operational Sites Visit: New directors visit operational sites of the PTTEP Group to enrich their understanding of the Company's operations and optimize their knowledge and experience for the benefit of the Company.

At the end of each orientation, new directors will evaluate the effectiveness of the orientation for further improvement. The director who is elected to be the Chairman and a member of a sub-committee is also required to attend an extra session and subsequently informed of the important subjects relating to the additional new role, including performing the duties of the Chairman and a member of a sub-committee as well as conducting and leading meetings of the Company's directors and shareholders.

Trainings of Directors

PTTEP's directors are knowledgeable, yet they are ambitious to learn and understand more about the business and their duties as a director. PTTEP encourages every director to acquire further knowledge through training organized by the Thai Institute of Directors Association (IOD) as well as those others to enhance the ability to perform their role. To continuously provide knowledge and share opinions with the directors, the Company's management delivered lectures and exchange opinions with the Board. In 2018, five sessions were arranged by the Company's management which were "Review Strategy" and the other four sessions related to Governance, Risk Management and Compliance (GRC). The Company always updates the directors with laws and best practices of good corporate governance for an even better understanding on a regular basis. The followings are details of the seminars and trainings attended by the Company's directors during 2018.

Directors	Courses
(1) Mr. Prajya Phinyawat	<ul style="list-style-type: none"> - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ul style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(2) Mr. Achporn Charuchinda	<ul style="list-style-type: none"> - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ul style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(3) Admiral Tanarat Ubol	<ul style="list-style-type: none"> - The Outlook for Energy: A View to 2040” by Ms. Lynne Taschner, Energy Advisor, ExxonMobil, held by Petroleum Institute of Thailand - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ul style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(4) Mr. Sethaput Suthiwart-Narueput	<ul style="list-style-type: none"> - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ul style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561

Directors	Courses
(5) Major General Nimit Suwannarat	<ul style="list-style-type: none"> - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ol style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(6) Mr. Wirat Uanarumit	<ul style="list-style-type: none"> - The Rules of Law for Democracy (Class 6) by College of the Constitutional Court - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ol style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (3) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(7) Mr. Twarath Sutabutr	<ul style="list-style-type: none"> - Executive Program on the Rule of Law and Development (ROLD) by Thailand Institute of Justice (TIJ) - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ol style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(8) Mr. Pitipan Teparitarnorn	<ul style="list-style-type: none"> - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ol style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561

Directors	Courses
(9) Ms. Panada Kanokwat	<ul style="list-style-type: none"> - Board Matters and Trends (BMT) 6/2018 by Thai Institute of Directors Association (IOD) - The Outlook for Energy: A View to 2040” by Ms. Lynne Taschner, Energy Advisor, ExxonMobil, held by Petroleum Institute of Thailand - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ol style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(10) Mr. Bundhit Eua-arporn	<ul style="list-style-type: none"> - Internal Lecture about GRC on the following topics: <ol style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(11) Ms. Penchun Jarikasem	<ul style="list-style-type: none"> - Ethical Leadership Program (ELP) 11/2018 by Thai Institute of Directors Association (IOD) - Risk Management Program for Corporate Leaders Class (RCL) 13/2018 by Thai Institute of Directors Association (IOD) - Board Matters & Trends (BMT) 6/2018 by Thai Institute of Directors Association (IOD) - Internal Lecture about GRC on the following topics: <ol style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(12) Mr. Chansin Treenuchagron	<ul style="list-style-type: none"> - Internal Lecture about GRC on the following topics: <ol style="list-style-type: none"> (1) Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (2) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561
(13) Mr. Patchara Anuntasilpa	<ul style="list-style-type: none"> - Internal Lecture about GRC on the topic of Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561

Directors	Courses
(14) Mr. Phongsthorn Thavisin	<ul style="list-style-type: none"> - Capital Market Leader Program (Class 27) by Capital Market Academy - Internal Lecture and Discussion Session on 2019 Strategy Review - Internal Lecture about GRC on the following topics: <ul style="list-style-type: none"> (1) Ethical Culture: Key Success Factor (2) Draft of Organic Act on Counter Corruption B.E. (3) Notification of the Office of the Securities and Exchange Commission regarding Preparation of Report on Changes in the Securities and Derivatives Holding of Directors, Executives, Auditors, Plan Preparers and Plan Administrators (4) Notification of the National Anti-Corruption Commission regarding Rules, Process and Procedures on Declaration of the List of Assets and Liabilities B.E. 2561

Currently, 12 of 14 of the Company's directors have participated in IOD's Director Certification Program (DCP), while four has attended the IOD's Director Accreditation Program (DAP). As a result, there are 13 out of 14 directors (92.86%) who have attended the two mentioned courses. In addition, the Company has applied an IOD membership for all of the directors and provided them with the information in regard to new and updated seminars or trainings to keep the directors consistently informed. Details of the training courses attended by the directors are disclosed in the "Information of the Board of Directors, Management, Controlling Persons, and Corporate Secretary" section.

9.5 Authority of the Chief Executive Officer

9.5.1 Authority under Resolutions from the Shareholder Meetings

The Chief Executive Officer is the authorized signatory who may sign to bind PTTEP with external parties under clause 9, paragraph 6, of the Company's Articles of Association registered with the Ministry of Commerce.

9.5.2 Authority under Resolutions from the Board's Meetings of PTTEP

The Board authorizes the Chief Executive Officer to act and conduct, on the Company's behalf, normal course of business operations under the stated objectives in our Memorandum of Association, petroleum concessions, and other agreements, including other businesses in which the Company has interests. In addition, the Chief Executive Officer is also authorized to be the acting body, conducting the business under PTTEP regulations, namely, the Budgetary, Finance and Accounting Charter B.E. 2555, Regulation on Human Resources Management B.E. 2548, Regulation on Procurement for PTT Exploration and Production Public Company Limited and Affiliate B.E. 2561, and Regulation on Investment Project Management B.E. 2557, by applying of the practices comparable to those of other private companies in the E&P business as well as in best interests of the Company. The Chief Executive Officer's delegation of authority is permitted unless the concerned attorney or the delegated person has a direct or indirect conflict of interest with the Company or our subsidiaries in exercising of the authority.

9.6 Corporate Governance Concerning Subsidiaries and Associated Companies

Details are disclosed in the "Policy and Business Operations Overview" section, "Structuring Policy of the PTTEP Group" part.

9.7 Directors' Serving Terms and Their Directorship in Other Companies

PTTEP's Articles of Association prescribes that one-third of the Company's directors shall be retired by rotation in each AGM and that the Board shall consist of no more than 15 members, each with a 3-year serving term. The Board meanwhile determines to allow each of the directors or independent directors to serve on the Board for no more than nine consecutive years, while a director who has served on the Board for nine years will not be considered for another term. This essentially allows our competent and qualified directors the time to continuously and effectively perform their duties.

PTTEP recognizes the value of knowledge and experience which our directors have earned over the years in the position. PTTEP therefore does not have a rigid limit for director's term (a two-term or six-year term, in example). This is so that the Nominating Committee could best select the replacements for the optimal benefits of the Company and shareholders.

In terms of the qualifications, the Company's directors shall not assume a directorship in more than three listed companies at once. Details of the number of directorships held by each of the Company's directors are disclosed in the "Information of the Board of Directors, Management, Controlling Persons, and Corporate Secretary" part. As of December 31, 2018, none of the directors held a directorship in more than three listed companies. Meanwhile, serving term of the members of the sub-committees is equal to that of the Board members.

9.8 Roles of the Chairman and the Chief Executive Officer

The Board is authorized to elect one director to be the Chairman of the Board as well as to appoint a person to be Chief Executive Officer where the Chairman and the Chief Executive Officer of PTTEP are of two different directors. The Chairman does not participate in the daily management of the business, providing that conducting and monitoring of the business policies are entirely separated from the daily operational management. Duties and responsibilities of the Chairman of the Board are as follows:

- (1) Supervise the Board to perform its duties with efficiency, according to the Board Performance Target and shareholder's expectations, with independency from the management
- (2) Determine agendas for the Board's meetings
- (3) Be the Chairman at the Board's and the shareholders' meetings and ensure that the Company's directors perform their duties as stipulated in the CG&BE and stimulate it as the Company's culture
- (4) Support and ensure constructive relations between directors and management

For transparency and appropriateness, the Chairman is not allowed to hold any positions in any of the Company's sub-committees as clearly stated in the charter of the sub-committees. The Chief Executive Officer meanwhile is responsible for the Company's daily management with the authority as empowered and granted by the Board.

9.9 Independence of the Chairman

PTTEP considers independency as the first priority in election of the Company's Chairman of the Board. Shall there be none who is suitable for the position, the Company's directors will be considered. The current Chairman, Mr. Prajya Phinyawat, is an independent director and has performed his duties with autonomy and discretion. The appraisal score of the Chairman in 2018 was 2.98 where 3 was the highest. The Chairman and his performance were appraised and examined for future improvements by the Board. Details of the appraisal results are disclosed in the "Performance Appraisal of the Board" part.

In addition, all of the Company's directors are allowed to independently express their views with freedom in regard to the business operation, whether in the meetings of the Board, sub-committees, or in other occasions. This is to ensure that the management is able to operate the businesses with efficiency, accuracy, transparency, and in the best interests of the shareholders.

9.10 Policy and Practices for the Chief Executive Officer, and Executives with Directorships in Other Companies

PTTEP clearly states in the CG&BE in regard to the duration which the Chief Executive Officer, and executives are allowed, on only-if-necessary and no-harms-done basis, to hold a directorship position in other companies or organizations which are not of their own or families. In addition, the individuals must be given an approval from the Company's authorized personnel as well as accept the condition that they shall not, in every aspect, associate PTTEP and their position held in the Company in those external activities. Meanwhile, remuneration of the Company's executives who are assigned to assume a directorship in the organizations or units in, or related to, the petroleum exploration and production is considered PTTEP's; otherwise, the remuneration is considered theirs. Details of the number of directorships held by each of the executives are disclosed in the "Information of the Board of Directors, Management, Controlling Persons, and Corporate Secretary" section.

9.11 Conflict of Interest Policy

PTTEP, under the following principles, is committed to preventing all potential conflicts of interest to ensure the Company's stakeholders' confidence that our business management is efficient, transparent, and in compliance with the CG&BE.

- (1) Directors, management, and employees shall treat the interests of the PTTEP Group with priority and shall not participate or be involved in all activities which may lead to any conflicts of interest.
- (2) Directors, management, and employees shall review and disclose, at least on an annual basis, their transactions that have led to a conflict of interest for the Company.
- (3) Directors, management, and employees shall not participate in considering or voting on any matters in which they have a stake or stakes, and, if such matters exist, all relevant information shall be completely disclosed.
- (4) Directors, management, and employees shall strictly adhere to the laws and regulations as required by the SET, particularly in relation to connected transactions.

The Company has established preventive measures for conflicts of interest as follows:

- (1) Directors, management, employees, and related persons must avoid financial involvement or engagement in a relationship with outsiders which may result in the PTTEP Group's loss of benefits, conflicts of interest, or operational inefficiency.
- (2) Directors, management, and employees who may have a potential conflict of interest in regard to procedures relating to a bidding process, and selecting and awarding of a transaction, must report to their supervisor or those participating in the given process through the Company's "Conflict of Interest Declaration Form". They must also withdraw themselves from participating in such processes.
- (3) Directors, management, and employees must notify the Company immediately should there be any suspicion or uncertainty that what they or their related persons are involved in, or that their shares in the business with transactions with the Company may lead to a conflict of interest.

(4) Directors, management, and employees must review their possible involvement in conflicts of interest on an annual basis. To review their conflicts of interest related to any particular matter in the procurement process, management and employees who are directly involved in the procurement process must disclose their transactions which may lead to a conflict of interest at least every 6 months. This is in order for the supervisors to consider a re-assignment of duty to prevent such conflicts of interest from occurring.

9.12 Business Ethics

PTTEP is committed to operating ethically primarily because the Company's Business Ethics are regarded as the crucial behavioral framework and guideline for all directors, management, and employees to perform effectively, transparently, and ethically, as well as to treat all of the stakeholders equally. These practices have resulted in confidence and acceptance by stakeholders in the efficiency and transparency of the Company's business operations, creating a long-term sustainable value and fairness for everyone concerned.

Business Ethics of the PTTEP Group is part of the CG&BE. The Board first established its Business Ethics in 1989, and it has been revised every year. The current version of the CG&BE was approved by the Board on January 30, 2019, and it is regarded as the highest regulation for business operations within PTTEP Group. The CG&BE is available for download from the Company's website.

PTTEP's Business Ethics as a whole consists of principles, samples of questions and answers, information for further study, and a list of the departments responsible for each of the principles. There are 10 ethical issues which reflect our organizational values and to which the Company's directors, the management, and employees must adhere.

- (1) Compliance with the Laws, Regulations and Rules, and Respect for Different Customs and Cultures
- (2) Political Neutrality
- (3) Human Resources
 - Workplace Environment
 - Privacy, Equal Treatment and Anti-Harassment
 - Illegal Drugs, Substance Abuse and Alcohol
 - Outside Employment, and Executives' and Employees' Participation in Outside Activities
- (4) Use and Protection of Information and Assets
 - Records Keeping, Using, Disclosing and Safeguarding of Information
 - Using and Storing Electronic Data and Information Technology Resources
 - Utilization and Protection of Intellectual Property
 - Insider Trading and Use of Inside Information
- (5) Conflicts of Interest
- (6) Procurement and Contracts

- (7) Anti-Corruption
- (8) Trade Competition
- (9) Anti-Money Laundering
- (10) Safety, Security, Health and Environment

PTTEP has distributed its CG&BE booklets to all the directors, management, and employees for their reference and adherence. Everyone is also required to sign their names, thus committing themselves to apply the CG&BE to the highest working standards. In addition, the booklets are sent to the Company's business partners, regulatory organizations, parties with regular business relationships with the Company, and other interested parties. For the convenience of the Company's shareholders, investors, and interested parties, contents of the CG&BE booklets can also be found on the Company's website under the Corporate Governance section.

PTTEP continuously enhances and promotes the knowledge and understanding of the Company's CG&BE among the company directors and personnel. The Board governs the ways in which the CG&BE is communicated to the directors and personnel to ensure that they are able to perform and conduct business accordingly. Communications also extend to external parties, for example, vendors, joint ventures, and agents of the PTTEP Group in order to encourage ethical cultures among their Groups and society in general. Details are explained in the subsection "Continuing to Provide Communication, Knowledge and Training" in "Anti-Corruption" section.

The Board's role involves monitoring and evaluating CG&BE activities. The Corporate Secretary is in charge of reporting them to the Corporate Governance Committee and the Board on a quarterly basis to ensure that CG&BE activities achieve the target performance. The Corporate Governance Committee has already reviewed the 2019 operation plan, while taking into account the 2018 evaluation results, to ensure continuity and efficiency for the development of the following plan for this year's operations.

9.13 Internal Controls

PTTEP places high importance on continual improvement of the internal control system based on the International Standard; COSO Internal Control – Integrated Framework issued by The Committee of Sponsoring Organizations of the Treadway Commission; to reasonably assure that three business objectives can be accomplished. These objectives are, namely, (1) efficient and effective operations with prudent use of resources and safeguarding of assets, (2) accurate, reliable, and timely disclosure of financial and non-financial information for internal and external uses, and (3) compliance with relevant laws, rules, and regulations as well as the Company's policies and procedures.

PTTEP's internal control system comprises five key components as follows:

(1) Control Environment

PTTEP has a control environment which fosters ethical working attitude among our management and employees, along with an atmosphere and awareness of the Company's internal control according to the principles of good corporate governance and business ethics towards specific corporate objectives: Growth, Prosperity, Stability, Sustainability, and Dignity. The Board is responsible for providing oversight and enhancing this internal control system. The Company has appropriately designed the organizational structure, reporting lines, and delegation of work authority.

In addition, PTTEP also focuses on human resource management by establishing an extensive set of written human resource management regulations and policies. We are determined to attract, develop, and retain competent individuals in line with the corporate objectives. The management and employees are also held accountable for their internal control responsibilities to ensure achievement of the objectives.

(2) Risk Assessment

PTTEP places importance on risk management by appointing the Risk Management Committee to be responsible for setting policy and risk appetite, as well as overseeing the effectiveness of the company-wide risk management. The Company has also applied the ISO 31000 Risk Management concept company-wide and assessed all risks related to our businesses, including fraud risk or the risks which may arise as a result of significant changes within the Company, to appropriately manage such risks in a timely manner.

(3) Control Activities

PTTEP has adequate control activities which are able to mitigate risks to acceptable levels for the respective business environments or business units. Various control activities have been established to mitigate the risks. The activities include development of general controls over technology or their deployment through regulations, policies, and working procedures. Control activities are periodically reviewed and improved. The Company also encourages employees to be constantly aware of the importance of conformity to the control activities and compliance with related laws and regulations to ensure that our internal control system is as effective as designed.

(4) Information and Communication

PTTEP realizes the significance of information and communication. Thus, the Company has provided for quality data processing systems which are appropriate and adequate for operations and decision-making, in other words; accurate, complete, up-to-date, accessible, protective, verifiable, and consistent systems suitable for both internal and external uses. The Company also restricts the access to confidential information and permits the access to authorized persons only. In addition, The Company also implemented Data Classification policy to prevent the disclosure of sensitive or confidential information of the Company.

PTTEP has effective and efficient internal and external communication channels and processes in place to support the functioning of the internal control system. The Company also set up whistleblowing channels for employees and external third parties to effectively report any wrongdoings in accordance with international standards. Any persons who report actual or suspected misconduct, and/or collaborate with the PTTEP Group in good faith will be protected from any form of retaliation as a result of those actions according to the "Reporting and Whistleblowing Regulation 2013".

(5) Monitoring Activities

PTTEP regularly monitors and assesses the effectiveness of our internal control system through ongoing evaluations which are built into the Company's daily operational activities, along with separate evaluations to ensure that the system is effective and appropriate for the current business environment and dynamic risk factors. Subsequently, once the deficiencies are identified, improvement plans will subsequently be developed, while responsible parties will be assigned to respond with timely resolutions. For the separate evaluations, the Company has developed the control self-assessment evaluations

on an annual basis at both the corporate and business process levels. In addition, the Internal Audit Division, which has a direct reporting line to the Audit Committee, meanwhile has responsibilities to perform independent audits correspondingly.

Details of the 2018 results of the internal control adequacy evaluation are disclosed in the “Internal Controls and Risk Management” section.

9.14 Risk Management

PTTEP Board and the management recognize the importance of strong and effective risk management as changes in the business environment are uncontrollable and may impact the businesses. The Company therefore established the Risk Governance Framework, Risk Appetite Statement as well as Risk Metrics and Risk Limit as the guidelines. Enterprise Risk Management Policy requires the directors, the management, employees, suppliers and contractors to manage risks thoroughly and systematically to ensure our target achievement.

The Company applies risk management guidelines in accordance with the ISO 31000, an international standard for risk management, throughout the Company. Risk management practices are applied throughout the organization, including strategic planning and management, investment and divestment decision-making, capital project management, and operations and business processes. The company also manages risks at all levels, including the corporate, asset/project, and working units. The Risk Management Department is responsible for ensuring risk management framework implementation and its effectiveness across the organization as well as regularly reporting the results to the management, the Risk Management Committee, and the Board for acknowledgement. The Risk Management Department is also responsible for fostering culture in managing risks throughout the organization.

9.15 Remuneration of Auditor

9.15.1 Remuneration of Auditor

(1) Audit Fee

In 2018, PTTEP and its subsidiaries, both domestic and overseas, paid audit fees to the State Audit Office of the Kingdom of Thailand (SAO) and other auditing firms for a total of USD 1.3 million.

(2) Non-Audit Fee*

In 2018, PTTEP did not pay a non-audit fee to the SAO.

*Remarks: “Non-Audit Fee” is a terminology commonly used by the Securities and Exchange Commission of Thailand (SEC reporting requirement).

9.15.2 Summary of the Auditors’ Report for the Past Three Years (2016-2018)

The SOA expressed its opinions, but without any issues, in the Auditors’ Report of PTTEP’s consolidated financial statements for the past three years.

9.16 Other Good Corporate Governance Practices

PTTEP places high importance on governing its business operations, guided by the Company’s CG&BE as well as most of the international best practices, taking into account appropriateness of the practices, the current business environment, as well as benefits to the Company, particularly targeting the shareholders and stakeholders. Conduct that reflect our advanced execution of best practices at the Company are as follows:

(1) To elect a director, each candidate must receive a vote of more than half of the total number of shareholders attending the shareholders' meeting and casting their votes (majority vote), even if the number of candidates is equal to the number of director positions that are up for election at the time.

(2) A director, who turns 70 years of age, is immediately disqualified to serve as a PTTEP director.

(3) PTTEP allows each director or independent director to serve on the Board for no more than nine consecutive years. Any director who has served on the Board for nine consecutive years will not be considered as eligible for another term.

The Company may, in the future, consider further limiting the term for each independent director to serve on the Board (for example, no more than six years). Such a proposal will be comprehensively considered based on the required skills and experience that will most benefit the exploration and production business.

(4) The total number of independent directors must not be fewer than half of the total number of directors.

(5) The right to attend a shareholders' meeting must be carefully examined to ensure that any vesting authority in proxies is conducted properly and that the granting of such rights does not interfere with the rights of the shareholders attending the meeting.

(6) The directors' Skill Mix is reviewed on an annual basis by the Board with a clear definition of required skills and experience. The Target Skill Mix is re-examined each year to be in line with PTTEP's strategies as well as to withstand economic volatility prior to the nomination and development of the director. In addition, PTTEP ensures that the Board's diversity continues and remains intact without gender and nationality discrimination.

(7) The Board has appointed a female director who graduated from accounting, and is qualified as an independent director to be an Audit Committee member. This is beneficial to the Audit Committee, providing further reasonable assurance for the Company's financial statements. In addition, all of the new Nominating Committee members appointed are independent directors. This is to ensure transparency of the director nomination process, to prevent conflicts of interest, as well as to stay in compliance with the Corporate Governance of the PTTEP Group.

(8) Performance appraisals of the Board and the sub-committees are thoroughly conducted, using our Performance Evaluation Form and the Board Performance Target. These appraisals include an individual self-appraisal and individual cross-appraisals by other directors, appraisal of the Chairman, and appraisal of the Board and each of the sub-committees. Results of the appraisals are discussed in related sub-committees and translated into plans for further performance improvement steps for the directors. Assessments by external parties are also conducted; for example, ASEAN CG Scorecard and Corporate Governance Report of Thai Listed Companies (CGR).

(9) The Independent Directors Committee held four meetings in 2018, while one Board meeting was held without the management's presence, to discuss and exchange opinions on significant and beneficial matters relating to the Company and our shareholders. The minutes of the meetings were reported to the CEO.

(10) PTTEP ensured that compensation of the CEO and executives were in line with the Company's short-term and long-term performance, and financial performance (Tied to Performance). The Company also disclosed the ratio of annual compensation of the CEO compared to the average annual compensation of the Company's top executives, and the ratio of annual compensation of the CEO compared to the average annual compensation of the Company's employees.

(11) Effective and tailored activities were organized to promote understanding of the CG&BE among the Company's directors, members of sub-committees, executives, and employees. Our activities reflected clear plans and performance indicators in place to evaluate knowledge and keep track of the results. With the Corporate Governance Committee in charge of planning of the activities, designing of the performance indicators, and regular monitoring, we assured that substantial results were achieved. These activities were also extended to examining vendors in an effort to foster a shared good culture in the business community and society. Details of these activities are available in the "Business Ethics" section of this report.

PTTEP also implemented the following other practices.

(1) PTTEP has always felt it vital that the Company's Chairman remain independent; thus the Company selects its Chairman from independent directors first, unless there are other reasons or qualifications to select from other lists of directors. The Company places importance on the fundamental attributes of business-related knowledge and expertise, working experience, leadership skills in addition to performance appraisal results to ensure that the Chairman governs the Company with full independence. More details along this line are discussed in the "Independence of Chairman" section of this report. The Company's current Chairman is qualified as an independent directors.

(2) PTTEP's Articles of Association (AoA) stipulates that the number of PTTEP directors shall not be fewer than 5, but not more than 15. As of December 31, 2018, the Company had 14 directors. This is in line with the Company's AoA and considered to be reasonable for the current business environment of the petroleum exploration and production industry, where experts from various disciplines are required for the directors to adequately and effectively monitor various areas of the business operations.

(3) Currently, the Board has appointed five sub-committees which are responsible for specific tasks as described in their respective regulations. Each of the committees' performance is assessed on an annual basis.

(4) In accordance with the Budget Procedure Act B.E. 2561 (2018), PTTEP, a state-owned entity, is required to assign the independent and reliable State Audit Office of the Kingdom of Thailand (SAO) to be the Company's external auditor.

(5) Although PTTEP has a free float ratio of less than 40 percent of the total paid-up shares, with PTT holding 65.29% interest, this is sufficient for minority shareholders to vote to inhibit a significant transaction. The Company places high priority on the rights of minor shareholders by organizing activities to periodically communicate beneficial information to these shareholders as well as to gain acceptance from other external agencies.

(6) PTTEP specifies that a quorum, at the time of the Board's passing of a resolution, must comprise at least two-thirds of the Board members who are present at the meeting. The Company also stipulates that if a director fails to attend a board meeting three consecutive times, unless an absence is deemed necessary, he or she will automatically be disqualified from the director position. The Company also uses attendance as a performance indicator for the Board Performance Target evaluation. Further, the Company also schedules the relevant meetings in advance throughout the year and always ensures that the directors will be available to attend the meetings. These measures collectively are already deemed sufficient, as evidenced by the attendance of the Board meetings in 2018, when the ratio always exceeded two-thirds. Prior to every voting activity, the Chairman allows the directors to ask questions and discuss various issues in detail to ensure that the Board's resolutions have unanimous consent.

(7) PTTEP does not have an Employee Stock Option Program (ESOP) for the management. However, the Company established a remuneration structure that is competitive and appropriate to the business environment. The structure has successfully passed careful consideration by the Remuneration Committee and the Board.

(8) During 2013-2018, a five-year period, PTTEP established an Employee Joint Investment Program (EJIP) to encourage management and employees to become more dedicated and loyal to the organization as well as to create an increased sense of group ownership in the long run. The Company is currently studying information regarding the possibility and the appropriateness of continuing this program.

(9) PTTEP has not implemented a cumulative voting system as our AoA clearly prescribes that a director must be elected through majority vote. In casting votes, each shareholder shall have votes equal to the number of shares held by him/her. The shareholder can vote to elect each candidate individually. The candidates are ranked based on the number of votes received, and those with the highest votes are chosen to fill the number of available vacancies. In addition, the Company has provided other mechanisms to protect the rights of our minor shareholders such as allowing them to propose a director candidate in advance during the nomination process.

(10) PTTEP places high importance on the distribution of the Annual General Meeting (AGM) invitation letters prior to the meeting to provide the Company's shareholders with adequate time to appropriately review the agenda items. To ensure that our shareholders receive full benefits, such as rights to receive their dividend payments from the Company in a timely manner, the meeting is usually held in March every year. For the best interest of the shareholders, the audit of PTTEP's financial statements, however, normally requires relatively more time than other companies due to the complexity of having international operations across various countries. Currently, the Company is able to distribute the invitation letter 21 days in advance and publish it on the Company's website at least 30 days prior to the date of the meeting.

9.17 Awards and Recognitions for Good Corporate Governance

(1) PTTEP was rated "Excellent" and received 5 of the National Corporate Governance Committee's symbols, the highest level, according to the Corporate Governance Report of Thai Listed Companies (CGR) 2018 of the Thai Institute of Directors Association (IOD). The survey criteria of the reports are similar and comparable to those of the ASEAN CG Scorecard Standard. The Company has continuously been rated and placed at this highest level since the first assessment in 2001.

(2) PTTEP was named one of Thailand's Top Three Domestic PLCs and was also chosen as one of the Top Fifty ASEAN PLCs (Top Ten ranking) at the ASEAN Capital Market Forum (ACMF) for the second consecutive year. The awards were given by the securities and capital market regulatory bodies in AEC jurisdictions.

(3) PTTEP was certified by Thailand's Private Sector Collective Action Coalition Against Corruption (CAC) as a member for the second consecutive term, reflecting PTTEP's commitment and compliance to anti-corruption guidelines. The company continues to adhere to principles of good corporate governance and business ethics with long-term dedication toward sustainable growth.

(4) PTTEP was selected as a member of the Dow Jones Sustainability Indices (DJSI) in the DJSI World Oil and Gas Upstream & Integrated Industry for the fifth consecutive year. DJSI is a family of internationally recognized indices which evaluate the sustainability performance of 2,500 global companies.

(5) PTTEP was selected as a constituent of the 2018 FTSE4Good Index Series: the FTSE4Good Emerging Index by FTSE Russell Limited for the third consecutive year. The FTSE4Good Index Series is designed to measure the performance of companies demonstrating strong Environmental, Social and Governance (ESG) practices. The FTSE4Good indices are used by a wide variety of market participants to create and assess responsible investment funds and other products.

(6) PTTEP received the SET Sustainability Award 2018 – Outstanding Category from the Stock Exchange of Thailand (SET). The company also received the Thailand Sustainability Investment Award 2018 for the third year. The awards recognized PTTEP as a listed company with outstanding sustainable practices and ongoing commitment to sustainability with good governance, environment and social responsibility, and transparency.

(7) PTTEP received the Sustainability Report Award 2018 in Excellence Category organized by the CSR Club of Thai Listed Companies Association (TLCA), the Securities and Exchange Commission (SEC) and the Thaipat Institute. The award recognized the Company's excellence in performing and revealing the Company's performance in terms of social responsibility to foster sustainability of the business and society. The criteria were focused on completeness, credibility and communication of the report.

(8) PTTEP was listed as one of the 100 outstanding Environmental, Social and Governance (ESG) performers on the Thai stock market, a testament to the company's commitment to deliver sustainable value to all stakeholders from Thaipat Institute, a pioneer in the development of Thailand's corporate sustainability database.

(9) PTTEP was recognized as an exemplary corporation in organizing the Annual General Meeting of Shareholders (AGM) for the year 2018 by successfully scoring 100 percent for the sixth year in the AGM checklist assessment conducted by the Thai Investors Association.

(10) PTTEP received six awards from The Asset Magazine, Hong Kong, namely, (1) Platinum Award of The Asset Corporate Awards for the tenth consecutive year for demonstration of excellent performance in the five business aspects, namely, finance, corporate governance, social responsibility, environmental responsibility, and investor relations, (2) The Asset Best Initiative in Innovation for the fourth consecutive year (3) Best Initiatives in Environmental Stewardship Award (4) Best CEO Award (5) Highly commended in Social Responsibility Award and (6) Highly commended in Investor Relations Team Award.

(11) PTTEP received the Best Investors Relations Award in the category for listed companies with market capitalization of over 100 billion baht, at the SET Awards 2018, organized by the Stock Exchange of Thailand, in cooperation with the Money & Banking Magazine. This award is given to recognize and acknowledge the best in investor relations practices among listed companies. The evaluation has been conducted under the direction of a distinguished committee from the SET. For the Best Investor Relations Award, the judging criteria include inclusive involvement in Investor Relations activities, transparency of information disclosure in a timely manner, variety and effectiveness of communication channels and finally, the evaluation results from analysts and institutional investors.

(12) PTTEP was ranked as one of the top 5 "Best Investor Relations in Global Energy Sector" by IR Magazine at the IR Magazine Global Forum and Awards. The final selection was based on the survey results from analysts and investors via the IR Magazine in Europe, Asia and North America.

(13) PTTEP received four awards from Corporate Governance Asia Magazine, a financial journal focusing on corporate governance in Hong Kong and Asia, namely, (1) Asia's Icon on Corporate Governance Award for the sixth consecutive year (2) Asia's Best CEO (Investor Relations) (3) Asia's Best CFO (Investor Relations) and (4) Best Investor Relations Company.

(14) PTTEP received three awards in recognition of its Corporate Social Responsibility initiatives at the 10th Annual Global CSR Summit and Awards and the Global Good Governance Awards 2018. These were the (1) Gold Award for Best Environmental Excellence for H.T.M.S. Underwater Learning Site Project - a study and development of former battleships as alternative diving sites for tourism, allowing natural coral reefs time to recover. (2) Gold Award in the category Best Environmental Excellence for the Crab Hatchery Learning Center Project which helps to develop society's knowledge on the Crab Hatchery, which is more effectively and positively increasing the community's income and replenishing crabs in the sea. These awards emphasize our ongoing commitment in all areas of society and the environment for future sustainable growth. (3) Platinum Award for Best Community Program for SIOLA (Stimulation, Intervention, Optimization of Services for Children) Project offering play-based education to maximize benefits for early childhood development, healthcare, counselling for young parents and new families, and microfinance in Indonesia.

(15) PTTEP was the Top Corporate Social Responsibility Advocates winner at the Asia Corporate Excellence & Sustainability Awards 2018. This award is presented to companies that lead and implement various CSR initiatives that are integrated into their policies and operations, and have a high level of employee and top management involvement in those programs. This includes a specific focus on community engagement, environment and social empowerment.

(16) PTTEP received two awards from Asia Responsible Enterprise Awards 2018, recognizing its corporate social responsibility projects including (1) Green Leadership Category for H.T.M.S. Underwater Learning Site Project and (2) Health Promotion Category for PTTEP LKC Free Health Service Program (Free Clinic Project) in Indonesia.

(17) PTTEP received a Silver Stevie Award in the Innovation in the Community Relations category from The Asia-Pacific Stevie Awards, recognizing its corporate social responsibility projects, namely, the "PTTEP Free Clinic project" and "Waste to Energy Project".

(18) PTTEP received I Bike I Walk Award from the Office of Transport and Traffic Policy and Planning (OTP). The award recognized the PTTEP Petroleum Development Support Base in Ranong province for undertaking its "Walk and Bike Friendly City" project organized by OTP, Thai Health Promotion Foundation, the Federation of Bicycle Users and Pedestrians in Upper Southern Region, Ranong Municipality and partners. The project focuses on turning areas around Anuban Ranong School and Khao Niwet Municipal School into safe zones for pedestrians and cyclists, making walking and cycling a popular choice for commuters.

(19) PTTEP received the Excellent Level (G-Gold) of the Green Office Award. PTTEP is the first company in the exploration and production business to achieve the highest level in Thailand Green Office Award campaign organized by the Department of Environmental Quality Promotion. The award reflects PTTEP commitment and efficiency on environmental management in various aspects, e.g., energy utilization, water utilization, resource utilization and pollution prevention including the efforts to emit the lowest level of greenhouse gases.

9.18 Reports of the Sub-Committees

9.18.1 The Corporate Governance Committee Report

PTTEP places high importance on the adherence to the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE), which has continuously been improved with regard to the Company's business operations. The Board has assigned the Corporate Governance Committee, comprising at least three directors, most of whom are independent directors, to govern and ensure that the whole organization is in compliance with the CG&BE.

In 2018, the Committee convened 4 times, with all incumbent directors attending every meeting. The duties and responsibilities of the Committee can be summarized as follows:

(1) Assessed and reviewed the CG&BE to check whether it is still in compliance with the laws, practices of international standards and those of other leading companies, and the recommendations from well-recognized institutions, as well as subsequently submitting the results for the Board's approval. Example detailed results follow: revision of the CG&BE related to remuneration for subsidiaries' directors, revision of the Reporting and Whistleblowing Regulation by adding more details on scope, procedure, and channels for filing a report to fit with business environment, and enhancement of whistleblowing system to become a two-way communication system between the Company and the whistleblower.

(2) Promoted business operations of the PTTEP Group and performance of the Board, management, and employees to be sure that they are in line with the CG&BE by monitoring and providing recommendations concerning any CG&BE-related activities to enhance knowledge and understanding of the CG&BE. Example recommendations include: setting targets and indicators to assess activities' achievements, and consider any complaints received through the CG Hotline on a quarterly basis. The Committee also supported and monitored the progress of driving Governance, Risk Management and Compliance (GRC) principles in PTTEP, and GRC knowledge sharing between external parties, e.g., The Securities and Exchange Commission (SEC), and the Bank of Thailand.

(3) Governed to ensure that PTTEP maintains its efficient and adequate system that appropriately supports the Company's anti-corruption policy, practices, and internal control systems for everyone in the organization to cultivate. The Committee also supported the Company in obtaining certification from Thailand's Private Sector Collective Action Coalition Against Corruption (CAC). PTTEP has been a member for the second consecutive term. Another action relates to supporting vendors to uphold their best practices on anti-corruption etc., and ensure that they abide by the CG&BE of the PTTEP Group, e.g., communication regarding the No Gift Policy and the VDO clip of CG&BE and anti-corruption policy, primarily conducted by sending emails to vendors.

(4) Considered whether to adjust the shareholder site visit arrangements based on the retail shareholders' proposal in the 2018 Annual General Meeting (AGM) by allowing the shareholders who had already attended the site visit to re-apply to join the 2018 site visit under their own expenses. Recommendations to improve shareholder engagement work plan were also considered.

(5) Provided recommendations and monitored the progress of PTTEP's long-term 2016–2020 Corporate Social Responsibility (CSR) and communication work plan and related activities on a quarterly basis to create sustainable growth. As a highlight of these efforts, the Company gives high priority to ensure the readiness and rapidness of communications related to any issues that attract attention of the general public.

(6) Provided recommendations and monitored the progress of PTTEP's improvement plan which was produced as a result of the 2017 PTTEP's CG&BE Perception Survey completed with key stakeholders in 2017. The progress is being considered on a quarterly basis taking into account both efficiency and effectiveness in order to foster growing trust of PTTEP's stakeholders. The areas of focus also include the impact and appropriateness of the plan's implementation.

(7) Considered and reviewed the implementation of the Corporate Governance Code (CG Code) by means that are deemed suitable to the PTTEP Group's businesses and conducive to strengthen long-term business values. The Company also established corporate governance reporting in accordance with the SEC's CG Code and international standards as well as incorporating the CG Report in the annual report for the stakeholders.

The Corporate Governance Committee reported the results of all meetings to the Board for its acknowledgement on a regular basis. In 2018, the Committee abided by its assigned tasks in accordance with the Charter for the Corporate Governance Committee and its amendments, with prudence, competence, and independence. The Committee properly provided straightforward opinions for the optimal benefits of PTTEP, both the shareholders and stakeholders of the Company.

(Signed) Admiral Tanarat Ubol

(Tanarat Ubol)

Chairman of the Corporate Governance Committee

9.18.2 The Audit Committee Report

PTTEP is determined to conduct our E&P business with a long-term strategy to achieve both sustainable growth, while emphasizing the importance of fair and good corporate governance as well as benefits for the shareholders and stakeholders. The Audit Committee and the Internal Audit Division, in line with this direction, are appointed by the Board to govern, oversee and review the Company's processes and their conformity with the Corporate Governance Code (CG Code) and Anti-Corruption policy to ensure that Governance, Risk management and Compliance (GRC) management remain effective in accordance with the changing business environment as well as to ensure that the Company's work processes and goals are closely monitored as we strive towards a sustainable future.

The Audit Committee consists of at least three, but no more than five, independent directors, whereby at least one member must be a designated financial expert who is able to review the accuracy and reliability of the financial reports. In 2018, the Committee convened 16 times, when the majority of incumbent directors attended all the meetings, to discuss on related matters with the management, the Company's internal auditors and external auditors. This includes the meetings that were conducted together with the Risk Management Committee to share information to ensure that their duties on monitoring the Company's activities were in line with each other. In 2018, the Committee's principal activities are as follows.

(1) Review of Financial Reports

The Committee reviewed the Company's quarterly and annual financial statements, together with the management and the external auditor, namely, the State Audit Office of the Kingdom of Thailand, to ensure the statements' accuracy, completeness, and compliance with all relevant laws and regulations as well as generally accepted accounting standards, including International Financial Reporting Standards (IFRS). The Committee also provided recommendations in regard to the Company's Management Discussion and Analysis (MD&A) to provide an analysis of the factors affecting the Company's operation and financial statements.

(2) Review of the Internal Controls System

The Committee reviewed and endorsed the assessment results of the Company's system of internal controls. This review comprised an assessment questionnaire, as required by the Securities and Exchange Commission of Thailand (SEC), which found that the Company had incorporated a proper internal control system. The Committee promoted a proactive approach in internal auditing and also continued to encourage a continuous implementation of the preventive controls which help to prevent or reduce the business risks which may have an unfavourable impact on the Company.

(3) Review of Connected Transactions or Transactions with Potential Conflicts of Interest

The Committee reviewed the connected transactions or transactions with potential conflicts of interest prior to the Board's consideration to ensure that they are reasonable and beneficial to the Company and the shareholders, particularly the minority shareholders. The Committee also reviewed the disclosure of the transactions and viewed that the transactions were correctly and completely disclosed, that the price and the conditions were fair, and that the transactions were appropriately approved by the management or the Board of Directors prior to their commencement.

(4) Review of Compliance with Laws and Related Regulations

The Committee reviewed the Company's and the subsidiaries' performance in terms of their compliance with the securities and exchange laws, SET's regulations, including other related laws, both Thai laws, and other countries' laws, in which the PTTEP Group operates or invests in. The Committee also acknowledged the compliance report relating to the Company's and our subsidiaries' business operations, as reported by the Compliance Department, in addition to the other compliance audit results as reported by the Internal Audit Division.

(5) Oversight of Internal Audit Activities

The Committee considers a revision of the Audit Committee Charter and Audit Charter every year. In addition to their responsibility to review the audit results and regularly monitor the management's action plans for audit findings. In 2018, the Committee promoted improving the Company's operational processes for example, establishing guidelines for supervision of cyber security to be the same standard across the entire organization, and monitored an auditing in joint venture projects both in Thailand and other countries which the PTTEP Group invests in, to ensure an efficiency of the operator's work processes and the accuracy of expenses charged by the operator. In consequence, the Company saved investment costs and acquired cooperation between partners to enhance the efficiency of joint venture project management.

In addition, the Committee supported implementation of digitization method to monitor and detect irregularities on a continuous basis in order to resolve the matters in time. For example, the implementation of the Continuous Control Monitoring System on Procure to Pay process. In 2018, PTTEP has expanded the scope to include low-value procurement transactions or those below 500,000 Baht. Furthermore, Management dashboard has been developed in order to increase the effectiveness in control and monitoring.

(6) Nomination of/Meeting with the External Auditor

The Committee considered the nomination of the State Audit Office of the Kingdom of Thailand as the Company's external auditor and, for 2018, determined that the external auditor performed its duties with independence, continued to exhibit the required experience in auditing the Company's financial reports, and ensured the accuracy and reliability of the Company's financial reports. In addition, the Committee proposed the audit's remuneration for 2018 and met separately with the external auditor and the Internal Audit Division, without the management presented, to acknowledge and identify the auditor's approach and audit plan as well as to consider the key audit matters in the auditor's report.

(7) Oversight of Fraud Prevention

The Committee encouraged improvement of the Company's internal controls system to ensure optimal controls over fraud prevention. For example, the Committee promoted procurement through a competitive bidding process and supported the management to provide analysis of procurement report in order to get the information for preparing annual procurement plan in advance. As a result, the proportion of bidding transaction is significantly higher than direct negotiation transaction. As well as encouraging that the reference price should be reasonable, and well prepared effectively and efficiently, thus ensuring transparency and verifiability. The Committee also supported reporting and whistleblowing procedure which allows a person to raise a suspicious misconduct or a potential fraud. In addition, the Committee was responsible to verify results of the Company's self-assessments relating to the anti-corruption process as required by CAC and as required by the Corporate Governance Code for Listed Companies 2017. The Company has also become certified as a member of Thailand's Private Sector Collective Action Coalition Against Corruption (CAC), reflecting our determination to stand strongly and prominently against corrupt practices.

The Audit Committee reported the results of all meetings to the Board on a regular basis. The Committee conducted its work thoroughly, methodically and strictly according to the Audit Committee Charter to enhance the Company's good corporate governance. This approach and its follow-through assured that the Company is able to deliver the best possible performance compared to our industrial peers. In addition, the Committee is confident in the competency of the Internal Audit Division, which consists of personnel with various qualifications, skills and experiences, enabling them to perform their duties in auditing to cover various aspects efficiently.

The Committee's opinion regarding the work in 2018 is that the Company's financial report was accurate, in compliance with the generally accepted accounting standards and in line with International Financial Reporting Standards. The Company also conducted the operations in compliance with the laws and related regulations by incorporating the proper systems of risk management, internal controls, internal audit, and corporate governance. The Audit Committee's performance was graded "Very Good" by its own committee, the Board of Directors, and related parties.

(Signed) Achporn Charuchinda

(Mr. Achporn Charuchinda)

Chairman of the Audit Committee

9.18.3 The Nominating Committee Report

In 2018, PTTEP was focusing on the Company's readiness for corporate growth in the areas of E&P, related businesses, new business, as well as selection process for the retiring members of the Management. Moreover, the Company also attached high importance on the preparation for expiring concessions' bid round to ensure continuous production in order to serve domestic energy demand. In the past year, the Nominating Committee paid most attention on nomination of directors, CEO, and organization restructuring to ensure that the aforementioned focuses are well supported with corporate capabilities for long-term competitiveness. In 2018, the Nominating Committee convened 9 times, and the essence of the meetings can be summarized as follows:

(1) Specified Target Skill Mix of the nominees to replace the directors who are due to retire by rotation in the areas of Organization Change and Development, Technology, and Legal to cope with the changing in the E&P business environment as well as PTTEP's strategy which emphasizes on new business opportunities. Consequently, the preparation on Company's organization structure and directors' qualification is highly crucial to support corporate growth in E&P, new investments, and technological advancement.

(2) Considered the principles for 2018 Board Performance Target in which the Board shall focus on monitoring and providing feedbacks to the management to best achieve PTTEP's Corporate Key Performance Index (KPI) as well as measuring the stakeholders' perspective towards the Company's Corporate Governance & Business Ethics (CG&BE) such as the CG ASEAN Scorecard assessment

(3) Nominated names of the candidates with appropriate Skill Mix to the Board for consideration regarding elections of directors and sub-committee members to replace those who resigned, as well as considered the principles in providing the opportunity for shareholders to nominate director nominees in accordance with the Company's Target Skill Mix for the considerations of the Board and consequently the Annual General Shareholder's Meeting. This is to provide equal opportunity and fairness to all shareholders to nominate director candidates.

(4) Considered the qualifications and selection process for the Chief Executive Officer (CEO) as a leader who drives the organization towards growth in E&P and other new business opportunities. The Nominating Committee also considered the CEO's short and long term performance evaluation criteria for short and long term work plans accordingly.

(5) Provided screening opinions to the Board concerning organizational restructuring and related work process to support long-term corporate growth.

(6) Developed a more concrete executive succession plan system which also includes competency development and selection process.

The Nomination Committee reported the results of all meetings to the Board for acknowledgement on a regular basis. The Nominating Committee performed its duties and responsibilities with prudence and independence for the best interest of the shareholders and stakeholders.

(Signed) *Bundhit Eua-arporn*

(Mr. Bundhit Eua-arporn)

Chairman of the Nominating Committee

9.18.4 The Remuneration Committee Report

PTTEP's Good Corporate Governance requires the Remuneration Committee to consist of at least three directors where most of the Committee members are independent directors. The Committee's responsibility is to evaluate an appropriate remuneration for the Board, sub-committees, and the President and Chief Executive Officer (CEO), as well as the salary structure of the Company's senior executives by adhering to fair and reasonable principles, procedures, and structure.

In 2018, the Remuneration Committee convened 3 times where all of the incumbent members attended every meeting. The duties and responsibilities of the Committee can be summarized as follows:

(1) Considered the performance evaluation and remuneration system of the Company to enhance employees' capability and to promote the development of high-potential employees to advance and become members of PTTEP's management by considering the remuneration that reflects the Company's annual performance and is in line with other companies in the market in order to motivate employees across the organization.

(2) Considered the CEO's performance appraisal and remuneration based on the assigned duties and responsibilities, benchmarked with those of other companies under PTT Group.

(3) Reviewed the remuneration policy and criteria of the Board and sub-committees on appropriate principles based on their responsibilities and consistent with long-term corporate strategy as well as being comparable to those of other companies in the same industry. Moreover, the Committee took business environment into account in considering appropriate remuneration principles to create incentives for the Board in directing the organization to achieve short and long-term goals together with being adaptive to the changing technology.

The Remuneration Committee performed its roles in a transparent, fair, cautious, and independent manner, while providing straightforward opinions for the best interests of the shareholders and stakeholders according to PTTEP's Good Corporate Governance and as specified by the Securities and Exchange Commission. The results of all meetings were also regularly reported to the Board for acknowledgement.

(Signed) *Achporn Charuchinda*

(Mr. Achporn Charuchinda)

Chairman of the Remuneration Committee

9.18.5 The Risk Management Committee Report

The year 2018 was very challenging for risk management to cope with the two expiring petroleum concessions, Bongkot and Erawan. The total capacity of these two concessions amounts to 60% of the total production in the Gulf of Thailand. The expiring concessions would significantly affect our production and sales volume. Therefore, the preparation of the bidding processes for both Bongkot and Erawan concessions as the representative of Thai exploration and production companies to maintain production volume and serve the country's energy demand was vitally important to sustain Thailand's energy security in the long term as well as to pursue the goal of becoming a sustainable organization for all stakeholders. 2018 was also the year of oil price volatility, even though the global oil price has risen from that recorded last year, the rise in renewable energy usage, disruptive technology, changes in laws and regulations relating to PTTEP's business and operation, as well as an increase in cyber threats all played a part in such instability. As these factors could potentially affect the achievement of PTTEP's goals or strategies, PTTEP's Board of Directors appointed the Risk Management Committee. As of December 31, 2018, the Committee comprised six members, two of which were independent directors. The Committee played a vital role into overseeing that PTTEP's risk management is in line with PTTEP's Board of Directors' directions by considering corporate risks in the areas of strategic planning, investment, capital project management and capability as well as providing advice and monitoring the results to ensure that the risks are effectively and efficiently managed.

In 2018, the Committee convened 15 times which include 2 meetings that were conducted together with the Audit Committee. The duties and responsibilities of the Committee can be summarized as follows:

(1) Managed strategic risks in response to the dynamically changing external environments such as the changing global energy landscape and an increase of digitally-driven technology in every industry. The Risk Management Committee assessed the risks associated with the Company's "RESET, REFOCUS, RENEW" strategies and the implementation of business plans in accordance with the strategies designed especially for expanding our investment in related E&P business and new businesses which has growth opportunity in the future. PTTEP's Risk Appetite Statement was revised accordingly to fit with corporate directions while the Risk Metrics and Risk Limits were reviewed in order to appropriately determine our investment in new businesses.

(2) Considered and screened investment projects to expand E&P investments including M&A, new exploration and divestment projects in alignment with the company's growth strategies, and project value realization. The Risk Management Committee also advised PTTEP to assess risks in all dimensions including counterparty risks; moreover, they focused on the bidding for the two expiring petroleum concessions, i.e., Bongkot and Erawan gas fields to ensure the continuity in natural gas supply while maintaining competitive costs, resulting in the maximization of benefits to the country and creating energy security in the long term. The risk mitigations were also prepared for bidding; for example, cost management to increase competitive bidding capability and worst case scenario analysis including contingency plan.

(3) Focused on the risk management of large development projects such as the Algeria Hassi Bir Rekaiz Project, the Mariana Oil Sands Project and the Mozambique Rovuma Offshore Area 1 Project by closely monitoring and providing advice to manage risks through options and impact analysis for proper decision-making. Risk Management Committee also drove these projects forward to manage the risks to PTTEP in both the financial and the reputation impact.

(4) Supported the exchange of views between the Audit Committee and the Risk Management Committee. The meetings were held to discuss the various risks; for example, legal and contractual risks whereby the Committee initiated the review of work processes, roles and approval framework between the corporate legal division and projects/assets. Cyber treat risks were also discussed in order for PTTEP to prevent and respond in a timely manner. Furthermore, subsidiary management risks especially for new investment were monitored to ensure good governance and ring-fencing of liabilities between PTTEP and the subsidiary.

In addition, Risk Management Committee consistently oversaw enterprise risk management to ensure businesses were operated within PTTEP's risk appetite, particularly risks related to market, oil price, finance, and exploration and production operations as well as enhanced the level of organization readiness to cope with emerging risks, in addition to existing corporate risks. The minutes of Risk Management Committee meetings were reported to the Board on a monthly basis. In this regard, PTTEP has been selected as a member of the 2018 Dow Jones Sustainability Indices (DJSI) in the DJSI World Oil and Gas Upstream & Integrated Industry and maintained DJSI score in the area of Risk and Crisis Management in the top quartile for the fifth consecutive year.

In summary, during the year 2018, the Committee independently performed duties relating to PTTEP risk management systematically, prudently, competently for PTTEP to achieve our objectives and goals and to the highest benefits of PTTEP, shareholders, and all stakeholders.

(Signed) *Sethaput Suthiwart-Narueput*

(Mr. Sethaput Suthiwart-Narueput)

Chairman of the Risk Management Committee

9.18.6 The Independent Directors Committee Report

In 2018, PTTEP adapted its strategic focus towards organization transformation to cope with fluctuations and challenges of the E&P industry. PTTEP also prepared the organization for moving towards new business opportunities which aim to cope with the growing trends of renewable energy and disruptive technology along with the bidding of Thailand expiring concession which is considerably crucial for national energy stability. Another significant change was the nomination of Company's leaders to replace the retiring Chief Executive Officer (CEO) who must be competent enough to lead PTTEP amidst such business transformation.

Due to the fact that PTTEP is a subsidiary of PTT Group while holding the status as a listed company under the Stock Exchange of Thailand (SET), the Independent Directors Committee has a duty to work as to serve the interests of all shareholders in an equal and transparent manner.

In 2018, the Committee convened 4 times, and the results of the meetings can be summarized as follows:

- (1) Reviewed to ensure that the Committee's roles and responsibilities were in line with PTTEP's Independent Directors Committee Charter as well as SET's Independent Directors Committee requirements
- (2) Considered the CEO's appointment principles to appropriately be in line with PTTEP's new business and organization transformation for sustainable growth by specifying the candidates' essential qualifications and having the candidate express his vision as the organization leader before further nominating the candidate for the Board's consideration
- (3) Considered and supported strategy to build marketing competency and become a competitive global supplier
- (4) Scheduled the Independent Directors Committee's meetings for 2019 and reviewed the 2018 Independent Directors Committee Report which is to be disclosed in the annual report
- (5) Provided comments and useful enquiries with independency when considering agenda items relating to connected transactions between PTT and PTTEP to appropriately protect the benefits and rights of the Company's minor shareholders, promoted transparency and independent decisions within the Board as well as ensured that the directors with conflicts of interest to the substance in each agenda item were abstained from the meeting and voting for the best interest of the Company, shareholders, and stakeholders

The Independent Directors Committee performed its duties by providing beneficial recommendations to the Company and the shareholders to assist the Board to perform with highest efficiency and effectiveness.

(Signed) *Prajya Phinyawat*

(Mr. Prajya Phinyawat)

Chairman of the Independent Directors Committee

▶▶ 10. Corporate Social Responsibility

10.1 Operational Policies towards Responsibility for the Society and the Stakeholders

PTTEP's vision is to become an energy partner of choice through competitive performance and innovation for long-term value creation. The vision is to create sustainable values for all of stakeholders. The Company aligns our sustainability practices with the international standards, such as the United Nations Sustainable Development Goals (SDGs) which is globally accepted and implemented by both public and private sectors; the United Nations Global Compact Advanced Level Principles, Social Responsibility Guidance Standard: ISO 26000, Global Reporting Initiative (GRI), Dow Jones Sustainability Indices (DJSI), Sufficiency Economy Philosophy, and several other internationally-accepted practices. Currently, the Company prioritizes our sustainability contributions to five SDGs which are SDG 3, 4, 7, 8, and 16, while continuing to support the rest of the SDGs in our routine operations.

The Company has developed the Sustainable Development Policy, also known as the G.R.O.W.T.H Policy, to be adopted across the entire organization. The purpose is to demonstrate our definite sustainability objectives and determination to overcome all of the challenges towards developing and becoming a sustainable organization. For the Sustainable Development Policy, please see the Company's website (www.pttep.com).

The Company has also developed the Sustainable Development Guideline underlying various aspects which are important to sustainability of the organization in an effort to establish a universal understanding of the Company's approach to sustainability. Harmony in respect to social responsibility throughout the Company is also established by having everyone operate according to international standards and policies, such as ISO 26000, Safety, Security, Health and Environment (SSHE) Policy of the International Association of Oil & Gas Producers (IOGP), International Petroleum Industry Environmental Conservation Association (IPIECA), OHSAS 18001, and the United Nations' Universal Declaration of Human Rights (UDHR). All divisions within the Company also strictly adhere to our Corporate Governance and Business Ethics, local laws, culture and values, while interacting with all stakeholders such as employees, communities, suppliers, business partners, regulators, and investors.

In 2018, PTTEP reviewed a stakeholder engagement survey result for both internal and external stakeholders to identify and prioritize material issues in respect to PTTEP. For the stakeholder management, the Company has also designated each of the divisions to have its own separate responsibility and participation programs for different groups of stakeholders that they are involved with.

For more details, please see PTTEP 2018 Sustainability Report.

10.2 Operation and Reporting

PTTEP has adopted the Global Reporting Initiative (GRI Standards), using sector specific guidelines of the GRI such as the Sustainability Reporting Guidelines & Oil and Gas Sector Disclosures (OGSD) – core level which is one of the world's most prevalent guideline for sustainability reporting to provide information in regard to the Company's economic, environmental, and social and governance performance. Information of the Company's capability to reduce greenhouse gas emission, for example, is included in the report. The high standard, comparable to those of financial management, allows the Company to

monitor our sustainability effectively. The report includes sustainability data and performance indicators from all parts of the business. This ranges from business planning, corporate risk assessment, internal control process, internal auditing, monitoring and reporting of the Company's performance. PTTEP also adopts and includes other international best practices in our sustainability report, such as DJSI best practices and requirements, AA1000 APS-AccountAbility Principles Standard (2008), SASB Materiality Map™ of Sustainability Accounting Standards Board (SASB), UNGC – Advanced Level, IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability and SDG Compass to support the UN Sustainable Development Goals. In 2018, the Company was able to implement the actions required to address these issues as planned.

PTTEP aims to improve the quality of our sustainability report and disclosure by studying the Integrated Reporting or IR reporting approach, which can better illustrate the relationship between the Company's sustainability and financial performance to apply as a framework for presenting our performance in the future.

For more details, please see PTTEP 2018 Sustainability Report.

10.3 Impacts of Business Operation on Social Responsibility

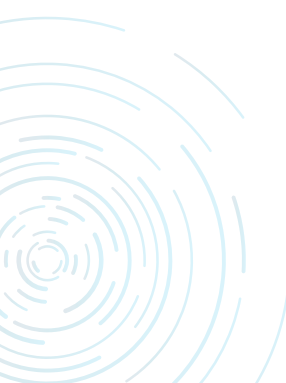
Details are disclosed in the "Legal Dispute" section.

10.4 Projects and Activities for Benefits of the Society and the Environment (After Process)

To be a sustainable organization with a vision of becoming an energy partner of choice through competitive performance and innovation for long-term value creation, PTTEP believes that the key to our license to operate and license to grow are the sustainability of social and environmental stewardship.

To meet the stakeholder's needs as well as to gain their trust and support, the 5-year CSR and Communication Roadmap 2016-2020 was initiated as a guidance with an even greater emphasis on social and environmental stewardship and stakeholder value creation. All CSR projects have been categorized into four themes, namely, Basic Needs, Education, Environment, and Culture. Currently, the Company has been focusing on key environmental and basic needs' CSR projects, namely, Forest Restoration Project for Eco-learning at Sri Nakhon Khuean Khan Park, Thai Heritage World Heritage (Nature) Project, Crab Hatchery Learning Center, Waste to Energy Project, Community Nurse Project and Parasite Free School Project.

For more details, please see PTTEP 2018 Sustainability Report.



▶▶ 11. Internal Controls and Risk Management

11.1 Board of Directors' Evaluation of PTTEP's Internal Controls

PTTEP's Board of Directors (the Board) and the management give high priority to the effectiveness of the internal control system. The management appoints the Internal Control Section to assess the adequacy and effectiveness of the system on an annual basis, while the Board appoints the Audit Committee to review the internal control assessment results, in order to ensure effective and efficient operations of the Company, accurate and reliable reporting, and compliance with relevant laws and regulations.

In 2018, the Board endorsed the Audit Committee's report on the assessment result of all of the five components of the Company's internal control system, namely, (1) control environment, (2) risk assessment, (3) control activities, (4) information and communication, and (5) monitoring activities. The report states that the Company's internal control system is adequate and appropriate. Moreover, when deficiencies are detected, they are constantly rectified, to ensure that it is suitable with our business operations, in compliance with the relevant laws and regulations, and there is an adequate internal control system in place to govern and monitor business operations of the Company's subsidiaries.

The Internal Control Self-Assessment Form issued by the Office of the Securities and Exchange Commission of Thailand (SEC) is employed to assess the Company's internal control system, covering the five components developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The assessment results are as follows:

1. Control Environment

PTTEP has appropriate control environment that can be summarized below.

- PTTEP operates our businesses with Good Corporate Governance and Business Ethics (CG&BE), which is considered as the highest regulation for business operations of the PTTEP Group. The directors, executives, and employees at all levels are required to sign a commitment form to formally acknowledge the CG&BE and to act accordingly. They are also required to self-assess their conflict of interest annually. PTTEP has established six good governance principles which are (1) responsibility, (2) accountability, (3) fairness and integrity, (4) transparency, (5) creation of long-term value to stakeholders, and (6) promotion of best practices. We also put in place 10 business ethics which contain the principles of ethical business behavior that all directors, executives, and employees must adhere to, for example, political neutrality, conflict of interest, trade competition, anti-money laundering, and anti-corruption.

- In 2018, the Company continued to work on CG&BE communication and promotion, to ensure that it is well understood by the executives and employees, through training courses, workshops, email communication, and activities, such as trainings on anti-corruption and insider trading, an induction program for the Company's new Board members and employees, an "Integrity Forum" with our incumbent CEO, a representative from the Office of the National Anti-Corruption Commission (NACC), and a representative from Thailand's Private Sector Collective Action Coalition against Corruption (CAC) as speakers. In addition, the information regarding CG&BE is also disseminated on the Company's website. We also have a clear policy to encourage related parties, i.e., joint venture partners, suppliers/vendors, and company representatives to conduct business ethically and do not involve, whether directly or indirectly, in any corrupt practices. Communication activities to build better understanding on anti-corruption were continuously rolled out, such as a lecture on Governance, Risk Management, and Compliance (GRC) and a lecture on our

anti-corruption policy in the “Symposium on PTTEP’s Vendor Pre-Qualification & Development”. We continue to take a firm stance with the public sector and civil society in the fight against corruption by supporting the anti-corruption work of various organizations, such as by being a member of the CAC and taking part in the International and National Anti-Corruption Day.

- PTTEP continues to monitor and assess compliance with the Code of Conduct through the second and third line of defense units, to ensure that the executives and employees can effectively integrate ethical conduct into their work life. Additionally, PTTEP is regularly evaluated by external independent parties such as the Corporate Governance Report of Thai Listed Companies conducted by the Thai Institute of Directors Association (IOD), Dow Jones Sustainability Index (DJSI), ASEAN Corporate Governance Scorecard and Thailand’s Private Sector Collective Action Coalition against Corruption (CAC).

- PTTEP establishes a clear segregation of duties between the Board and the management. The Board’s duty is to develop the corporate operational strategies and govern business performance of the management to achieve the objectives as set in the strategies. The Board also delegates their power to the management through the PTTEP Group’s regulations to ensure operational flexibility and efficiency. Additionally, the Board has assigned the Audit Committee to be responsible for governing and providing comments on the internal control system, internal audit system and financial report, as well as considering, selecting and proposing an appointment of an external auditor, which are in line with the roles and duties set out in the Audit Committee Charter.

- PTTEP’s structure is appropriately organized corresponding to the main activities of petroleum exploration and production business. The organizational structure and format were designed to allow for flexibility, to effectively manage our human resources and cater for the Company’s strategic growth. Segregation of duties, and checks and balances have been adopted in line with the internal control principles. In 2018, to appropriately respond to the technological changes and business growth, the Company underwent an organizational restructuring, for example, combining the Exploration and New Venture Division with the Business Development 1 Division, allowing for integrated management in pursuit of new projects based on company strategy, upgrading the Sustainability Strategy Section to a department level as the Sustainability Strategy and Operational Excellence Department, to enhance the organization’s sustainability strategy, transferring the Information Technology and Information Management Department to be under the reporting line of the Business and Organization Transformation Group, to better prepare for and respond to the changes brought about by disruptive technologies.

- PTTEP has appropriate reporting-line structures corresponding to the Company’s business requirements and responsibilities of the management and employees. They are clearly defined and documented in the Company’s Functional Description and the Delegation of Authority and Signatures (DAS). In 2018, PTTEP revised the DAS according to the new organizational structure and reformed business operations for more effective delegation of authority.

- PTTEP has an extensive set of written regulations and policies on human resource management which focus on attracting, developing, and retaining qualified individuals to support our businesses and future growth, both in short-term and long-term. In 2018, our goals in preparing our personnel to meet the business needs were as follows:

- (1) Personnel recruitment and development to support the petroleum exploration and production business by focusing on three main areas, namely, (1) exploration success, (2) joint venture management, and (3) mergers and acquisitions (M&A)

- (2) Personnel recruitment and development to support new businesses, such as business development, sales and marketing, business and organization transformation, and digital technology

The Company also regularly reviews and assesses the level of knowledge and competency of our personnel in key positions and necessary for future expansion, focusing on internal development. In addition, specific development plans for high potential employees, management succession plan, job rotation, and promotion, have also been developed. An employee engagement survey is carried out annually to review the factors relating to our employees' satisfaction and organizational commitment, to review and revise the plans. As for the corporate remuneration policy, we adopt the pay-for-performance compensation system and regularly review it to retain highly competent employees and ensure their compliance with the Company's policy.

- PTTEP establishes the Internal Control Policy and Internal Control Standard, and emphasize the need to communicate them to our executives and employees through training courses, activities and publications such as GRC workshop, to ensure accurate understanding of the requirements, roles, and responsibilities of each individual in relation to the internal control system. In 2018, PTTEP, which is a state enterprise under the State Fiscal and Financial Disciplines Act B.E. 2561 (2018), appointed the Internal Control Committee as required by the Ministry of Finance on Standard and Rule of Practice of Internal Control for Government Agency B.E. 2561 (2018), in order to comply with the laws and regulations.

2. Risk Assessment

PTTEP employs an international risk management approach which can be summarized below.

- PTTEP establishes the Risk Appetite Statement, Risk Governance Framework, and Risk Metrics & Limit to clearly define roles, responsibilities, and authorities relevant to the risk management at all levels of the Company, including the Board, the Risk Management Committee, and the management, as well as supporting and operational business units. In 2018, PTTEP's Risk Appetite Statement was revised and approved by the Board, in line with our strategic plan and new business growth direction.

- PTTEP develops the Enterprise Risk Management Policy, Risk Management Standard and Risk Management Guideline which are regularly reviewed and updated to ensure that all key risk activities are covered.

- PTTEP develops the Business Continuity Management Policy, Business Continuity Management Standard and Corporate Business Continuity Procedure. In 2018, the policy, standard and procedure have been reviewed and revised.

- PTTEP communicates the Risk Appetite Statement, Risk Metrics & Limit, Risk Management Policy including standards, guidelines, processes, and tools to the management and employees through various channels, such as trainings for employees and risk coordinator, workshop and Enterprise Risk Management and Internal Control Division Intranet to enhance their understanding and concrete implementation, in order to achieve the Company's objectives.

- PTTEP manages risks throughout the organization based on the four risk categories, namely, strategic planning and management, investment and divestment decision making, operations and business process, and capital project management. In addition, the Company develops the Risk Profile to identify and assess the risks at all levels, from the corporate, function group, division, and department levels, down to the asset/project level.

- PTTEP conducts risk assessment by considering both the internal and external risk factors, impact, and likelihood of those risks. Risk mitigation plans meanwhile are developed, executed, and monitored to reduce the level of risk through various measures. Key Risk Indicators (KRIs) are also developed to provide an early warning of risks to prevent and develop mitigation plans for risks that can potentially impact the Company's ability to achieving our business objectives. In 2018, the Company developed and further improved the Business Continuity Management System (ISO 22301:2012) for the Myanmar Asset (certified), the Petroleum Development Support Base (PSB) (Songkhla) (re-certified) and our headquarters in Bangkok (standard maintained).

- PTTEP appoints the Operational Risk Committee (ORC) to continuously manage the operational risks of various projects in the technical, contractual and operational support aspects. In 2018, ORC convened four times. The Company also appoints the Business Continuity Management Committee (BCMC) to assist the management to obtain the resources required to support the Business Continuity Management System, provide strategic directions, and approve the Business Continuity Plan. In 2018, BCMC convened two times. At the second meeting, the contents of the BCMC Meeting No. 2/2561/24 and No. 3/2561/25 were combined for better efficiency.

- PTTEP appoints the Hedging Committee to effectively manage the petroleum price risk and financial risk. In 2018, the Hedging Committee convened fourteen times.

- At the corporate level, corruption risk assessment was conducted for high-risk business activities: embezzlement, corruption, fraud, and misstatement of financial reporting. Historical data and future likelihood of occurrence are used for the analysis, to develop the Corporate Risk Profile.

- At the process level, process owners are responsible for assessing the corruption risk of their respective process, together with the operational risks, in order to improve the standard of internal controls.

- The Audit Committee assigned the Internal Audit Division (CIA) to carry out audits regarding high risk areas which can lead to corruption. CIA is also responsible for undertaking a preliminary investigation upon receiving a report or when requested by the Audit Committee and/or CEO.

- PTTEP has considered, modified, and approved the strategic plan. The implementation is also regularly monitored and reviewed to ensure that the organizational goal remains reasonable and suitable with the changing situation. The key factors which are closely monitored include the oil price, economy, geopolitics, foreign exchange rates, laws and regulations, government policies, technological development, to respond to those risks in a timely manner, as well as to adapt to new technology and alternative energy which are gaining importance in the energy industry.

3. Control Activities

PTTEP has adequate and efficient control activities to appropriately manage and mitigate the risks to an acceptable level. Our key control activities can be summarized below.

- PTTEP has extensive sets of written regulations and policies with which the executives and employees have to strictly comply. The executives and supervisors are responsible for following up and monitoring such compliance. In 2018, to ensure higher level of work efficiency within the organization, the Company developed and updated the corporate policies, standards and guidelines such as the Business Continuity Management Policy and Standard.

- PTTEP recognizes the significance of control activities at the process level, including segregation of duties, review and authorization of transactions, to ensure that the business operations are efficient and able to prevent errors and deter corruption. In 2018, the Company has improved and added additional control measures for various processes as a result of the control self-assessment (CSA), such as Inventory Management Process of Myanmar Asset and Compliance Management Process. In addition, the Company regularly monitor our contractual parties to ensure that they comply with the terms of the procurement contracts by using the control measures adopted by the Company such as Contract Management Procedure review and improvement, random assessment on compliance with the work procedure, and random assessment of the contractual parties on compliance with the terms of the contracts.

- PTTEP develops general controls of the information system, physical security, data backup and recovery to ensure business continuity. Our issued IT security policy applies organization-wide, in line with the principle of good corporate governance. In 2018, the information system was improved to integrate control activities in the business processes with the information system, such as the Bank Communication System (BCS), which automatically generates and sends electronic payment orders from the SAP system to the banking system in order to prevent modification during the payment process. Digital Security Awareness E-Learning was also carried out to build awareness and understanding among the staff on the use of information technology according to the corporate IT security policy and regulations, and in compliance with the Act on Commission of Offences Relating to Computer B.E. 2550 (2007), which they must acknowledge and strictly follow.

- IT infrastructure controls are in place with a clear policy to bring in digital technology to improve the effectiveness of the IT system. The ICT strategy is adopted based on the COBIT 5, which is a business framework for the governance and management of enterprise IT, and ISO 27001 which is an information security standard. In 2018, we considered the adoption of a cloud-based IT system. The consideration included the issues of standardization, organizational suitability, and system compatibility, to ensure compliance with the defined information technology security standard.

- PTTEP emphasizes IT security policy and controls for IT security and IT risks to maintain system stability and prevent security breach. A data backup and recovery system are also in place to ensure business continuity. The controls can be classified into three types, namely, (1) General Control, such as IT guidelines and procedures, and Business Continuity Plan, (2) Control at Personal Level, such as personal access controls, and cybersecurity drill, and (3) Control at System Level, such as Work Mobility Program, and external penetration testing by expert organization for system vulnerability improvement.

- PTTEP appoints the IT Steering Committee to provide IT strategic directions, goals, strategies, policies and standards, including investment direction in IT Master Plan and Roadmap to mitigate IT risks to an acceptable level.

- There is a procedure to regularly monitor the operations of PTTEP's subsidiaries, associated companies and joint ventures. PTTEP executives and employees are designated to manage these entities. The Company has developed the Subsidiary Directors Guideline for the designated person to ensure standardized subsidiary directors' roles and responsibilities. The Internal Audit Division also has the responsibility to audit Assets/Projects in which the Company has invested.

- PTTEP regularly reviews policies, requirements and work processes to ensure that work processes and defined control activities are effectively and efficiently managed the risks when situation changes. In 2018, the Company revised the policies, requirements and work processes for better effectiveness, such as the Standard of Practices for Anti-Corruption, Safety and Environment documents and Business Continuity Management documents.

4. Information and Communication

PTTEP has effective and efficient information and communication systems for internal and external stakeholders, which can be summarized below.

- PTTEP determines data and information from internal and external sources after reviewed by the responsible units before final decisions are made. In addition, access is limited to only the concerned persons. Data classification is implemented to prevent unauthorized disclosure of sensitive or confidential information of the Company.

- PTTEP has developed the Corporate Reference Document Center or “FindMe” as the information technology infrastructure to store and manage important business documents of the PTTEP Group through a single access platform. In 2018, PTTEP revised the document management policies and standards to be in line with international and petroleum industry practices.

- For internal communication, PTTEP has effective and efficient internal channels to ensure that the executives and employees can access the information essential for their work requirements. The Company communicates the objectives, scope and responsibility of the internal controls through internal meetings and emails. The Company has also set up the “Call Tree” network for communication in times of crisis. In 2018, we conducted an information promotion activity on the GRC concept for the employees through the GRC Workshop, to ensure that they can appropriately integrate this concept into their work responsibilities. GRC is an integrated collection of assurances, comprising Governance, Risk management, and Compliance.

- For external communication, PTTEP establishes business units which are responsible for communicating with each specific group of stakeholders, such as investor relations, corporate communication, and corporate secretary units. This is to ensure that information disclosed to external stakeholders are accurate, complete, sufficient, and timely. In 2018, the Company provided different types of information to the stakeholders, such as the importance and necessity for the public sector to open the auction of the Erawan and Bongkot gas fields’ concession. In addition, the CEO Message to the investors and analysts is communicated via the Company’s website, LinkedIn and Facebook. We also provided information publications for analysts, fund managers and shareholders for better understanding of the E&P business. The Safety, Security, Health and Environment (SSHE) Policy is also communicated to our contractors at the Contractor Forum every year, while the Anti-Corruption Policy is communicated to the suppliers/vendors through various communication channels, such as the Vendor Symposium on PTTEP’s Vendor Pre-Qualification & Development and PTT Group CG Day.

- PTTEP establishes whistleblowing channels for employees and external stakeholders in accordance with the PTTEP Reporting and Whistleblowing Regulation, such as letter, email, and online reporting on PTTEP website, to ensure accurate, complete, and timely report of and information on wrongdoings committed by the Company’s directors, the management, employees, or third parties acting on behalf of the Company.

5. Monitoring Activities

PTTEP has adequate and efficient monitoring systems which can be summarized below.

- PTTEP regularly monitors and assesses the internal controls, to ensure that they can appropriately respond to the dynamic business environments in terms of corporate and technical risks. In 2018, the Company monitored the GRC-related activities through the annual GRC Plan to effectively implement the GRC within the organization.

- PTTEP employs two levels of Control Self-Assessment (CSA), namely, the corporate and process levels. For the corporate level, the CSA is performed based on the Internal Control Self-Assessment Form issued by the Office of the Securities and Exchange Commission of Thailand (SEC) and the internal control questionnaires which are assessed by the management at all level. For the process level, the process owners of respective business processes with significant impact on the Company are required to assess the controls of such processes. In 2018, the CSA Guideline was revised. Findings from the two-level CSA are subsequently used to develop improvement plans and follow-ups.

- The Compliance Department (CCC)¹ is responsible for monitoring and reviewing compliance, and reporting two types of non-compliance within an organization, namely, (1) non-compliance with the laws and external regulations, which is reported to the Chief Executive Officer on a monthly basis and to the Audit Committee at least biannually; and (2) non-compliance with the internal regulations and policies, which is reported to the Management Committee on a quarterly basis. If the matter is deemed to have a significant impact on the PTTEP Group, CCC shall immediately report it to responsible parties.

- The Internal Audit Division (CIA) is responsible for auditing and providing recommendations for improvements to ensure adequacy and effectiveness of the Company's internal control system. CIA is also responsible for developing improvement plans to resolve the issues identified and subsequently communicate with responsible parties, while periodically report the findings and improvement progress to the Audit Committee.

11.2 Head of the Internal Audit Division and Head of the Compliance Function

11.2.1 Roles and Responsibilities of Head of the Internal Audit Division

PTTEP has established the Internal Audit Division which has a direct reporting line to the Audit Committee and an administrative (dotted-line reporting) reporting line to the Chief Executive Officer. Key roles, responsibilities and scopes of work of the Internal Audit Division include the followings.

(1) In-house and Subsidiary Audits

The purpose of the audits is to ensure that the operations achieve the Company's target. The auditors evaluate and, in turn, aim to improve the effectiveness of risk management, internal controls, and corporate governance in a continuous effort to detect and prevent all types of deceptive schemes with potential for frauds, or schemes which can potentially lead to illegal wrongdoings. The audits and the processes involved are also developed to identify control weaknesses which could potentially create opportunities for frauds as well as to provide recommendations for enhancement of the internal controls.

(2) Joint Venture Audits

The auditors conduct audits on the operators for projects that PTTEP has invested in to ensure that the operators comply with the joint venture agreements and other related contractual arrangements, that they possess appropriate internal controls, and that the expenditures incurred and reported are equitable, reasonable, and accurate for benefits of all the parties involved.

(3) Consulting Services

The auditors pre-determine the scope of the consulting services prior to the engagement, ensuring that they will result in an improved efficiency and effectiveness of the existing processes as well as useful recommendations in regard to risk management, internal controls, and corporate governance.

(4) Fraud Investigation

The Head of the Internal Audit Division is responsible for undertaking the investigation of all reported or suspected frauds, according to the Reporting and Whistleblowing Regulation B.E. 2556. Investigation team members must not have any conflicts of interest in regard to complaints under the investigation. Prevention, detection, further investigation, and prosecution of fraud offenders are however under responsibility of the management.

¹ Since January 1, 2019, the Compliance Department has been renamed to the Governance, Compliance, and Internal Control Department, as part of the organizational restructuring of PTTEP to centralize all compliance works into the same function.

(5) Special Audit Requests

Special audit requests are not included in the annual audit plan. The Internal Audit Division performs special audits as requested by the Company's management and/or the Audit Committee to prevent and mitigate risks which may arise.

According to the Audit Committee Charter, the Audit Committee has a duty to determine the Company's internal audit unit's independence as well as to endorse the appointments, transfers, performance appraisal or punishments of the Head of the Internal Audit Division.

In 2018, Mrs. Chanamas Sasnanand held the positions of the Senior Vice President of the Internal Audit Division and Head of the Internal Audit Division. Since January 1, 2019, Ms. Yaninee Wajeepratubjit has assumed these positions in replacement. The Audit Committee deems that both aforementioned executives are qualified to undertake the responsibility based on their educational background, necessary knowledge, skills, and work experience. They both have also been up-to-date in terms of professional knowledge and expertise, primarily through extensive trainings on internal auditing methodologies, management programs, and internal auditor competency development. Such stringent attention to the person holding the title and the supports provided to the entire team highlight the importance which the Company has placed on the efficiency and effectiveness of the Internal Audit Division and performance of the Audit Committee.

Details of the Head of the Internal Audit Division are disclosed in Attachment 3: Details of Head of the Internal Audit Division and Head of the Compliance Function.

11.2.2 Roles and Responsibilities of Head of the Compliance Function

PTTEP has established the Compliance Department² which has a direct reporting line to the Senior Vice President of the Legal Division, the Executive Vice President of the Corporate Affairs and Assurance Group, and the Chief Executive Officer. The key responsibilities are to encourage the PTTEP Group to fully comply with applicable laws as well as to support the management in managing compliance risk efficiently through various compliance programs, including providing of communication and training programs, developing and maintaining of the legislation database and compliance monitoring system, identifying and conducting compliance risk assessment, providing advice upon new issuance or amendment of the PTTEP Group's internal regulations, coordinating with regulators, and reporting the performance of the compliance programs to the Audit Committee and the management.

Mr. Verasak Manchuwong has been appointed as the Vice President of the Compliance Department² and the Head of the Compliance Department, effective on October 1, 2013. Since October 1, 2018, Mr. Kanes Supyaboonrod has assumed this position in replacement. More details of the Head of the Compliance Function are disclosed in Attachment 3: Details of Head of the Internal Audit Division and Head of the Compliance Function.

² Since January 1, 2019, the Compliance Department has been renamed to the Governance, Compliance, and Internal Control Department, as part of the organizational restructuring of PTTEP to centralize all compliance works into the same function.

12.1 Connected Transactions between Related Companies

Connected transactions at PTTEP and/or our subsidiaries with other entities that may result in conflicts of interest in the fiscal year ending December 31, 2018 are as follows:

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
PTT Public Company Limited (PTT)	<ul style="list-style-type: none"> ■ PTT, the Company's major shareholder, holds 65.29% of the Company's registered and paid-up capital. ■ PTT's executives who serve as PTTEP's directors are: <ol style="list-style-type: none"> (1) Mr. Chansin Treenuchagron (2) Mr. Wirat Uananumit (3) Mr. Phongsthom Thavisin 	<p>Petroleum product sales: crude oil, natural gas; liquefied petroleum gas; and condensate</p> <ul style="list-style-type: none"> ■ Total income ■ Accounts receivable <p>Other income includes:</p> <ul style="list-style-type: none"> ■ Income from infrastructure services to support petroleum development such as warehouse, helicopter, and accommodation for PTT personnel at Arthit and Bongkot projects ■ Income from maintenance of natural gas meters ■ Income from charges to PTT for working areas at Arthit and Bongkot projects' production platforms based on the Gas Sales Agreement ■ Income from charges to PTT for gas receiving areas, working areas and accommodation on platforms based on the Greater Bongkot South field's natural gas purchase/sale contract. ■ Income from the jetty and warehouse rentals at Songkhla base ■ Income from fines based on the S1 Gas Sales Agreement, Clause 13.7 ■ Income from the Company's personnel seconded to PTT 	<p>4,485.55</p> <p>637.13</p>	<ul style="list-style-type: none"> ■ Condition and price setting follows normal business operations, at an arm's length basis for non-related persons or operations. ■ Condition and price setting follows normal business operations, at an arm's length basis for non-related persons or operations.

▶▶ 12. Connected Transactions





Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
Energy Complex Company Limited (EnCo)	<ul style="list-style-type: none"> ■ PTT, the Company's major shareholder, holds 50% of EnCo's registered and paid-up capital. ■ PTTEP, EnCo's major shareholder, holds 50% of EnCo's registered and paid-up capital. 	<ul style="list-style-type: none"> ■ Income from service charges for management's drivers based on the agreement between PTT and PTTEP Services (a subsidiary of PTTEP) ■ Income from meeting room rentals at EnCo B building, 16th-18th Floor ■ Income from office building rental and facility management provided by EnCo (a subsidiary of PTTEP) ■ Total income 13.22 ■ Accounts receivable 4.84 		
		Purchase of petroleum products and related expenses, manpower charges for PTT personnel seconded to the Company and subsidiaries, and other expenses <ul style="list-style-type: none"> ■ Total expenses 25.01 ■ Accounts payables 3.65 		<ul style="list-style-type: none"> ■ Condition and price setting for the purchase of petroleum products, related equipment, related services, and other expenses follows normal business operations, at an arm's length basis for non-related persons or operations. ■ Manpower rates are based on the actual rates PTT pays to employees seconded to PTTEP.
		Deferred compensation that is the Company's obligation based on the Arthit Project's Gas Sale Agreement	1.76	<ul style="list-style-type: none"> ■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		Income from the Company's personnel seconded to EnCo <ul style="list-style-type: none"> ■ Total income 0.26 ■ Accounts receivable 0.02 The Company has signed a three-year lease agreement with EnCo to rent the office building, storage and common areas at the Energy Complex Center. The Company is eligible to extend its lease agreement for another three years. <ul style="list-style-type: none"> ■ Total lease and service expenses 17.91 ■ Accounts payable 0.0044 		<ul style="list-style-type: none"> ■ Manpower rates are based on the actual rates the Company pays to employees seconded to EnCo. ■ The leasing rate is based on the market rate of the office building lease and follows normal business operations, at an arm's length basis for non-related persons or operations.

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
PTT Digital Solutions Company Limited (PTT Digital) (Formerly is PTT ICT Solutions Company Limited.)	<ul style="list-style-type: none"> ▪ PTT, the Company's major shareholder, holds 20% of PTT Digital's registered and paid-up capital. ▪ PTTEP holds 20% of PTT Digital's registered and paid-up capital. 	<p>The Company signed a loan contract with EnCo under the following conditions:</p> <ul style="list-style-type: none"> ▪ Contract period of 13 years and 6 months ▪ Expiration date is October 2, 2022. ▪ Reference interest rate follows the loan contract between EnCo and Krung Thai Bank Public Company Limited, dated April 2, 2009 (contract amendment is included). <p>The interest rate as of December 31, 2018 is FDR+3.35% per year.</p> <ul style="list-style-type: none"> ▪ Loans outstanding 17.87 ▪ Interest receivable 0.60 <p>Income from the following services:</p> <ul style="list-style-type: none"> ▪ Income from the Company's personnel seconded to PTT Digital ▪ Dividend income ▪ Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP) ▪ Total income 3.46 ▪ Accounts receivable 0.30 		<ul style="list-style-type: none"> ▪ The mentioned contract follows the conditions of the loan contract signed by EnCo and Krung Thai Bank Public Company Limited, dated April 2, 2009 (contract amendment is included) with the financial support of all of EnCo's shareholders proportionately. ▪ Manpower rates are based on the actual rates the Company pays to employees seconded to PTT Digital.
PTT Energy Resources Company Limited (PTTER)	<ul style="list-style-type: none"> ▪ PTT, the Company's major shareholder, holds 100% of PTTER's registered and paid-up capital. ▪ Co-director is Mr. Pitipan Teartimargorn. 	<p>The Company and subsidiaries have signed a contract with PTT Digital for IT services and communications.</p> <ul style="list-style-type: none"> ▪ Total expenses 17.23 ▪ Accounts payable 2.48 <p>Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP)</p> <ul style="list-style-type: none"> ▪ Total income 0.15 ▪ Accounts receivable 0.0014 		<ul style="list-style-type: none"> ▪ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations. ▪ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.



Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
Business Services Alliance Company Limited (BSA)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds more than 10% of BSA's registered and paid-up capital. 	<p>Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP)</p> <ul style="list-style-type: none"> Total income 0.12 Accounts receivable 0.0012 <p>Expenses from the following services:</p> <ul style="list-style-type: none"> Expenses for field trip arrangements Manpower charges for BSA personnel seconded to PTTGL (a subsidiary of PTTEP) Manpower charges for BSA personnel providing services at Energy Complex, PTT headquarters, PTT Research and Technology Institute in Wangnoi District, Ayutthaya Province and PTT Research and Technology Institute in Wang Chan District, Rayong Province based on the agreement between BSA and EnCo (the subsidiary of PTTEP) Total expenses 0.46 Accounts payable 0.02 	<ul style="list-style-type: none"> Condition and price setting follows normal business operations, at an arm's length basis for non-related persons or operations. Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations. 	
IRPC Public Company Limited (IRPC)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 38.51% of IRPC's registered and paid-up capital. Co-director is Mr. Chansin Treenuchagron. 	<p>Income from the following services:</p> <ul style="list-style-type: none"> Income from the jetty and warehouse rentals at Songkhla base Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP) Total income 1.99 Accounts receivable 0.12 	<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations. 	
Dhipaya Insurance Public Company Limited (TIP)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 13.33% of TIP's registered and paid-up capital. 	<p>Income from the following services:</p> <ul style="list-style-type: none"> Insurance claims for Pailin and Bongkot projects Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP) Total income 8.67 Accounts receivable 8.68 	<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations. 	



Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
Thai Oil Public Company Limited (TOP)	<ul style="list-style-type: none"> ▪ PTT, the Company's major shareholder, holds 49.10% of TOP's registered and paid-up capital. 	<p>Expenses for the Company and subsidiaries' assets insurance, and our employees' health and life insurance</p> <ul style="list-style-type: none"> ▪ Total expenses ▪ Accounts payable <p>Income from the following services:</p> <ul style="list-style-type: none"> ▪ Income from the jetty and warehouse rentals at Songkhla base ▪ Income from meeting room rentals ▪ Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP) ▪ Total income ▪ Accounts receivable 	<p>7.10 (0.08)</p>	<ul style="list-style-type: none"> ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations. ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT Global Chemical Public Company Limited (GC)	<ul style="list-style-type: none"> ▪ PTT, the Company's major shareholder, holds 48.18% of GC's registered and paid-up capital. 	<p>Income from the following services:</p> <ul style="list-style-type: none"> ▪ Income from office renovation at EnCo A building, 1st Floor ▪ Income from meeting room rentals ▪ Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP) ▪ Total income ▪ Accounts receivable <p>Mercury analysis fees for PTTEP SP Gas Processing Plant</p> <ul style="list-style-type: none"> ▪ Total expenses ▪ Accounts payable 	<p>1.07 0.02</p> <p>2.66 0.06</p> <p>0.0083 0.0012</p>	<ul style="list-style-type: none"> ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations. ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations. ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations. ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT Natural Gas Distribution Company Limited (PTT NGD)	<ul style="list-style-type: none"> ▪ PTT, the Company's major shareholder, holds more than 10% of PTT NGD's registered and paid-up capital. 	<p>Income from the following services:</p> <ul style="list-style-type: none"> ▪ Income from service charges for the management's drivers based on in the agreement between PTT NGD and PTTEP Services (a subsidiary of PTTEP) ▪ Income from office building rental and services provided by EnCo (a subsidiary of PTTEP) ▪ Total income ▪ Accounts receivable 	<p>0.18 0.01</p>	<ul style="list-style-type: none"> ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.



Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
PTT Retail Business Company Limited (PTTRM)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds more than 10% of PTTRM's registered and paid-up capital. 	<ul style="list-style-type: none"> Income from office building rental and services provided by EnCo (a subsidiary of PTTEP) <ul style="list-style-type: none"> Total income 0.03 Accounts receivable 0.0017 Expenses for drinking water for EnCo (a subsidiary of PTTEP) <ul style="list-style-type: none"> Total expenses 0.000042 Accounts payable - 		<ul style="list-style-type: none"> Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations. Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT Tank Terminal Company Limited (PTT Tank)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds more than 10% of PTT Tank's registered and paid-up capital. 	<ul style="list-style-type: none"> Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP) <ul style="list-style-type: none"> Total income 0.0204 Accounts receivable 0.0003 		<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
Trans Thai-Malaysia (Thailand) Limited (TTM)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds more than 10% of TTM's registered and paid-up capital. 	<ul style="list-style-type: none"> Income from the following services: <ul style="list-style-type: none"> Income from warehouse rentals at Songkhla base Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP) <ul style="list-style-type: none"> Total income 0.01 Accounts receivable 0.01 		<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT International Trading Pte. Ltd. (PTTT)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 100% of PTTT's registered and paid-up capital. 	<ul style="list-style-type: none"> Expense from oil price hedging contracts <ul style="list-style-type: none"> Total expenses 3.83 Accounts payable - 		<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT International Trading London Ltd. (PTTT LDN)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 100% of PTTT LDN's registered and paid-up capital. 	<ul style="list-style-type: none"> Petroleum product sales: crude oil <ul style="list-style-type: none"> Total income 55.93 Accounts receivable - 		<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT Regional Treasury Center (PTT RTC)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 100% of PTT RTC's registered and paid-up capital. 	<ul style="list-style-type: none"> PTTGL Investment Limited (PTTGL), a subsidiary of PTTEP, signed a loan contract with PTT RTC under the following conditions: <ul style="list-style-type: none"> Contract period of 6 years and 10 months Expiration date is July 2, 2024. Interest rates refer to the LIBOR plus Interest Rate Spread which are in line with market rates. Loans outstanding 38.81 Interest expenses 1.63 		<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations with the financial support of all PTTGL's shareholders proportionately.

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
Global Power Synergy Company Limited (GPSC)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 22.58% of GPSC's registered and paid-up capital. 	<p>Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP)</p> <ul style="list-style-type: none"> Total income 0.47 Accounts receivable 0.0613 		<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT Global LNG Company Limited (PTTGL)	<ul style="list-style-type: none"> PTT, major shareholder of PTTEP and PTTGL, hold 50% of PTTGL's registered and paid-up capital. PTTEP, PTTGL's major shareholder, holds 50% of PTTGL's registered and paid-up capital. 	<p>Income from the following services:</p> <ul style="list-style-type: none"> Income from accounting, tax and financial operations services provided by PTTEP Income from financial services provided by PTTEP Treasury Center Company Limited (a subsidiary of PTTEP) Income from the Company's personnel seconded to PTTGL Income from service charges for management's drivers based on the agreement between PTTGL and PTTEP Services (a subsidiary of PTTEP) Income from meeting room rentals Income from subleasing office areas of approximately 320 sq.m. Income from providing utilities and other services <p>Total income 0.69 Accounts receivable 0.07</p>		<ul style="list-style-type: none"> Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTTGL Investment Limited (PTTGLI)	<ul style="list-style-type: none"> PTT, major shareholder of PTTEP and PTTGL, hold 50% of PTTGLI's registered and paid-up capital. PTTEP, PTTGL's major shareholder, holds 50% of PTTGLI's registered and paid-up capital. PTTGL, the major shareholder of PTTGLI, holds 100% of PTTGLI's registered and paid-up capital. 	<p>PTTEP Treasury Center Company Limited (a subsidiary of PTTEP) signed a loan contract with PTTGLI under the following conditions:</p> <ul style="list-style-type: none"> Contract period of 6 years and 10 months Expiration date is July 2, 2024. Interest rates refer to the LIBOR plus Interest Rate Spread which are in line with market rates. <p>Loans outstanding 77.62 Interest income 3.27</p>		<ul style="list-style-type: none"> Conditions and price setting follow normal business operations at an arm's length basis for non-related persons or operations with the financial support of all PTTGL's shareholders proportionately.



Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
		<p>The Company and subsidiaries signed contracts with PTTGLI for the following services:</p> <ul style="list-style-type: none"> ▪ Accounting, Tax and Financial Operations services provided by PTTEP ▪ Financial services provided by PTTEP Treasury Center Company Limited ▪ Total income 0.04 ▪ Accounts receivable 0.0042 		<ul style="list-style-type: none"> ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT LNG Company Limited (PTTLNG)	<ul style="list-style-type: none"> ▪ PTT, the Company's major shareholder, holds 100% of PTTLNG's registered and paid-up capital. 	<p>Income from office building rentals and services provided by EnCo (a subsidiary of PTTEP)</p> <ul style="list-style-type: none"> ▪ Total income 0.08 ▪ Accounts receivable 0.0008 		<ul style="list-style-type: none"> ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.
PTT Oil and Business Company Limited (PTTOR) (Formerly is PTTRB.)	<ul style="list-style-type: none"> ▪ PTT, the Company's major shareholder, holds 100% of PTTOR's registered and paid-up capital. 	<p>Purchase of petroleum products and related expenses</p> <ul style="list-style-type: none"> ▪ Total expenses 23.58 ▪ Accounts payable 1.15 <p>Income from office building rental and services provided by EnCo (a subsidiary of PTTEP)</p> <ul style="list-style-type: none"> ▪ Total income 0.70 ▪ Accounts receivable 0.48 		<ul style="list-style-type: none"> ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations. ▪ Conditions and price setting follow normal business operations, at an arm's length basis for non-related persons or operations.

12.2 Preconditions and Reasons for Connected Transactions

PTTEP's Audit Committee reviewed the connected transactions which were recorded during the fiscal year ending December 31, 2018 as summarized above and considered them to be indispensable, fair and justifiable in terms of conditions and prices, and/or within the arm's length basis. The transactions were also approved by the management or the PTTEP's Board of Directors (Board) prior to execution.

12.3 Measures and Procedure of Connected Transactions

The Board reviews any transactions potentially leading to conflicts of interest, or those which are connected or related, under proper ethical standards, however only after they are initially screened and examined by the Company's Audit Committee. The transactions are particularly those falling within the criteria as set forth by the Stock Exchange of Thailand, the Capital Market Supervisory Board, and the Securities and Exchange Commission. The Board's responsibility also includes, when deemed appropriate, public disclosure of accurate and correct information of the transactions which might be questionable. The Company meanwhile has conducted a clear set of policies regarding conflict of interest for our directors and employees to follow and act accordingly, as well as a reporting procedure in procedure of the conflict.

Shall any of the directors, employees, or related persons have a vested interest in a transaction that the Company is involved in, he or she will not be allowed to take part in the making of any of the decisions or approvals related to the transaction. The transaction, in this case, also remains to be treated under an arm's length basis, fair and justifiable in terms of both price and conditions.

12.4 Policy for and Future Possibility of Connected Transactions

12.4.1 Policy for Connected Transactions

PTTEP treats connected transactions as normal business transactions without any intentions to transfer benefits between or among the Company and related companies, or persons. The Company strictly adheres to securities and exchange laws and regulations, including those imposed by the Capital Market Supervisory Board, the Stock Exchange of Thailand, and other related supervisory agencies, regarding connected transactions to ensure that, with reasonable business terms and conditions, and use of the market reference prices, for instance, the Company's shareholders and stakeholders will be treated equally and in their interests, in accordance with the Company's good corporate governance policy.

12.4.2 Future Possibility of Connected Transactions Potentially Leading to Conflicts of Interest

PTTEP will continue to have connected transactions with related entities in the future. Most of these transactions include normal business, office building-leasing, and supporting business transactions, which can be summarized as follows:

(1) Sales of petroleum products and purchases of fuel: Since the transactions are a normal part of the Company's business and are executed under conditions and requirements as stated in the contracts, they will continue due to their necessity to the operations.

(2) Lease of office buildings: Since leasing of office buildings is reasonable and necessary for the Company's business operations, the transactions will be continued.

(3) Hiring of information and technology services: Since it remains reasonable and necessary for the Company to be supported with information and technology services to operate our business, the transactions will continue.

Section 3

**Financial Position
and Performance**



▶▶ 13. Significant Financial Information

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES
STATEMENTS OF FINANCIAL POSITION

	As at December 31, 2016		As at December 31, 2017		As at December 31, 2018	
	Thousand (USD)	%	Thousand (USD)	%	Thousand (USD)	%
Assets						
Current Assets						
Cash and cash equivalents	2,039,500	10.8	1,512,181	7.9	3,180,095	16.2
Short-term investments	1,982,077	10.5	2,955,491	15.4	820,530	4.2
Investments in trading securities	169	0.0	208	0.0	70,550	0.4
Investments in available-for-sales securities	-	-	-	-	10,450	0.1
Account receivable - parent company	382,762	2.0	566,569	2.9	637,129	3.3
Trade accounts receivable	75,994	0.4	109,434	0.6	87,251	0.4
Other accounts receivable	62,305	0.3	78,595	0.4	471,386	2.4
Inventories	37,548	0.2	19,186	0.1	23,402	0.1
Materials and supplies	345,871	1.8	298,064	1.5	258,825	1.3
Current tax assets	106,020	0.6	89,007	0.5	44,251	0.2
Other current assets	158,088	0.8	136,101	0.7	152,199	0.8
Total Current Assets	5,190,334	27.5	5,764,836	30.0	5,756,068	29.4
Non-current Assets						
Investments in available-for-sales securities	685	0.0	713	0.0	557	0.0
Investments in associates	46,724	0.2	212,644	1.1	219,797	1.1
Investments in joint ventures	20,021	0.1	18,721	0.1	17,412	0.1
Other long-term investments	-	-	11	0.0	224	0.0
Long-term loans to related parties	16,187	0.1	110,498	0.6	95,495	0.5
Property, plant and equipment	8,269,887	43.8	8,034,375	41.8	8,203,148	41.9
Goodwill	1,014,382	5.4	1,014,382	5.3	1,091,040	5.6
Intangible assets	91,814	0.5	83,988	0.4	82,092	0.4
Exploration and evaluation assets	3,815,472	20.2	3,306,976	17.2	3,312,350	16.9
Deferred tax assets	197,011	1.0	416,117	2.2	462,550	2.4
Rights to receive reimbursement from decommissioning funds	115,874	0.6	131,356	0.7	161,721	0.8
Other non-current assets	112,986	0.6	125,204	0.6	168,906	0.9
Total Non-current Assets	13,701,043	72.5	13,454,985	70.0	13,815,292	70.6
Total Assets	18,891,377	100.0	19,219,821	100.0	19,571,360	100.0

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES
STATEMENTS OF FINANCIAL POSITION (cont'd)

	As at December 31, 2016		As at December 31, 2017		As at December 31, 2018	
	Thousand (USD)	%	Thousand (USD)	%	Thousand (USD)	%
Liabilities and Equity						
Current Liabilities						
Trade accounts payable	83,887	0.4	115,353	0.6	102,656	0.5
Working capital to co-venturers	15,333	0.1	15,641	0.1	17,579	0.1
Current portion of long-term financial liabilities	-	-	399,710	2.1	407,015	2.1
Accrued expenses	490,788	2.6	490,906	2.6	596,428	3.0
Accrued interests payable	23,283	0.1	24,151	0.1	16,275	0.1
Income tax payable	341,121	1.8	406,005	2.1	678,133	3.4
Short-term provision	54,842	0.3	63,424	0.3	133,674	0.7
Deferred considerations acquired through business acquisition	-	-	-	-	465,972	2.4
Financial derivative liabilities	35,155	0.2	25,521	0.1	10,685	0.1
Other current liabilities	56,408	0.3	60,545	0.3	57,364	0.3
Total Current Liabilities	1,100,817	5.8	1,601,256	8.3	2,485,781	12.7
Non-current Liabilities						
Debentures	2,264,810	12.0	1,938,721	10.1	1,537,767	7.8
Long-term loans	566,813	3.0	568,731	3.0	985	0.0
Deferred tax liabilities	1,078,607	5.7	963,020	5.0	854,017	4.4
Provision for employee benefits	104,528	0.6	123,772	0.7	135,264	0.7
Provision for decommissioning costs	2,015,978	10.7	2,275,433	11.8	2,243,655	11.5
Provision for remuneration for the renewal of petroleum production	253,954	1.3	195,015	1.0	238,661	1.2
Other non-current liabilities	119,406	0.6	37,220	0.2	54,725	0.3
Total Non-current Liabilities	6,404,096	33.9	6,101,912	31.8	5,065,074	25.9
Total Liabilities	7,504,913	39.7	7,703,168	40.1	7,550,855	38.6
Equity						
Share capital						
Issued and paid-up share capital	150,684	0.8	150,684	0.8	150,684	0.8
Share premium	3,439,037	18.2	3,439,037	17.9	3,439,037	17.6
Subordinated capital debentures	1,152,103	6.1	1,154,812	6.0	1,154,687	5.9
Retained earnings						
Appropriated						
Legal reserve	15,048	0.1	15,048	0.1	15,048	0.1
Reserve for expansion	431,231	2.3	431,231	2.2	431,231	2.2
Unappropriated	6,295,794	33.3	6,354,906	33.1	6,862,943	35.0
Other components of equity	(97,433)	(0.5)	(29,065)	(0.2)	(33,125)	(0.2)
Total Equity	11,386,464	60.3	11,516,653	59.9	12,020,505	61.4
Total Liabilities and Equity	18,891,377	100.0	19,219,821	100.0	19,571,360	100.0
Book value per share (USD)	2.87		2.90		3.03	
Issued and fully paid-up capital at the end of year (Thousand share)	3,969,985		3,969,985		3,969,985	

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES

STATEMENTS OF INCOME

FOR THE YEARS ENDED DECEMBER 31,

	2016		2017		2018	
	Thousand (USD)	%	Thousand (USD)	%	Thousand (USD)	%
Revenues						
Sales	4,189,564	96.6	4,281,205	94.7	5,202,810	95.3
Revenue from pipeline transportation	66,487	1.5	77,805	1.7	107,564	2.0
Gain on foreign exchange	11,587	0.3	51,402	1.1	-	-
Interest income	30,065	0.7	59,579	1.3	83,353	1.5
Gain on financial derivatives	-	-	-	-	13,966	0.3
Other income	41,482	1.0	53,273	1.2	50,784	0.9
Total Revenues	4,339,185	100.0	4,523,264	100.0	5,458,477	100.0
Expenses						
Operating expenses	582,131	13.4	625,061	13.8	645,084	11.8
Exploration expenses	73,352	1.7	52,194	1.2	45,685	0.8
Administrative expenses	222,927	5.1	251,371	5.6	290,234	5.3
Petroleum royalties and remuneration	353,108	8.1	367,858	8.1	469,663	8.6
Depreciation, depletion and amortization	2,079,382	47.9	1,650,220	36.5	1,848,511	33.9
Loss on foreign exchange	-	-	-	-	18,632	0.3
Loss on financial derivatives	118,189	2.7	28,407	0.6	-	-
Impairment loss on assets	47,151	1.1	558,214	12.3	-	-
Other expenses	-	-	-	-	57,768	1.1
Finance costs	234,466	5.4	226,227	5.0	238,565	4.4
Total Expenses	3,710,706	85.5	3,759,552	83.1	3,614,142	66.2
Share of profit of associates and joint ventures	8,547	0.2	9,745	0.2	7,932	0.1
Profit before income taxes	637,027	14.7	773,457	17.1	1,852,267	33.9
Income taxes	(285,307)	(6.6)	(179,571)	(4.0)	(732,658)	(13.4)
Profit for the year from continuing operations	351,720	8.1	593,886	13.1	1,119,609	20.5
Profit (loss) for the year from discontinued operations - net of tax	20,334	0.5	(348)	(0.0)	-	-
Profit for the year	372,054	8.6	593,538	13.1	1,119,609	20.5
Basic earnings (loss) per share (USD)						
Continuing operations	0.07		0.13		0.27	
Discontinued operations	0.01		(0.0001)		-	

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES
STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31,

	2016	2017	2018
	Thousand (USD)	Thousand (USD)	Thousand (USD)
Cash flows from operating activities			
Continuing operations			
Profit before income taxes	637,027	773,457	1,852,267
Adjustment to reconcile profit before income taxes to net cash provided by (used in) operating activities			
Share of profit of associates and joint ventures	(8,547)	(9,746)	(7,932)
Depreciation, depletion and amortization	2,079,382	1,650,220	1,848,510
Impairment loss on assets	47,151	558,214	-
Other provision	-	-	11,005
Increase in (reversal of) allowance for decrease in value of inventory to net realizable value	(16,945)	(9,323)	1,643
Write-off of exploration assets	29,013	25,936	673
Other amortization of expenses	(2,084)	7,730	11,975
Loss on disposal of assets	13,290	33,559	17,369
Income recognized from deferred income	(6,389)	(5,922)	(5,457)
(Gain) loss on financial derivatives	82,965	9,447	(35,470)
Premium from repurchase of debentures	7,327	-	-
Provision for employee benefits	11,346	12,232	13,395
Loss (gain) on foreign exchange	(16,088)	(5,361)	8,006
Interest income less than interest expenses	199,625	162,879	147,262
Loss from divestment of asset	-	-	57,768
	3,057,073	3,203,322	3,921,014
Change in operating assets and liabilities	(769,584)	(534,420)	(644,147)
Discontinued operations	826	-	-
Net cash flows provided by operating activities	2,288,315	2,668,902	3,276,867
Cash flows from investing activities			
Continuing operations			
Cash payment for short-term investments	(1,992,078)	(4,415,788)	(1,652,635)
Cash received from investing in short-term investments	274,160	3,442,374	3,786,110
Cash payment for investment in available-for-sale securities	-	-	(10,444)
Cash payment for long-term loans to related parties	-	(92,750)	-
Cash received from long-term loans to related parties	-	-	15,129
Cash payment for business acquisition	-	-	(652,852)
Cash prepayment for business acquisition	-	-	(397,780)
Cash received from divestment of asset	-	-	133,092
Cash payment for investment in associate	-	(156,609)	-
Cash received from investment in joint ventures	1,311	393	1,049
Increase in other long-term investments	-	(11)	-
Net cash received from divestment of business	8,704	-	-
Dividends received from related parties	5,212	5,275	5,437
Interest received from short-term investments	4,671	27,730	39,797
Interest received from loans	552	575	3,335
Increase in property, plant and equipment	(996,712)	(1,331,920)	(1,081,485)
Increase in intangible assets	(7,041)	(6,164)	(11,695)
Increase in exploration and evaluation assets	(19,019)	(22,845)	(60,773)
Discontinued operations	(6)	-	-
Net cash flows used in investing activities	(2,720,246)	(2,549,740)	116,285

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES
 STATEMENTS OF CASH FLOWS (cont'd)
 FOR THE YEARS ENDED DECEMBER 31,

	2016	2017	2018
	Thousand (USD)	Thousand (USD)	Thousand (USD)
Cash flows from financing activities			
Continuing operations			
Payment of debentures	(183,877)	-	(403,742)
Payment of long-term loans	-	-	(575,135)
Interest paid for loans	(134,242)	(133,512)	(128,372)
Cash payments for finance costs	(5,750)	-	-
Cash payment for redemption of subordinated capital debentures	-	(874,311)	-
Cash received from issuance of subordinated capital debentures	-	854,695	-
Finance costs paid for issuance of subordinated capital debentures	-	(66)	(1,226)
Interest paid for subordinated capital debentures	(65,670)	(52,826)	(57,696)
Net cash received for financial derivative contract	155,597	-	(2,395)
Dividends paid	(310,427)	(458,570)	(555,702)
Net cash flows used in financing activities	(544,369)	(664,590)	(1,724,268)
Net increase (decrease) in cash and cash equivalents	(976,300)	(545,428)	1,668,884
Cash and cash equivalents at the beginning of the year	2,995,403	2,039,500	1,512,181
	2,019,103	1,494,072	3,181,065
Adjustment for the effect of exchange rate changes	20,397	18,109	(970)
Cash and cash equivalents at the end of the year	2,039,500	1,512,181	3,180,095

Summary significant financial ratio table

		2016	2017	2018
Liquidity ratio				
Current Ratio	Times	4.72	3.60	2.32
Quick Ratio	Times	4.07	3.21	1.90
Cash Flow from Operations to Current Liabilities Ratio	Times	1.82	1.98	1.60
Account Receivable Turnover	Times	8.35	7.68	7.58
Collection Period	Days	44	48	48
Profitability Ratio				
Net Profit Margin	%	8.57	13.12	20.51
Return on Equity	%	3.28	5.18	9.51
Efficiency Ratio				
Return on Assets	%	1.93	3.11	5.77
Return on Fixed Assets	%	19.21	19.01	25.78
Assets Turnover	Times	0.23	0.24	0.28
Financial Policy Ratio				
Debt to Equity Ratio	Times	0.25	0.25	0.16
Net Debt to Equity Ratio	Times	(0.10)	(0.14)	(0.17)
Times Interest Earned	Times	12.90	13.54	16.18
Dividend Ratio	%	98	90	55
Data per Share				
Book Value per Share	USD	2.87	2.90	3.03
Net Profit per Share	USD	0.08	0.13	0.27
Dividend per Share	THB	3.25	4.25	5.00
Growth Rate				
Total Asset	%	(3.82)	1.74	1.83
Total Liabilities	%	(9.74)	2.64	(1.98)
Sales	%	(21.26)	2.42	21.83
Net Profit	%	143.59	59.53	88.63

▶▶ 14. Management Discussion and Analysis of Operating Results

14.1 Executive Summary

In 2018, PTTEP continued to operate for sustainable growth through the strategy focusing on the investment in strategic areas where the Company has full range expertise, namely “Coming-Home Strategy” including Thailand and South East Asia which reflects through winning of Bongkot and Erawan bidding in December 2018 that will materially improve petroleum reserves to PTTEP. Other success included acquisition of 22.2222% of participating interest in Bongkot gas field with additional sale volume and immediate cash flow at mid of 2018. PTTEP also rationalized investment portfolio in non-core areas proven with Montara Field divestment in Australia completed in the third quarter. To support long term growth, PTTEP continued to accelerate on FID of Pre-Development projects mainly the Mozambique Rovuma Offshore Area 1 Project which progressively stepped forwards in finalizing and signing of long term LNG Sale and Purchase Agreements (SPAs) with potential buyers while expected the FID in first half of 2019. Moreover, the Company has strengthened exploration activities in Myanmar and Malaysia that would increase long term petroleum reserves. Besides, PTTEP remains focusing on M&A opportunity within the region and other prolific areas, e.g., Middle East with strategic partners.

To be agile amid challenges and disruption of industry landscape, PTTEP strongly believes that collaboration among stakeholders is more important than only competition as it brings shared value and mutual benefits. As a result, PTTEP's new vision, “Energy Partner of Choice”, is not only defined as common business partner but this new vision also means to create shared value and mutual benefits to all stakeholders. Likewise, PTTEP has re-organized its structure, business operations as well as staff to improve its agility and efficiency coupled with adoption of new appropriate technology, e.g., AI and robotics in order to support the growth of E&P business and capture new business opportunity to sustain the Company's long term growth.

For 2018, PTTEP reported net income of 1,120 MMUSD with more than 89% higher comparing to the previous year. The net income from normal operation increased to 1,215 MMUSD comparing to previous year at 836 MMUSD, mainly driven by higher average selling price (ASP) and increased sales volume. The company's unit cost of 2018 is slightly higher at 31.7 USD per Barrel of Oil Equivalent (BOE), according to increased royalty expenses aligning with higher ASP and higher DD&A expenses due to Bongkot acquisition. Additionally, PTTEP's financial structure remains strong and ready to accommodate new investment opportunities reflected by positive cash flow generated from operation of 3,276 MMUSD with healthy EBITDA margin at 73%. As of yearend 2018, the Company maintained its robust financial position, with total assets amounting to 19,571 MMUSD, of which 4,001 MMUSD was cash and short-term investments; while total liabilities were reported at 7,551 MMUSD in which interest-bearing debt accounted for 1,946 MMUSD; and total shareholders' equity ended at 12,020 MMUSD.

Summary of Key Financial Results

(Unit: MMUSD)	2018	2017	% Inc. (Dec.) YTD	Q3 2018	Q4 2018	Q4 2017	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Total Revenue	5,459	4,523	21	1,398	1,557	1,271	11	23
Sales Revenue	5,203	4,281	22	1,338	1,411	1,202	5	17
EBITDA	3,860	3,063	26	992	1,024	825	3	24

(Unit: MMUSD)	2018	2017	% Inc. (Dec.) YTD	Q3 2018	Q4 2018	Q4 2017	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Profit (loss) for the period	1,120	594	89	315	269	289	(15)	(7)
Basic earnings per share (USD)	0.27	0.13	>100	0.07	0.07	0.07	0	0
Profit (loss) from normal operation	1,215	836	45	292	283	240	(3)	18
Profit (loss) from non-recurring items	(95)	(242)	61	23	(14)	49	>(100)	>(100)

14.2 Economic Outlook in 2018

(1) Crude Oil Prices

Crude oil prices are among the key determinants of the Company's performance. In 2018, Dubai crude oil price averaged at 69.65 USD per barrel (Source: Platts). Although the price improved from 2017 average at 53.14 USD per barrel, crude oil prices remained volatile. During the first half of 2018, Dubai crude oil price moved higher due to the production cut from OPEC and Non-OPEC producers, whose compliances were above the target. As a result, the global crude inventory decreased and approached to the average level last 5 years (2013 - 2017). In addition, there were other key bullish drivers of crude oil prices such the concerns on global supply disruption due to the geopolitical issues in major producer countries, e.g., sanctions on Iran and Venezuela imposed by the US. Global economy also recovered and this positive growth outlook pointed to a continuously risen in crude oil demand. In October 2018, prior to the due of US sanction on Iran, Dubai crude oil price spiked to the peak of the year 2018 at 84.40 USD per barrel. However, crude oil prices dramatically dropped since arising of concerns over the global economic recession that mainly pressured by tensions on US-China trade war, economic slowdown in emerging countries such Turkey, Argentina and Indonesia. In the meanwhile, on the supply side, global crude market became over supply from the US granting waive to majors Iranian oil importers, higher US shale oil production, the slight increase of production of OPEC and Non-OPEC such as Saudi Arabia and Russia. These led to a sharp drop and the price at the end of 2018 closed at 52.84 USD per barrel or 37% decrease within the fourth quarter of 2018.

(2) Liquefied Natural Gas (LNG)

For LNG Market in 2018, the average Asian spot price increased to 9.76 USD per MMBTU (Source: Platts) mainly driven by higher demand from China and India coupled with supports from the rally of global oil prices that moved to the highest level during last 3 years. However, the LNG market remained oversupply due to incremental volumes from new projects, mainly from LNG projects in Australia, Russia and the US with total capacity of 315 million tons, while LNG's demand stayed at 312 million tons.

(3) Thailand's Energy Demand

Thailand's energy demand from January to November of 2018 was reported at 2.15 million BOED, or 1.1% increased comparing to the same period last year (Source: EPPO, The Ministry of Energy), driven by Thailand's economic expansion. During 2018, energy consumption from crude oil, coal and imported hydropower increased while demand of natural gas and lignite slightly decreased. Domestic power generation has increased from hydro as a result of heavy raining along the year whereas LNG was imported at the level equivalent to last year.

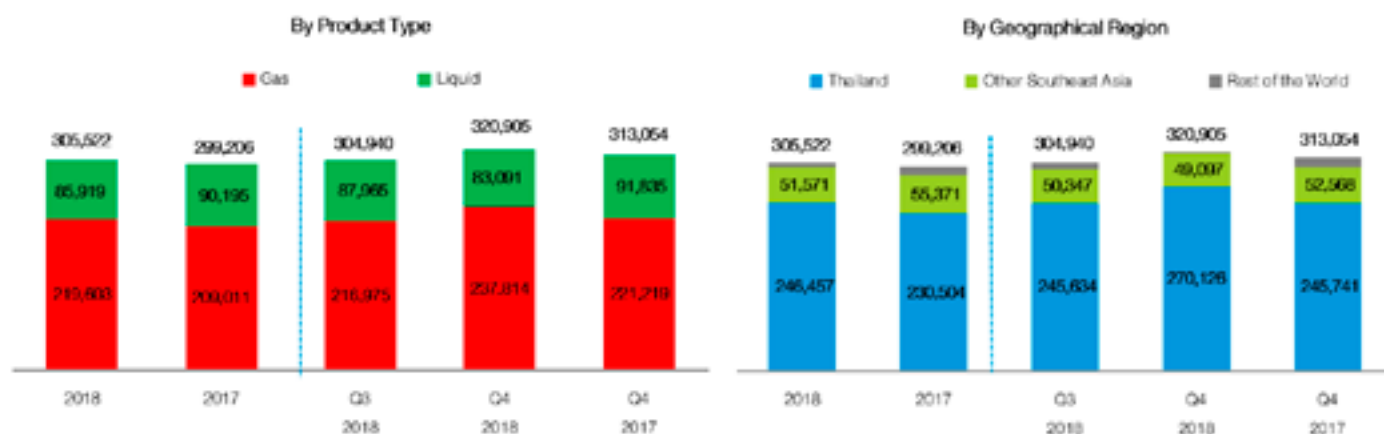
(4) Exchange Rates (Thai Baht against US Dollar)

PTTEP's functional currency is US Dollar (USD) whereas the tax filing currency is Thai Baht (THB), thus USD/THB exchange rate is another factor affecting the Company's financial performance. For 2018, USD/THB continued to fluctuate and became strengthening through the first quarter of 2018 as a result of uncertainty of US trade and fiscal policies coupled with recovery of overall Thai economy. In the second quarter of 2018 USD/THB depreciated since foreign fund was flow back to the US market where the interest rate gradually hiked. In the second half of the year 2018, despite the global financial market and foreign fund flow remained fluctuated due to concerns over US-China trade war, Strong Thai economy supported the strength of THB mainly driven by higher Bank of Thailand (BOT) policy rate and recovery of domestic economy. At the end of 2018, USD/THB slightly appreciated to 32.45 THB/USD from 32.68 THB/USD at the end of 2017, leading to tax saving related to foreign exchange gains for PTTEP.

14.3 Financial Performance

Average Sales Volume and Selling Price

Unit: Barrels of Oil Equivalent per Day



Average selling price and Dubai crude oil price (Unit: USD)	2018	2017	% Inc. (Dec.) YTD	Q3 2018	Q4 2018	Q4 2017	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Average selling price (/BOE)	46.66	39.20	19	47.67	47.79	41.74	0	15
Liquid price (/BOE)	67.40	52.26	29	69.92	66.01	59.20	(6)	12
Gas price (/MMBTU)	6.42	5.59	15	6.44	6.90	5.75	7	20
Average Dubai crude oil price (/BBL)	69.65	53.14	31	74.22	68.30	59.31	(8)	15

For the year ended 2018 compared with the year ended 2017

For 2018, average sales volume of PTTEP and its subsidiaries (the "Group") increased to 305,522 barrels of oil equivalent per day (BOED) when compared with the year ended 2017 (In 2017: 299,206 BOED). The increase was primarily from the Bongkot Project, due to the acquisition of the additional participating interests, although there was a lower nomination from buyer, and from the Contract 4 Project, due to higher nomination from buyer. The average selling price increased to 46.66 USD/BOE (In 2017: 39.2 USD/BOE).

For the fourth quarter of 2018 compared with the third quarter of 2018

In Q4/2018, the Group had an average sales volume of 320,905 BOED. An increase from Q3/2018 of 304,940 BOED was primarily due to higher nomination from buyer of the Bongkot Project and the Sinphuhorm Project. The average selling price in Q4/2018 also increased to 47.79 USD/BOE (Q3/2018: 47.67 USD/BOE).

For the fourth quarter of 2018 compared with the fourth quarter of 2017

When compared the average sales volume for Q4/2018 to Q4/2017 of 313,054 BOED, the average sale volume increased primarily due to the acquisition of the additional participating interests of the Bongkot Project, although there was a shutdown for maintenance activities in Q4/2018. The average selling price increased to 47.79 USD/BOE (Q4/2017: 41.74 USD/BOE).

14.3.1 Overall Operating Results

For the year ended 2018 compared with the year ended 2017

For 2018, the Group had a net profit of 1,120 MMUSD, an increase of 526 MMUSD or 89% from a net profit in 2017 of 594 MMUSD. The increase in profit can be separated as the profit from normal operation of 1,215 MMUSD and loss from non-recurring items of 95 MMUSD.

The profit from normal operation for the year ended 2018 was 1,215 MMUSD, an increase of 379 MMUSD when compared with a profit for the year ended 2017 of 836 MMUSD. The reason was primarily due to an increase in sales revenue of 922 MMUSD mainly from an increase in the average selling price, while income tax expense increased 227 MMUSD mainly from an increase in petroleum profit due to an increase in sales revenues. There was an increase in depreciation, depletion and amortization expenses of 198 MMUSD mainly due to the acquisition of additional participating interests of the Bongkot Project as well as an increase in the number of development wells and wellhead platforms in the Contract 4 Project and the S1 Project. In addition, the petroleum royalties and remuneration expenses increased by 102 MMUSD.

With the consideration of the loss from non-recurring items of 2018, the Group reported a loss of 95 MMUSD, a decrease in loss of 147 MMUSD when compared with 2017 which reported a loss of 242 MMUSD. The reason was primarily due to a recognition of an impairment loss on assets of the Mariana Oil Sand Project of 558 MMUSD. However, Thai Baht against US Dollar in 2018 was less appreciated than in 2017, resulting in an increase of 272 MMUSD in income tax expense relating to changes in foreign exchange rate and a recognition of loss on foreign exchange rate amounting to 19 MMUSD in 2018 while recognized gain on foreign exchange rate in 2017 of 51 MMUSD. In addition, there was a loss on the Montara field divestment of 58 MMUSD.

For the fourth quarter of 2018 compared with the third quarter of 2018

For Q4/2018, the Group reported a net profit of 269 MMUSD, a decrease of 46 MMUSD or 15% from a net profit in Q3/2018 of 315 MMUSD. The increase in profit can be separated as the profit from normal operation of 283 MMUSD and loss from non-recurring items of 14 MMUSD.

The profit from normal operation for Q4/2018 was 283 MMUSD, a decrease of 9 MMUSD when compared with the profit for Q3/2018 of 292 MMUSD. The reason was primarily due to an increase in the income tax expenses of 59 MMUSD, while there was an increase in sales revenue of 73 MMUSD mainly from increases in average selling price and sales volume.

With the consideration of the loss from non-recurring items of Q4/2018, the Group reported a loss of 14 MMUSD, a decrease of 37 MMUSD when compared with Q3/2018 which reported a profit of 23 MMUSD. The reason was primarily due to

an increase in income tax expense relating to changes in foreign exchange rate of 76 MMUSD from the depreciation of Thai Baht against US Dollar in Q4/2018, as well as, the derecognition of deferred tax assets from group of companies in Australia of 54 MMUSD due to no future benefit to be utilized. However, there was an increase in gain on financial derivatives mainly from oil price hedging of 77 MMUSD which recognized a gain on oil price hedging of 68 MMUSD in Q4/2018, while a loss on such transaction of 9 MMUSD in Q3/2018.

For the fourth quarter of 2018 compared with the fourth quarter of 2017

When compared a net profit for Q4/2018 with the same period last year which reported a net profit of 289 MMUSD, the Group had a decrease in profit of 20 MMUSD or 7%, which can be separated to the following.

The net profit for Q4/2018 mainly consisted of the profit from normal operation which was 283 MMUSD, an increase of 43 MMUSD when compared with the profit for Q4/2017 of 240 MMUSD. The reason was primarily due to an increase in sales revenue of 209 MMUSD mainly from an increase in the average selling price. However, there was an increase in total expense mainly from an increase in income tax expense of 108 MMUSD, as well as an increase in depreciation, depletion and amortization expenses of 48 MMUSD mainly due to the acquisition of additional participating interests of the Bongkot Project.

With the consideration of the loss from non-recurring items for Q4/2018, the Group reported a loss of 14 MMUSD, a decrease of 63 MMUSD when compared with Q4/2017 which reported a profit of 49 MMUSD. The reason was primarily due to an increase in income tax expense relating to changes in foreign exchange rate of 68 MMUSD from the depreciation of Thai Baht against US Dollar in Q4/2018, as well as, the derecognition of deferred tax assets from group of companies in Australia of 54 MMUSD due to no future benefit to be utilized, and assets divestment (Montara Field) which resulting to loss on divestment of 21 MMUSD. However, there was an increase in gain on financial derivatives mainly from oil price hedging of 74 MMUSD which recognized a gain on oil price hedging of 68 MMUSD in Q4/2018, while a loss on such transaction of 6 MMUSD in Q4/2017.

14.3.2 Operating Results by Segments

Net Profit (loss) (Unit : MMUSD)	2018	2017	% Inc. (Dec.) YTD	Q3 2018	Q4 2018	Q4 2017	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Exploration and Production	954	254	>100	205	229	250	12	(8)
Thailand	1,073	826	30	266	303	264	14	15
Overseas	(119)	(572)	79	(61)	(74)	(14)	(21)	>(100)
- Other Southeast Asia	59	40	48	14	18	(4)	29	>100
- Australia	(151)	(46)	>(100)	(60)	(89)	(8)	(48)	>(100)
- America	(27)	(563)	95	(17)	(5)	(3)	71	(67)
- Africa	(0.2)	(3)	93	2	2	1	0	100
Pipeline Transportation	230	238	(3)	82	7	63	(91)	(89)
Head Office and Others	(64)	102	>(100)	28	33	(24)	18	>100
Total	1,120	594	89	315	269	289	(15)	(7)

For the year ended 2018 compared with the year ended 2017

For 2018, the Group reported a net profit of 1,120 MMUSD, an increase of 526 MMUSD or 89% when compared with a net profit in 2017 of 594 MMUSD, primarily due to an increase of Exploration and Production segment in America of 536 MMUSD and Thailand of 247 MMUSD, while there was a decrease of Head Office and Others segment of 166 MMUSD and Exploration and Production segment in Australia of 105 MMUSD.

(1) Exploration and Production Segment

(1.1) *America*

For 2018, America segment reported net loss of 27 MMUSD, a decrease of 536 MMUSD or 95% from net loss of 563 MMUSD in 2017, primarily due to the recognition of impairment loss on assets of the Mariana Oil Sand Project.

(1.2) *Thailand*

For 2018, Thailand segment reported a net profit of 1,073 MMUSD, an increase of 247 MMUSD or 30% from net profit of 826 MMUSD in 2017. The increase was primarily due to an increase in sales revenue mainly from an increase in average selling price, while there was an increase in depreciation, depletion and amortization expenses which mainly derived from the acquisition of additional participating interests of the Bongkot Project and increase in income tax expense.

(1.3) *Australia*

For 2018, Australia segment reported net loss of 151 MMUSD, an increase of 105 MMUSD or more than 100% from net loss of 46 MMUSD in 2017, primarily due to assets divestment (Montara Field) which resulting to loss on divestment and the derecognition of deferred tax assets from group of companies in Australia due to no future benefit to be utilized.

(2) Head Office and Others Segment

For 2018, Australia segment reported net loss of 151 MMUSD, an increase of 105 MMUSD or more than 100% from net loss of 46 MMUSD in 2017, primarily due to assets divestment (Montara Field) which resulting to loss on divestment and the derecognition of deferred tax assets from group of companies in Australia due to no future benefit to be utilized.

For the fourth quarter 2018 compared with third quarter of 2018

In Q4/2018, the Group reported a net profit of 269 MMUSD, a decrease of 46 MMUSD or 15% when compared with a net profit in Q3/2018 of 315 MMUSD, primarily due to a decrease of the Pipeline Transportation segment of 75 MMUSD, while there was an increase of the Exploration and Production segment in Thailand of 37 MMUSD.

(1) Pipeline Transportation Segment

In Q4/2018, the Pipeline Transportation segment reported a net profit of 7 MMUSD, a decrease of 75 MMUSD or 91% when compared with a net profit in Q3/2018 of 82 MMUSD, primarily due to the recognition of deferred tax expense from the Zawtika Gas Pipeline Investment Project.

(2) Exploration and Production Segment

Thailand

In Q4/2018, Thailand segment reported a net profit of 303 MMUSD, an increase of 37 MMUSD or 14% from net profit of 266 MMUSD in Q3/2018. The increase was primarily due to an increase in sales revenue mainly from an increase in average sales volume, while there were increases in income tax expense and operating expense.

For the fourth quarter of 2018 compared with fourth quarter of 2017

In Q4/2018, the Group reported a net profit of 269 MMUSD, a decrease of 20 MMUSD or 7% when compared with a net profit in Q4/2017 of 289 MMUSD, primarily due to a decrease of the Exploration and Production segment in Australia of 81 MMUSD and the Pipeline Transportation segment of 56 MMUSD, while there was an increase of Head Office and Others segment of 57 MMUSD and the Exploration and Production segment in Thailand of 39 MMUSD.

(1) Exploration and Production Segment

(1.1) *Australia*

In Q4/2018, Australia segment reported a net loss of 89 MMUSD, an increase in loss of 81 MMUSD or more than 100% from net loss of 8 MMUSD in Q4/2017, primarily due to the derecognition of deferred tax assets from group of companies in Australia due to no future benefit to be utilized.

(1.2) *Thailand*

In Q4/2018, Thailand segment reported a net profit of 303 MMUSD, an increase of 39 MMUSD or 15% from net profit of 264 MMUSD in Q4/2017. The increase was primarily due to an increase in sales revenue mainly from an increase in average selling price, while there was an increase in depreciation, depletion and amortization expenses which mainly derived from the acquisition of additional participating interests of the Bongkot Project. In addition, there were increases in income tax expense and operating expense.

(2) Pipeline Transportation Segment

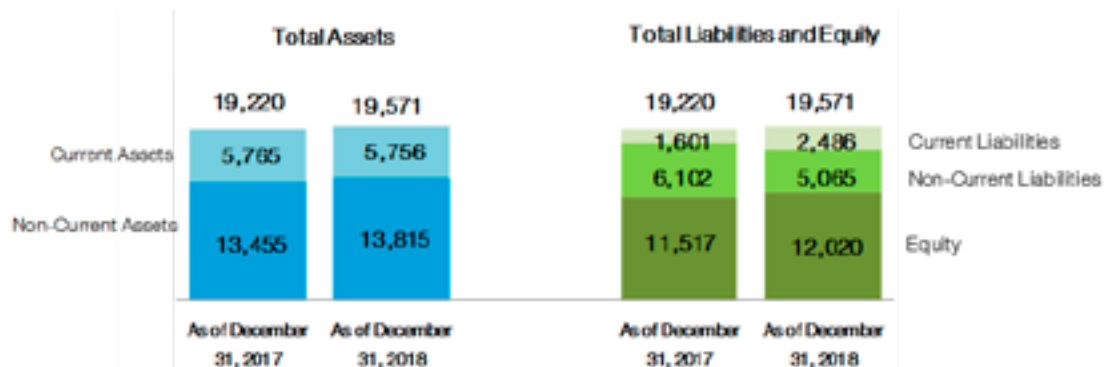
In Q4/2018, the Pipeline Transportation segment reported a net profit of 7 MMUSD, a decrease of 56 MMUSD or 89% when compared with a net profit in Q4/2017 of 63 MMUSD, primarily due to the recognition of deferred tax expense from the Zawtika Gas Pipeline Investment Project.

(3) Head Office and Others Segment

In Q4/2018, the Head Office and Others segment reported net profit of 33 MMUSD, an increase of 57 MMUSD or more than 100% when compared with net loss of 24 MMUSD in Q4/2017, primarily due to an increase in financial derivatives (recognized gain in Q4/2018 while recognized loss in Q4/2017) mainly from oil price hedging. However, there was an increase in income tax expense and a recognition of loss on foreign exchange due to the depreciation of Thai Baht against US Dollar in Q4/2018.

14.3.3 Financial Position

Unit: Million US Dollar



(1) Assets

As at December 31, 2018, the Group had total assets in the amount of 19,571 MMUSD, an increase of 351 MMUSD from the total assets as of December 31, 2017 of 19,220 MMUSD, primarily due to;

(1.1) Current assets, which were primarily comprised of cash and cash equivalents, short-term investments, account receivable – parent company, and other receivables, reduction of 9 MMUSD mainly due to a decrease of 467 MMUSD in cash and cash equivalents including short-term investments, while there was an increase of 393 MMUSD in other receivables and 71 MMUSD in account receivable – parent company.

(1.2) Non-current assets, which were primarily comprised of exploration and production assets in joint venture projects being recognized as part of the property, plant and equipment, exploration and evaluation assets and goodwill, an increase of 360 MMUSD was mainly due to an increase in the property, plant and equipment, and goodwill of 245 MMUSD, primarily due to the acquisition of additional participating interests of the Bongkot Project.

(2) Liabilities

As at December 31, 2018, the Group had total liabilities of 7,551 MMUSD, a decrease of 152 MMUSD from total liabilities as at December 31, 2017 of 7,703 MMUSD, primarily due to;

(2.1) Current liabilities, which were primarily comprised of income tax payable, accrued expenses, deferred considerations acquired through business acquisition, and current portion of long term financial liabilities, increased 885 MMUSD mainly due to an increase in deferred considerations acquired through business acquisition of 466 MMUSD, primarily due to the acquisition of additional participating interests of the Bongkot Project, an increase in income tax payable of 272 MMUSD, an increase in accrued expense of 106 MMUSD, and an increase in current portion of long term financial liabilities of 7 MMUSD which was the net result of a reclassification of some portion of debentures due within one year and a settlement of unsecured and unsubordinated debentures on the maturity date.

(2.2) Non-current liabilities, which were primarily comprised of provision for decommissioning costs, debentures and deferred tax liabilities, decreased 1,037 MMUSD mainly due to settlement of long-term loans of 575 MMUSD and a reclassification of some portion of debentures due within one year to current liabilities of 404 MMUSD (debentures 13,200 MMTHB).

(3) Capital Structure

As at December 31, 2018, the capital structure comprised of shareholders' equity in the amount of 12,020 MMUSD and total liabilities of 7,551 MMUSD, including the interest-bearing debts of 1,946 MMUSD with a weighted average cost of debt of 5.32% and the average maturity of 8.67 years. All interest-bearing debts are fixed interest and denominated in US Dollar currency.

In Q1/2018, the Group redeemed the unsecured and unsubordinated debentures on the maturity date for 2,500 MMTHB.

In Q2/2018, the Group paid the unsecured and unsubordinated loans before the payment schedule for 575 MMUSD.

In Q3/2018, the Group redeemed the unsecured and unsubordinated debentures on the maturity date for 323 MMUSD.

14.3.4 Cash Flows



As at December 31, 2018, the Group had cash and cash equivalents, including short-term investment in the form of bank fixed deposit with a maturity of more than three months, but within twelve months of 4,001 MMUSD, a decrease of 467 MMUSD from cash and cash equivalents including short-term investment as at December 31, 2017 of 4,468 MMUSD.

Sources of funds in the amount of 3,462 MMUSD primarily came from Net cash received from operating activities as a result of the positive net cash flows from sales revenues, offset with cash payments for expenditures and income tax expense.

Uses of funds in the amount of 3,929 MMUSD primarily came from Net cash used in additional investment activities for exploration and production assets, primarily for investment in the S1 Project and the Zawtika Project and the acquisition of additional participating interests of the Bongkot Project. For the Net cash used in financing activities, there were mainly the payment of loans and debentures, and the payment of dividend for the second half of 2017 and the first half of 2018.

14.3.5 Key Financial Ratios

	2018	2017	Q3 2018	Q4 2018	Q4 2017
Profitability Ratios (%)					
EBITDA to revenue from sales	72.68	70.26	72.55	71.08	67.35
Return on equity	9.51	5.18	9.91	9.51	5.18
Net profit margin	20.51	13.12	21.71	20.51	13.12
Leverage Ratios (Times)					
Debt to equity	0.16	0.25	0.17	0.16	0.25
Debt to EBITDA	0.63	0.95	0.66	0.63	0.95

Remarks:

EBITDA to revenue from sales	=	Profit before deduction of interest, tax, and depreciation to revenue from sales including revenue from pipeline transportation
Return on equity	=	Net profit to weighted average shareholders' equity for the past 12 months
Net profit margin	=	Net profits to total revenue for the past 12 months
Debt to equity	=	Interest Bearing Debt to total shareholders' equity
Debt to EBITDA	=	Average Interest Bearing Debt to profit for the past 12 months before deduction of interest, tax, and depreciation

14.4 Operational Highlights

At the end of 2018, PTTEP's domestic and international operations altogether sum to 40 projects in 11 countries, with total proved reserves of 677 million barrels of oil equivalent (MMBOE) and probable reserves of 351 MMBOE. The followings are key project highlights.

14.4.1 Projects in Thailand

PTTEP currently has 16 projects in Thailand, the majority of which are projects in the *production phase*, and are located in the Gulf of Thailand and onshore. Average sales volume from projects in Thailand amounted to 246,457 BOED in 2018, which accounted for 81% of PTTEP's total sales volume. The key activities of producing projects include; the **Bongkot Project** maintained the production plateau as planned and successfully completed the acquisition of additional 22.2222% stake, as a result, the current working interest is 66.6667%. In December 2018, PTTEP was awarded the rights of petroleum exploration and production and as the operator of Bongkot and Erawan fields, the concessions are expiring in 2022 - 2023. The **S1 Project** has continuously drilled additional production wells to maintain production levels. Apart from the producing projects, **Ubon Field of the Contract 4 Project** is in the process of pre-development with expected first production by 2023 at planned capacity of 25,000 BPD for crude oil and 50 MMSCFD (approximately 8,300 BOED) for natural gas.

14.4.2 Projects in Southeast Asia

PTTEP has 15 projects in this region which are located in the Republic of the Union of Myanmar (Myanmar), the Socialist Republic of Vietnam (Vietnam), Malaysia and the Republic of Indonesia (Indonesia). In 2018, the average sales volume from projects in this region amounted to 51,571 BOED, which accounted for 17% of PTTEP's total sales volume.

The highlights of key projects in the *production phase* within this region can be summarized as follows. The **Zawtika Project**, located in the Gulf of Moattama, Myanmar, completed production drilling in Phase 1C with 4 production platforms and has continuously drilled additional wells to maintain production plateau. In 2018, the natural gas sales volume averaged 298 MMSCFD (approximately 47,569 BOED). The **Vietnam 16-1 Project**, located offshore in the southeast of Vietnam, started producing from 2 production platforms and is currently drilling an additional production well to maintain production plateau. In 2018, crude oil and natural gas sales volume averaged 17,238 BPD and 6 MMSCFD (approximately 1,353 BOED) respectively.

The *exploration phase* projects in this region are mainly located in onshore and offshore of Myanmar. The major highlights include the **Myanmar M3 Project**, is awaiting approval for the Field Development Plan that was proposed in Q4/2018, from the Government of Myanmar. The **Myanmar MD-7 Project**, is in preparation for drilling plan for an exploration well in 2019. The **Myanmar M11 Project**, is also in preparation for drilling plan of an exploration well in 2019 and is seeking partner to manage the project's risk. The **Myanmar MOGE 3 Project**, has drilled an exploration well in December 2018 and is under drilling preparation of 3 exploration wells in 2019. The **Sarawak SK410B Project** in Malaysia, is currently assessing the fields' resource potential and under drilling preparation of an exploration well in 2019. The **Sarawak SK417 Project**, is currently evaluating the petroleum potential. The **Sarawak SK438 Projects**, is now under drilling preparation of 2 exploration wells in 2019. The **Vietnam B & 48/95 Project** and the **Vietnam 52/97 Project** are located offshore of Vietnam. The projects have been granted approval for the Field Development Plan and are currently in the negotiation process on commercial terms in order to push forward the Final Investment Decision (FID) with the first production target at the end of 2022 and ramping up capacity to 490 MMSCFD.

14.4.3 Project in Americas

PTTEP has 5 projects in this region located in Canada, the Federative Republic of Brazil (Brazil) and United Mexican States (Mexico). All projects are in the *exploration phase*.

The **Mariana Oil Sands Project**, located in Alberta, Canada, was granted the approval for the development Thornbury Phase 1 field in May 2018 and is under the evaluation of appropriate project development plan.

PTTEP has 2 projects in Brazil. The **Barreirinhas AP1 Project** is located in the Barreirinhas Basin, offshore to the northeast of Brazil, and the **Brazil BM-ES-23 Project** is located offshore in the Espirito Santo basin, east of Brazil. Both projects are currently evaluating the petroleum potential.

PTTEP has 2 projects in Mexico: **The Mexico block 12 (2.4) Project**, located in the Mexican Ridges, western Gulf of Mexico and; the **Mexico block 29 (2.4) Project**, located in the Campeche, southern Gulf of Mexico. The projects submitted the exploration plan to the National Hydrocarbons Commission in Mexico in Q4/2018, expecting the approval within Q1/2019.

14.4.4 Projects in Australasia

PTTEP has 1 project in this region, **PTTEP Australasia Project**, which is located in the Commonwealth of Australia (Australia), comprising of 8 permits.

The **Montara Field** is in the *production phase*, with average sales volume in 2018 of 5,368 BPD. The divestment of the field was completed on September 28, 2018. However, the operatorship transfer is awaiting for approval from the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) which is expected to be within 2019.

The **Cash Maple Field** is in the *exploration phase*. The field has completed the Pre-FEED study and is under the evaluation of appropriated development plan. The **AC/P54 Field**, is under drilling preparation of an exploration well in Q1/2019.

14.4.5 Projects in Africa

PTTEP has 3 projects in this region, located in the People's Democratic Republic of Algeria (Algeria) and the Republic of Mozambique (Mozambique).

The **Algeria 433a and 416b Project**, which is in the *production phase* and is located onshore in the eastern part of Algeria. In 2018, the project has average production volumes of 17,350 BPD.

The **Algeria Hassi Bir Rekaiz Project** is located onshore in the eastern part of Algeria. The project's development plan has been approved by the Algerian government in April 2018 and is divided into 2 phases. The first phase capacity of around 10,000 - 13,000 BPD is expected to start production within 2020 with a plan for the second phase production capacity ramping up to around 50,000 - 60,000 BPD in 2024.

The **Mozambique Rovuma Offshore Area 1 Project**, which is in the *exploration phase*, is a large LNG project located in offshore Mozambique, the project has made a significant progress in 2018 which includes; the government approval of Plan of Development (POD) in Golfinho-Atum area in February; negotiation on construction agreement of onshore LNG liquefaction plant; the completion of contractor selection for offshore installation. In addition, the project is now under the finalization and signing of long term LNG Sale and Purchase Agreements (SPAs) with potential buyers and, in parallel, the project is negotiating for project finance with financial institutions in order to support the Final Investment Decision (FID) in the 1H2019, with the planned first phase of production at 12 MTPA starting in 2024.

14.5 Company Strategy

14.5.1 Portfolio Management

During 2018, PTTEP continues to operate according to the 3R strategy "**RESET REFOCUS RENEW**" in order to enhance the company competitive advantage and sustainable growth amid challenges of new industry landscape.

RESET: Increase value and sale volume of legacy assets and maintain competitive advantage

- Increase production and sale volume from legacy assets
- Maintain cost competitiveness among peers
- Improve petroleum reserves through acceleration on FID of Pre-Development projects including the Mozambique Rovuma Offshore Area 1 Project, the Algeria Hassi Bir Rekaiz Project, the Vietnam B & 48/95 Project and the Vietnam 52/97 Project as well as the Contract 4 (Ubon Field)
- Reposition in non-core assets

REFOCUS: Expand core E&P business to strategic investment areas

- **Coming-Home Strategy:** PTTEP focus on investments in Thailand and South East Asia where the Company targets as strategic investment areas. The evidences of Renew strategy are reflected through acquisition of additional participating interest in Bongkot, winning in the bidding of both expiring concessions, Bongkot and Erawan gas fields. As the current operator of Bongkot, PTTEP is able to carry out investment as plan to ensure continuity of gas supply. Similar to Erawan, PTTEP also puts forward clear work plan, together with the upcoming Facility Access Agreement, Staff and Job Handover Agreement, Detailed Facility and Infrastructure Assessment as well as Common Use of production Facility Agreement to ensure smooth transition of operatorship. In addition, PTTEP propels the activity in exploration projects located in Myanmar and Malaysia to improve petroleum reserves. Moreover, PTTEP also looks to expand business opportunities such as Gas Value Chain business in Myanmar in term of Gas-to-Power.

- **Strategic Alliance:** PTTEP captures new investment opportunity in other petroleum prolific areas with strategic alliances by mainly focusing on the Middle-East where considered as low cost barrel region.

RENEW: Enhance capability in technology and capture new business opportunity to maintain long term sustainability

The Company has transformed its organization and invested in new business focusing on technology and innovation as well as R&D capability to support core E&P business and future investment opportunity related to energy industry. In 2018, PTTEP has re-organized its structure and business operations to improve its agility and efficiency to be line with our growth strategy. The new organization structure was effective since January 2019.

14.5.2 Capital Management

PTTEP focuses on ensuring effective financial management by maintaining a robust capital structure. As of the end of 2018, the Company maintained a strong liquidity position with cash on hand of approximately USD 4.0 billion and debt-to-equity ratio of 0.16 which is in line with the Company financial policies and also provides adequate liquidity in order to fund capital expenditure to maintain production, develop future projects in the pipeline, and carry out exploration activities as well as to support new investment opportunities through Merger and Acquisitions (M&A).

Moreover, the Company has prepared to undertake transactions of cross-border payment via Blockchain which could enhance the efficiency of PTTEP's cross-border remittance for our partners and service providers with faster and lower cost of operation.

14.6 Sustainable Development

PTTEP's Sustainable Development is aligned with global indices and UN principles. In 2018, PTTEP was selected, for the fifth consecutive year, as a member of Dow Jones Sustainability Index (DJSI) in the Oil and Gas Upstream & Integrated Industry sector and for the third consecutive year, elected as a constituent of the FTSE4Good Index Series, in the category of FTSE4Good Emerging Index 2018. In addition, PTTEP received the Thailand Sustainability Investment Award 2018 and the outstanding award on SET Sustainability Awards 2018 from the Stock Exchange of Thailand.

This recognition underlines our ongoing commitment to sustainability as a leading sustainable organization. Key activities in 2018 covering business, society, and environment, are as follows:

14.6.1 Business

PTTEP encourages all staff on Research & Development (R&D), creation of new technology and innovation in order to support our core business by allocating approximately 3% of net income each year as a budget for research and technology development. During 2018, the key projects in progress are as follows

- **Increase Exploration Success**, i.e., Electromagnetic for subsurface fluid movement monitoring to enhance petroleum exploration and production efficiency
- **Green Practice**, i.e., CO₂ emission reduction and re-utilization.
- **Petroleum Related Technology**, i.e., Autonomous Underwater Vehicle (AUV) and In-pipe Inspection Robot

PTTEP also received several awards in 2018, e.g., The Asset Best Initiative in Innovation 2018, from The Asset Magazine, that awarded to the PTTEP's initiative to enhance petroleum production planning and efficiency. Moreover, PTTEP has submitted for intellectual properties of 13 innovation projects which reflect PTTEP's commitment and support in Research and Development.

14.6.2 Social

PTTEP is committed to carrying out its business operations in a socially responsible manner, and is focused on four development areas: fundamental needs, education, environment, culture and sports. In 2018, PTTEP continuously focused on the fundamental needs related projects and expanded its success to others target communities, e.g., expansion of Crab Hatchery Learning Project into Songkhla and Pattani provinces as well as the establishment of others Services for Children (SIOLA) project in western Sulawesi, Indonesia. According to those activities, in 2018, PTTEP has been recognized from more than 10 international CSR awards.

14.6.3 Safety, Security, Health and Environment

PTTEP has an environmental management system which encompasses a project's entire life cycle, and is a subset of PTTEP's Safety, Security, Health and Environment Management System (SSHE MS). In 2018, PTTEP had a Lost Time Injury Frequency (LTIF) score of 0.07 and a Total Recordable Incident Rate (TRIR) score of 0.75. The Company's performance on both safety indicators is in line with the average of the members in the International Association of Oil and Gas Producers (IOGP). Moreover, PTTEP aims to become a Low Carbon Footprint organization, and has revised a goal to reduce its greenhouse gas (GHG) emissions by a minimum 25% by the year 2030 versus its 2012 base year figure.

14.7 Future Business Outlook

(1) Energy Outlook

Current global energy consumption still primarily relies on Fossil fuels including crude oil, natural gas and coal which together contribute around 81% of global consumption and expected to maintain its dominant proportion up to 73% of

energy consumption during the next 30 years (Source: IHS). Although consumption from renewable energy is expected to gradually grow to 22% of the future consumption including 5% growth from nuclear. Natural gas demand including LNG remains robust aligning with the global economic expansion especially in power generation sector and national energy policy of various countries, e.g., China which is transforming to clean energy consumption from natural gas. Crude oil consumption seems to grow in decelerated rate while the expansion of petrochemical industry and heavy-duty transport sector are the key boosters. In contrast, crude oil consumption in passenger car is expected to reduce from higher efficiency development of oil consumption in passenger car and growing use of electric vehicle. In addition, demand in renewable energy tends to enlarge in many countries particularly in solar and wind. Thanks to rising support from governments as well as advanced technology of power generation, renewable energy will become cheaper with economy of scale.

For Thailand, the Government is finalizing the Power Development Plan (PDP), in order to reflect current circumstances and the change in electricity consumption pattern. Nonetheless, Thailand power generation is still expected to heavily rely on fossil fuels, mainly natural gas. Renewable energy seems to gradually grow whereas coal consumption is likely to decrease.

To handle above situations, PTTEP continues to strategically pursue gas value chain business. This ultimate goal is in-line with the global demand outlook where natural gas remains dominant source of supply. As the Company endeavors to ensure readiness of Bongkot and Erawan production transition plan since PTTEP has won the bidding of both expiring gas fields in December 2018 and to accelerate development of large natural gas projects in the portfolio especially Mozambique Rovuma Offshore Area 1 Project. Moreover PTTEP seeks for investment opportunities of gas value chain business in prolific area as seen a jointly invested subsidiary with PTT namely PTT GL that would expand business opportunity in integrated LNG projects globally with the key objectives to enhance competitiveness and strengthen energy security of Thailand.

In addition, PTTEP realizes the changes and challenges of new industry landscape, consequently PTTEP strategically focuses on expanding into new business. In 2018, PTTEP has established a subsidiary named AI and Robotics Ventures Company Limited" (ARV) in order to support future investments in Artificially Intelligence (AI) and Robotics. Moreover, the Company aims to enhance value of E&P business, also focuses investment in gas value chain and alternative energy particularly solar and wind to maintain our competitiveness and support long term growth with sustainability amid coming challenges.

(2) Oil Price Outlook

For 2019, average Dubai crude prices is expected to range between 55 - 65 USD per barrel following to slightly shrunk global demand outlook comparing to 2018 mainly driven by Chinese economic slowdown and inconclusive path of US and China trade war.

Currently, crude oil prices remains pressured by the glut of global supply which primarily caused by rapid growth of US shale production despite the infrastructure bottleneck. The US shale oil flooding to global crude market likely occurs after the completion of the pipeline project to the gulf. Other factors contributing to oversupply include lower than expectation of crude supply cut from Russia and Iraq as well as minimal Iranian crude supply shortage due to partially US sanction waived on major importers.

Notwithstanding, the key bullish factors for global crude price in 2019 that should keep in focus are; higher crude demand following to softening or reaching to consensus agreement of US-China trade war, full effect of Iran nuclear sanction imposed by US, which can disrupt Iranian supply to global market between 1.2 - 1.8 MMBPD, the compliance of production cut from OPEC and Non-OPEC producers as agreed in the meeting on last December 2018 and whether a new production cut target from those majors producers can be a driver for crude oil price recovery.

(3) LNG Market

The oversupply situation of Global LNG market is expected to prolong towards 2019 with total capacity of existing and upcoming LNG projects growing by 12% to 355 million tons, while demand side is anticipated to stabilize at 342 million tons. In addition lower crude oil prices put pressure on 2019 global LNG price that is expected to decrease comparing to 2018. Average Asian Spot LNG price is expected to range between 5.89 - 8.45 USD/MMBTU. However, the global LNG price remains fluctuated caused by number of bearish factors, e.g., increasing LNG supply from new projects sanction during 2019-2020 and bullish factors, e.g., higher LNG demand in Asian Market especially from China and India, supply disruption from existing LNG projects coupled with national energy policy from various countries. Nonetheless, demand-supply of global LNG market is expected to rebalance following to 2022 - 2023.

(4) Thai Economy and Foreign Exchange Outlook

The Bank of Thailand has forecasted growth of Thai economy in 2019 at 4.0%. The main drivers consist of the anticipated expansion of domestic consumption and investment of private sector, increase of employment rate, spending from government projects as well as growth of export sector and tourism industry. For exchange rate, USD/THB exchange rate remains volatile as a result of uncertainty of monetary and fiscal policies from industrialized countries, e.g., unclear direction of Brexit, slow hike of US policy rate led to depreciation of USD in 2019. In addition, US trade barrier policy and other geopolitical issues are the key factors of USD fluctuation comparing to other currencies.

PTTEP's financial performance will be affected by USD/THB exchange rate fluctuations mainly through income tax. The effect arises since the Company's functional currency is the US Dollar whereas tax filing currency is the Thai Baht. However, the implication of this difference would not create impact to the Company's cash flows. Moreover, an increasing interest rate outlook would not impact to the Company's financial performance as its current interest-bearing debt are in fixed-rate.

(5) Other Important Factors That Affect the Company's Operations

IMO 2020 Regulations. the International Maritime Organization (IMO) agreed to limit Sulphur content in all marine fuels to 0.5% (from current 3.5%) effective on January 1, 2020 onwards. As the result, demand of High Sulphur Fuel Oil (HSFO) is expected to decrease significantly and will likely lead to lower HSFO's price. According to PTTEP gas sale agreement especially in the Gulf of Thailand, HSFO is a factor accounted in the gas pricing formula which led to a risk of lower selling price. However PTTEP has realized in the impact of this issue while expecting minimal impacts thanks to lagging of fuel price linked to gas sale formula varied from 6 - 12 months. In the meantime, PTTEP is actively negotiating with buyers and started to hedge against volatility of HSFO. In addition, from 2022 onwards, PTTEP expects material decrease of the impacts according to gas selling price of Bongkot and Erawan under the new production sharing contracts linked to Dubai crude price.

Enactment of Laws and Regulations that affect the Company's operations: In 2018, enactment of Laws and Regulations that affect to PTTEP are Laws related to Production Sharing Contract, Decommission, Budget, Finance and Accounting. PTTEP also closely monitors the proposed enactment of amendments to the Revenue Code Act and the Petroleum Income Tax Act, which will allow tax filing in non-THB functional currencies. This will subsequently decrease the impact of FX volatility.

PTTEP places the highest priority in complying with relevant laws in all areas of business. It is imperative that personnel of PTTEP Group, including its directors, executives, and employees understand and abide by those laws to ensure legality and efficiency of Company operations. PTTEP monitors laws and regulations that have the potential to affect its businesses on a continuous basis, reviews working processes to ensure their compliance, and clearly defines responsible persons for each of its operations.

(6) PTTEP's Performance Outlook for 2019

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



* based on average Dubai price assumption of 60 USD/BBL for 2019

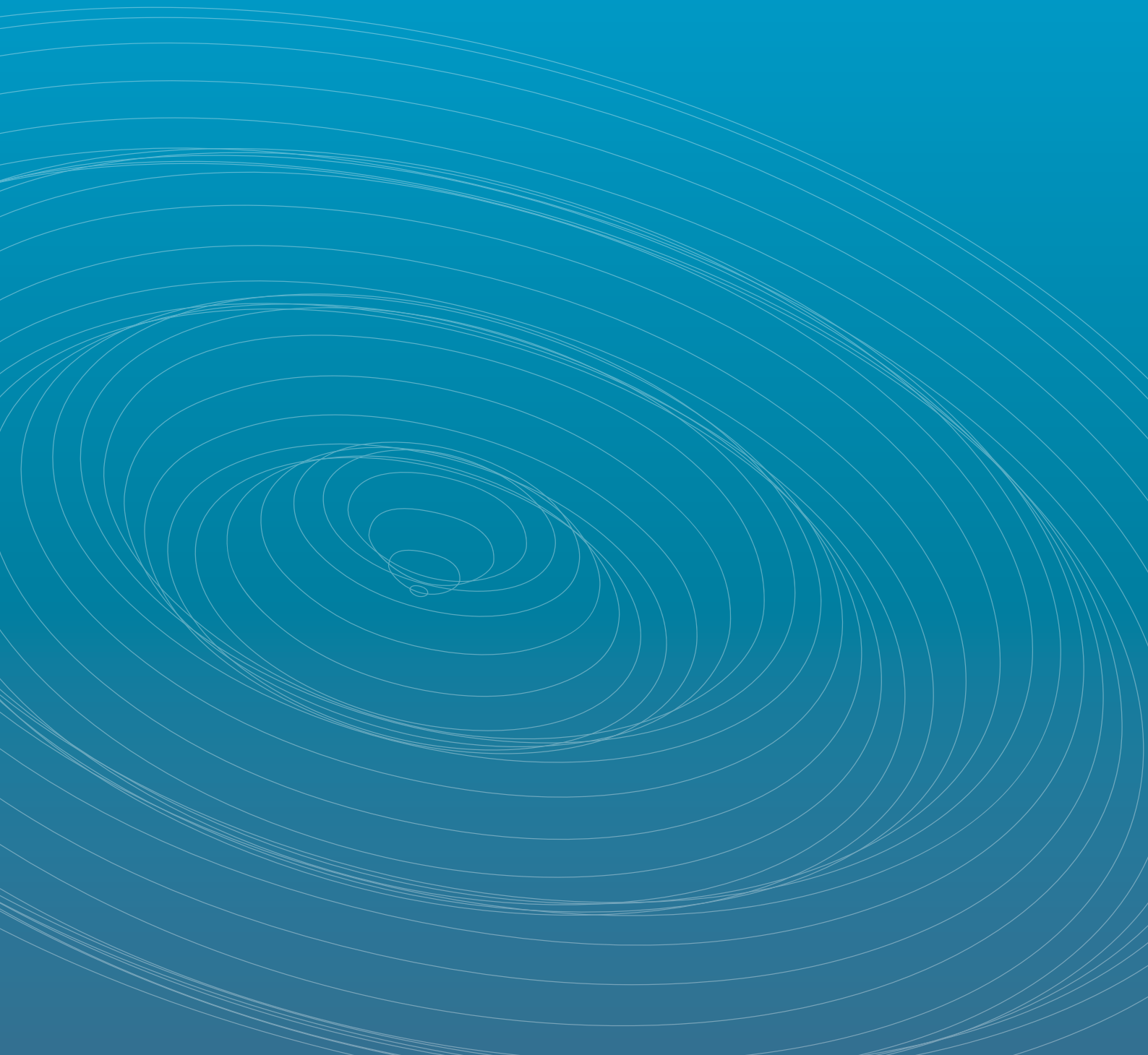
Sales Volume: PTTEP focuses on maintaining the production level in Thailand with the estimated sales volume for Q1/2019 and full-year 2019 of approximately 309 KBOED and 318 KBOED, respectively. The target sales volume is supported by the additional participating interests in the Bongkot Project since mid of 2018.

Sales Price:

- PTTEP's liquid prices will fluctuate relative with global crude prices.
- PTTEP's gas prices are linked via a price formula with 6 - 12 months lag-time to referenced global oil prices indices. Average gas price for Q1/2019 and full-year 2019 are estimated at approximately 6.8 USD/MMBTU, reflecting the upturn in oil price environment. (Based on average Dubai price assumption of 60 USD/BBL for full-year 2019)
- Outstanding volume of oil price hedging as of year-end 2018 is approximately 5 MM barrels; the Company, however, consistently monitors crude oil price movements and has the flexibility to adjust the hedging plan as appropriate.

Unit Cost: In Q1/2019 and for the full-year 2019, PTTEP endeavors to uphold its competitive unit cost at around 32 USD/BOE in line with planned investment and activities.

Attachments



▶ Attachment 1: Information of the Board of Directors, Management, Controlling Persons, and Corporate Secretary

1. PTTEP's Board of Directors

As of 31 December 2018, PTTEP's Board of Directors consists of 14 directors. Details of 14 current directors and 4 directors retiring from the office during the year 2018 are as below.

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Praiya Phinyawat - Chairman - Chairman of the Independent Directors Committee	67	Education	0.00038 (15,000 shares)	None	Other listed companies		
		<ul style="list-style-type: none"> Ph.D. (Civil Engineering), University of Texas at Austin, U.S.A. M.S. (Civil Engineering), Stanford University U.S.A. B.E. (Civil Engineering), Chulalongkorn University 			<ul style="list-style-type: none"> 2011 - 2014 ● Director 2005 - 2013 ● Director 2004 - 2013 ● Director 	<ul style="list-style-type: none"> ● PTT Global Chemical Public Company Limited ● Bangkok Polyethylene Public Company Limited ● Thai Lube Base Public Company Limited 	
Begin Date March 28, 2012		Training of Thai Institute of Directors Association			Other companies		
		<ul style="list-style-type: none"> Board Matters and Trends (BMT) 4/2017 The Power of Culture: From Performance Culture to Winning Culture Seminar Anti-Corruption: Leadership Role of the Board 			2011 - 2016	● Chairman	● PTT Asahi Chemical Company Limited
					Other organizations		
					2015 - Present	● Director of Council	● Vidyasirimedhi Institute of Science and Technology (VISTEC)



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> Chairman Forum: "Clean Business: What is the Chairman Role?" 1/2014 Role of the Chairman Program (RCP) 35/2014 Director Certification Program (DCP) 14/2002 <p>Other Trainings</p> <ul style="list-style-type: none"> The 1st PLATTS-PTT Day Academic Seminar by PTT and Platts McGraw Hill Financial The Joint State - Private Sector course (Class 15), National Defense College Capital Market Academy Leadership Program (Class 7), Capital Market Academy Certificate of Energy Literacy for a Sustainable Future Program (Class 1/2012), Thailand Energy Academy 					

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Achporm Charuchinda - Independent Director - Chairman of the Remuneration Committee - Chairman of the Audit Committee Begin Date January 1, 2013	65	Education	None	None	Other listed companies		
		<ul style="list-style-type: none"> L.L.B., Faculty of Law, Thammasat University, Thailand Thai Barrister-at-Law, Institute of Legal Education of the Thai Bar Association 			2012 - 2015	Member of the Legal Committee	Thai Airways International Public Company Limited
		Training of Thai Institute of Directors Association			Other companies		
		None			2013 - 2016	Director	Thai Smile Airways Company Limited
		Other Trainings			Other organizations		
		Law Drafting Certificate, India			2017 - Present	Board Member in Legal	<ul style="list-style-type: none"> The National Economic and Social Development Board (NESDB)
		The National Defense Course (Class 46), National Defense College			2017 - Present	Chairman	<ul style="list-style-type: none"> National Reform Committee in Justice Process, National Reform Committee
					2017 - Present	Member of the Risk Oversight Committee	<ul style="list-style-type: none"> The Bank of Thailand
					2015 - Present	Member	<ul style="list-style-type: none"> Constitution Drafting Committee
					2014 - Present	Board Member	<ul style="list-style-type: none"> Office of Insurance Commission
	2014 - Present	Board Member	<ul style="list-style-type: none"> Highland Research and Development Institute (Public Organization) 				



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					2003 - Present	<ul style="list-style-type: none"> Member of the Council of State 	<ul style="list-style-type: none"> The Office of the Council of State
					2015 - 2017	<ul style="list-style-type: none"> Board Member 	<ul style="list-style-type: none"> The National Economic and Social Development Board (NESDB)
					2013 - 2017	<ul style="list-style-type: none"> Board Member 	<ul style="list-style-type: none"> The Bank of Thailand
					Apr - Oct 2016	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Thailand Tobacco Monopoly, Ministry of Finance
					2013 - 2015	<ul style="list-style-type: none"> Chairman of the Securities and Exchange Commission Board 	<ul style="list-style-type: none"> The Securities and Exchange Commission Board
					2012 - 2014	<ul style="list-style-type: none"> Member of the Board of Directors 	<ul style="list-style-type: none"> The Metropolitan Waterworks Authority
					2011 - 2014	<ul style="list-style-type: none"> Member of the Institutions Policy Committee 	<ul style="list-style-type: none"> The Bank of Thailand

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					2011 - 2014	<ul style="list-style-type: none"> Member of the Office of the Teacher Civil Service and Educational Personnel Commission 	<ul style="list-style-type: none"> The Office of the Teacher Civil Service and Educational Personnel Commission, The Ministry of Education
					2011 - 2013	<ul style="list-style-type: none"> Member of the National Energy Policy Council 	<ul style="list-style-type: none"> Energy Policy and Planning Office, The Ministry of Energy
					2011 - 2013	<ul style="list-style-type: none"> Member of the National Water and Flood Management Committee 	<ul style="list-style-type: none"> The Office of the National Water and Flood Management Policy
					2010 - 2013	<ul style="list-style-type: none"> Member of the Decentralization to Local Government Organization Committee 	<ul style="list-style-type: none"> The Office of the Permanent Secretary, The Prime Minister's Office



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					2010 - 2013	<ul style="list-style-type: none"> ● Secretary - General of the Office of the Council of state 	<ul style="list-style-type: none"> ● The Office of the Council of State
					2010 - 2013	<ul style="list-style-type: none"> ● Member of the Administrative Courts Officials Commission 	<ul style="list-style-type: none"> ● The Office of the Administrative Courts
					2010 - 2013	<ul style="list-style-type: none"> ● Board Member 	<ul style="list-style-type: none"> ● The Energy Conservation Promotion Fund
					2010 - 2013	<ul style="list-style-type: none"> ● Member 	<ul style="list-style-type: none"> ● The Government Pension Fund (GPF)
					2007 - 2013	<ul style="list-style-type: none"> ● Chairman of the Audit Committee for the Financial Institutions Development Fund 	<ul style="list-style-type: none"> ● The Bank of Thailand
					2007 - 2013	<ul style="list-style-type: none"> ● Member of the Financial Institutions Development Fund 	<ul style="list-style-type: none"> ● The Bank of Thailand

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Admiral Tanarat Ubol - Vice Chairman of the Independent Directors Committee - Chairman of the Corporate Governance Committee - Member of the Remuneration Committee	64	Education	None	None	Other listed companies		
		<ul style="list-style-type: none"> ● Master of Public and Private Management, National Institute of Development Administration (NIDA), Thailand ● Bachelor of Science in Electrical Engineering, The National Defense Academy of Japan, Japan 			None		
Begin Date September 1, 2014		Training of Thai Institute of Directors Association			Other companies		
		<ul style="list-style-type: none"> ● Board Matters and Trends (BMT) 4/2017 ● Strategic Board Master Class (SBM) 1/2017 ● Anti-Corruption: Leadership Role of the Board ● How to Develop a Risk Management Plan (HRP) 9/2016 ● Risk Management for Corporate Leaders (RCL) 26/2016 			<ul style="list-style-type: none"> ● 2014 - 2015 ● Apr 2015 - Sep 2015 	<ul style="list-style-type: none"> ● Chairman ● Director 	<ul style="list-style-type: none"> ● Bangkok Dock Company Limited ● Thai Aviation Industries Company Limited
					Other organizations		
					2015 - Present	Royal Thai Navy	● Office of the Permanent Secretary for Defence
					Apr - Sep 2015	Deputy Chief of Joint Staff	● Royal Thai Armed Forces Headquarters
					Apr - Sep 2015	Director, Equipment Control and Industry Development Committee	● Defence Industry Department, Ministry of Defence
					2014 - 2015	Chairman	● Frigate Squadron Project, Royal Thai Navy
					2014 - 2015	Chief of Staff	● Royal Thai Navy



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> Boards that Make a Difference (BMD) 1/2016 Ethical Leadership Program (ELP) 1/2015 Director Certification Program (DCP) 204/2015 <p>Other Trainings</p> <ul style="list-style-type: none"> 22nd World Petroleum Congress (WPC), Istanbul, Turkey Maritime Joint Force Commander Course (Admiral Level), Hawaii, U.S.A. Advanced Security for Senior Executive, Hawaii, U.S.A. National Institute for Defense Studies (Japan) National Institute for Defense College (Class 51) 			<ul style="list-style-type: none"> 2013 - 2014 <ul style="list-style-type: none"> Chairman 2013 - 2014 <ul style="list-style-type: none"> Chairman 2012 - 2013 <ul style="list-style-type: none"> Senior Advisor 	<ul style="list-style-type: none"> Royal Thai Navy Transport Helicopter Procurement Project, Royal Thai Navy HTMS Naresuan Frigate Squadron Improvement Project, Royal Thai Navy Royal Thai Navy 	

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Sethaput Suthiwart-Narueput - Independent Director - Chairman of the Risk Management Committee - Member of the Nominating Committee - Member of the Audit Committee Begin Date September 1, 2014	53	Education <ul style="list-style-type: none"> ● Ph.D. Economics, Yale University, U.S.A. ● M.Phil. Economics, Yale University, U.S.A. ● B.A. (Highest Honors) Economics, Swarthmore College, U.S.A. Training of Thai Institute of Directors Association <ul style="list-style-type: none"> ● Advanced Audit Committee Program (AACCP) 18/2015 ● Risk Management Committee Program (RMP) 6/2015 ● Director Accreditation Program (DAP) 94/2012 Other Trainings <ul style="list-style-type: none"> ● None 	None	None	Other listed companies		
					2016 - Present	● Director	● Osotspa Public Company Limited
					Other companies		
					2011 - Jan 2018	● Director and Managing Partner	● The Advisor Company Limited
					Other organizations		
					2017 - Present	● Member of the Board of Directors	● The Bank of Thailand
					2015 - Present	● Director	● Puey Ungphakorn Institute for Economic Research, Bank of Thailand
					2014 - Present	● Member of the Monetary Policy Committee	● The Bank of Thailand
					2012 - 2017	● Executive Chairman	● Thailand Future Foundation
					2000 - 2017	● Visiting Professor of Economics	● Sasin Graduate Institute of Business Administration
2000 - 2016	● Advisor on Academic Affairs	● Sasin Graduate Institute of Business Administration					

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Major General Nimit Suwannarat - Independent Director - Member of the Nominating Committee - Member of the Risk Management Committee	47	Education <ul style="list-style-type: none"> ● Master of Arts in International Relations, Chulalongkorn University ● Master of Science in Electrical Engineering (Communications and Signal Processing), University of Minnesota, Minnesota, U.S.A. ● Bachelor of Science in Electrical Engineering, Virginia Military Institute, Virginia, U.S.A. Training of Thai Institute of Directors Association <ul style="list-style-type: none"> ● Director Certification Program (DCP) 216/2016 Other Trainings <ul style="list-style-type: none"> ● Public Key Infrastructure (Certification Authority, Digital Signature) Course, Ottawa, Canada ● Electronic Commerce Course, Orlando, Florida, U.S.A. 	None	None	Other listed companies		
					None		
Begin Date September 1, 2014					Other companies		
					None		
					Other organizations		
					Oct 2018 – Present	● Deputy Chief of Office	● Office of Military Affairs Coordination to the Ministry of Foreign Affairs, Office of Policy Planning Ministry of Defence, Ministry of Defence
					Apr – Sep 2018	● Staff Officer to the Minister of Defence	● Ministry of Defence
					2017 – Mar 2018	● Commanding Officer	● 1 st Development Regiment, Royal Thai Army
					2016 - 2017	● Senior Operation Officer, Defence Industry and Energy Center	● Office of the Permanent Secretary for Defence
					2015 - 2016	● Commanding Officer of the 1 st Field Artillery Regiment King's Guard	● Royal Thai Army

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> ● Computer Emergency Response Team, Carnegie Mellon, Pittsburg, Pennsylvania, U.S.A. ● National Crisis Management Course, APCSS, Honolulu, Hawaii, U.S.A. ● Command and General Staff College (Class 83), Royal Thai Army ● Joint Staff Course, Joint Staff College ● Intermediate Certificate Course in Political Leadership in the New Era (Class 2), King Prajadhipok's Institute 			2010 - 2015	<ul style="list-style-type: none"> ● Executive Officer of the 1st Field Artillery Regiment, King's Guard 	<ul style="list-style-type: none"> ● Royal Thai Army

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Wirat Unanarumit	56	Education <ul style="list-style-type: none"> Master of Business Administration (Financial Management), Pennsylvania State University, U.S.A. Bachelor of Engineering (Electrical Engineering), Chulalongkorn University Training of Thai Institute of Directors Association <ul style="list-style-type: none"> Anti-Corruption: Leadership Role of the Board Director Certification Program Update (DCPU) 5/2015 Director Certification Program (DCP) 8/2001 Audit Committee Program (ACP) 38/2012 Ethical Leadership Program (ELP) 7/2017 	None	None	Other listed companies 2016 - Present <ul style="list-style-type: none"> Chief Operation Officer, Upstream Petroleum and Gas Business Group 2014 - 2016 <ul style="list-style-type: none"> Chief Financial Officer Jan - Sep 2016 <ul style="list-style-type: none"> Director 2014 - 2015 <ul style="list-style-type: none"> Director 2012 - 2014 <ul style="list-style-type: none"> Executive Vice President – Corporate Finance Other companies Nov 2018 – Present <ul style="list-style-type: none"> Chairman 2016 - Present <ul style="list-style-type: none"> Director 2016 - 2017 <ul style="list-style-type: none"> Chairman Jun - Oct 2017 <ul style="list-style-type: none"> Chairman 		
- Director							<ul style="list-style-type: none"> PTT Public Company Limited
- Member of the Risk Management Committee							<ul style="list-style-type: none"> PTT Public Company Limited
Begin Date							<ul style="list-style-type: none"> PTT Public Company Limited
February 23, 2015							<ul style="list-style-type: none"> Thai Oil Public Company Limited Bangchak Petroleum Public Company Limited PTT Public Company Limited

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		Other Trainings <ul style="list-style-type: none"> Advanced Certificate Course in Public Economics Management for Executive (Class 20), The College of Politics and Governance, King Pradhipok's Institute (KPI) Thailand CG Forum: Governance as a Driving Force for Business Sustainability, The Stock Exchange of Thailand Advanced Management Program, INSEAD Business School, France Advanced Management Program 184, Harvard Business School, U.S.A. Capital Market Academy Leadership Program (Class 4), Capital Market Academy The Program for Senior Executives on Justice Administration (Class 16), Office of the Judiciary 			2014 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTT International Trading Private Limited
					2012 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Star Petroleum Refining Public Company Limited (SPRC)
					Other organizations		
					2016 - Present	<ul style="list-style-type: none"> Advisory Committee, Trade, Investment Promotion & Business Council 	<ul style="list-style-type: none"> The Federation of Thai Industries
					2016 - Present	<ul style="list-style-type: none"> Advisor to the President 	<ul style="list-style-type: none"> Association of Capital Market Academy (ACMA)
					2015 - Present	<ul style="list-style-type: none"> Chairman, Thailand – Malaysia Business Council 	<ul style="list-style-type: none"> The Federation of Thai Industries
					2015 - Present	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Chulalongkorn University Alumni Association (CUAA) (2015-2017)
					2015 - Present	<ul style="list-style-type: none"> Director under Thai-Chinese Railway Finance and Investment Sub-Committee 	<ul style="list-style-type: none"> Thai-Chinese Railway Development Committee



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> Advanced Security Management Program (Class 2), The National Defence College Association of Thailand TLC A Executive Development Program (Class 1), Association of Listed Companies, Stock Exchange of Thailand The Joint State – Private Sector Course (Class 2013), National Defence College Executive Management with Business Development and Investment (Class 2), Institute of Business and Industrial Development (IBID) The Rules of Law for Democracy (Class 6), College of the Constitutional Court 			<ul style="list-style-type: none"> 2013 - Present 2014 - 2017 2015 - 2016 2015 - 2016 	<ul style="list-style-type: none"> Director & Audit Committee Director Director Advisory Committee, Promoting and Supporting Office of Industries 	<ul style="list-style-type: none"> Thailand Management Association (TMA) Kamnoetvadya Science Academy School (KVIS) & Vidyasirimedhi Institute of Science and Technology (VISTEC) The Joint Standing Committee on Commerce, Industry and Banking The Federation of Thai Industries

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Twarath Sutabutr	49	Education	None	None	Other listed companies		
- Director		● Ph.D. Civil & Environmental Engineering, Massachusetts Institute of Technology (MIT), U.S.A.			2014 - 2015	● Director	● Thai Oil Public Company Limited
- Member of the Risk Management Committee		● M.S. Soil Mechanics, Asian Institute of Technology (AIT)			Apr 2015 - Jul 2015	● Director	● PTT Public Company Limited
Begin Date		● B.E. Civil Engineering, Chulalongkorn University			Other companies		
October 1, 2015		Training of Thai Institute of Directors Association			None		
		● Anti-Corruption: Leadership Role of the Board			Other organizations		
		● Director Certification Program (DCP) 115/2009			Oct 2018 – Present	● Inspector General	● Office of the Permanent Secretary, Ministry of Energy
		● Financial Statements for Directors Program (FSD) 4/2009			2017 - Present	● Association President	● Asian Institute of Technology (AIT)
		Other Trainings			2017 - Present	● Director, The Civil Service Sub-Commission	● The Office of the Civil Service Commission (OCSC)
		● Energy Literacy for a Sustainable Future (Class 10), Thailand Energy Academy			2017 - Present	● Association President, Thai Government Scholarship Students Association	● The Office of the Civil Service Commission (OCSC)



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> Capital Market Academy Leadership Program (Class 24), Capital Market Academy International Leadership Program (ILP) by Government of the United Kingdom e-Government Executive Program (e-GEP) Class 5, Electronics Government Agency (Public Organization) Advance Management Program (AMP) INSEAD, France (Government Officials Development Scholarship, Office of the Civil Service Commission) Top Executive Program in Commerce and Trade (TEPCoT) Class 6, University of Thai Chamber of Commerce TLCA Executive Development Program (EDP) Class 9, Capital Market Academy 			<ul style="list-style-type: none"> 2017 - Present 2015 - Oct 2018 2014 - Feb 2018 2014 - 2015 2014 - 2015 2013 - 2014 2009 - 2014 	<ul style="list-style-type: none"> Sub-committee Member, Public Sector Development Commission Sub-committee on Public Sector Drive 4.0 Director-General Spokesperson Deputy Director General Chairman Advisor to the Board of Directors: Energy Deputy Director General 	<ul style="list-style-type: none"> Office of the Public Sector Development Commission (OPDC) Energy Policy and Planning Office, The Ministry of Energy Ministry of Energy Ministry of Energy Department of Alternative Energy Development and Efficiency Co-Operative The Engineering Institute of Thailand Under H.M. The King's Patronage Department of Alternative Energy Development and Efficiency

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> ● The Civil Service Executive Program for Senior Civil Servants (Class 61), Office of the Civil Service Commission ● New Wave Leadership Development (Class 3), Office of the Civil Service Commission ● Energy Executive Program (Class 2), Ministry of Energy ● Infrastructure in a Market Economics, Harvard University, Cambridge, U.S.A. ● Ministry's Spokesperson Program, Institute of Public Relations, The Government Public Relations Department ● Executive Program on the Rule of Law and Development (RoLD), Thailand Institute of Justice (TIJ) 					



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years			
					Period	Position	Function/Company/Type of Business	
Mr. Pitipan Tepartimargorn	62	Education <ul style="list-style-type: none"> ● M.A. Political Science (Public Administration), Thammasat University ● B.E. Electrical Engineering (Second Class Honor), King Mongkut's Institute of Technology Ladkrabang Training of Thai Institute of Directors Association <ul style="list-style-type: none"> ● Anti-Corruption: Leadership Role of the Board ● Director Certification Program (DCP) 138/2010 ● Anti-Corruption for Executive Program (ACEP) 4/2012 Other Trainings <ul style="list-style-type: none"> ● Strategic Human Resource Management, Harvard University, U.S.A. 	None	None	Other listed companies Aug 2018 - Present <ul style="list-style-type: none"> ● Member of the U-Tapao Aircraft Repair Center Project Governance and Thai Airways Business Development Project at U-Tapao Airport Sub-committee May 2018 – Present <ul style="list-style-type: none"> ● Member of the Risk Management Committee Feb 2018 – Present <ul style="list-style-type: none"> ● Member of the Nomination Committee Jan 2018 - Present <ul style="list-style-type: none"> ● Member of the Human Resources Committee 2017 - Present <ul style="list-style-type: none"> ● Director 			
								<ul style="list-style-type: none"> ● Thai Airways International Public Company Limited ● Thai Airways International Public Company Limited ● Thai Airways International Public Company Limited ● Thai Airways International Public Company Limited ● Thai Airways International Public Company Limited

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> NIDA – Wharton Executive Leadership Program, The Wharton School, University of Pennsylvania, U.S.A. Senior Executive Program (SEP), Sasin Graduate Institute of Business Administration Advance Political and Electoral Development Program (Class 3), Office of The Election Commission of Thailand PTT Executive Leadership Program, General Electrics, Crotonville, U.S.A. Capital Market Academy Leadership Program (Class 19), Capital Market Academy 			<ul style="list-style-type: none"> 2015 - 2016 <ul style="list-style-type: none"> Chief Operation Officer, Upstream Petroleum and Gas Business Group Acting Senior Executive Vice President, Human Resources & Organization Excellence 2015 - 2016 <ul style="list-style-type: none"> PTT Public Company Limited 2010 - 2015 <ul style="list-style-type: none"> Senior Executive Vice President, Human Resources & Organization Excellence PTT Public Company Limited 		
					Other companies		
					2014 - 2016	<ul style="list-style-type: none"> Director and Chairman of the Remuneration Committee 	<ul style="list-style-type: none"> Sakari Resources Limited



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					Apr - Oct 2016	● Chairman	● PTT Energy Resources Company Limited
					2012 - 2015	● Chairman	● PTT Polymer Logistics Company Limited
					2010 - 2015	● Chairman	● PTT ICT Solutions Company Limited
					2012 - 2014	● Chairman	● PTT Polymer Marketing Company Limited
					Other organizations		
					Feb 2018 - Present	● Chairman of Executive Committee	● Vidyasirimedhi Institute (VISTEC)
					2017 - Present	● Vice Chairman of the Governing Board	● Kamnoetvidya Science Academy
					2015 - Present	● Council Member, Executive Board Member, and Chairman of the Personnel Management Committee	● Vidyasirimedhi Institute (VISTEC)

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					2014 - Present	<ul style="list-style-type: none"> Director, The Civil Service Sub-Commission on Development of Human Resource Management (HRM) 	<ul style="list-style-type: none"> The Office of the Civil Service Commission (OCSC)



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Ms. Panada Kanokwat	69	Education <ul style="list-style-type: none"> ● Master of Business Administration (Finance & Banking), North Texas State University, U.S.A. ● Bachelor of Accounting, Faculty of Commerce and Accountancy, Thammasat University 	0.00076 (30,000 shares)	None	Other listed companies		
- Independent Director					Apr 2018 - Present	● Member of the Audit Committee	● TISCO Financial Group Public Company Limited
- Member of the Audit Committee					Apr 2018 - Present	● Independent Director and Member of the Audit Committee	● TISCO Bank Public Company Limited
- Member of the Corporate Governance Committee					2014 - Present	● Member of the Corporate Governance Committee	● TISCO Financial Group Public Company Limited
Begin Date		Training of Thai Institute of Directors Association			2008 - Present	● Independent Director	● TISCO Financial Group Public Company Limited
February 12, 2016		● Board Matters and Trends (BMT) 6/2018			2017 - Apr 2018	● Member of the Corporate Governance Committee	● Global Power Synergy Public Company Limited
		● Anti-Corruption: Leadership Role of the Board			2014 - Apr 2018	● Independent Director and Member of the Audit Committee	● Global Power Synergy Public Company Limited
		● Directors Certification Program Update (DCPU) 2/2014			2015 - 2017	● Independent Director and Chairman of the Audit Committee	● Asia Biomass Public Company Limited
		● Risk Management Committee Program (RMP) 4/2014					
		● Anti-Corruption Focus Group (C-FG) 4/2013					
		● Anti-Corruption for Executive (ACEP) 8/2013					

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years				
					Period	Position	Function/Company/Type of Business		
		<ul style="list-style-type: none"> Financial Institutions Governance Program (FGP) 2/2011 Directors Certification Program (DCP) 11/3/2009 Directors Accreditation Program (DAP) 7/5/2008 <p>Other Trainings</p> <ul style="list-style-type: none"> Executive Program in Capital Market Academy Leadership Program (Class 2), Capital Market Academy Executive Program in International Management, Stanford-National University of Singapore, Singapore Building, Leading & Sustaining the Innovation Organization, Sloan School of Management, Massachusetts Institute of Technology (MIT), U.S.A. 			2013 - 2014	<ul style="list-style-type: none"> Member of the Audit Committee 	<ul style="list-style-type: none"> TISCO Financial Group Public Company Limited 		
					2013 - 2014	<ul style="list-style-type: none"> Member of the Audit Committee 	<ul style="list-style-type: none"> TISCO Bank Public Company Limited 		
					2008 - 2014	<ul style="list-style-type: none"> Independent Director and Member of the Audit Committee 	<ul style="list-style-type: none"> TISCO Bank Public Company Limited 		
					2011 - 2013	<ul style="list-style-type: none"> Chairman of the Audit Committee 	<ul style="list-style-type: none"> TISCO Financial Group Public Company Limited 		
					2011 - 2013	<ul style="list-style-type: none"> Chairman of the Audit Committee 	<ul style="list-style-type: none"> TISCO Bank Public Company Limited 		
					Other companies				
					None				
					Other organizations				
					2014 - Jan 2018	<ul style="list-style-type: none"> Member of the Risk Management Sub-Committee 	<ul style="list-style-type: none"> The Government Pension Fund (GPF) 		

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Bundhit Eua-arporn - Independent Director - Chairman of the Nominating Committee	53	Education	Spouse/ Cohabiting Couple: 0.00012 (4,587 shares)	None	Other listed companies		
		<ul style="list-style-type: none"> Ph.D., Imperial College of Science Technology and Medicine, University of London M.Eng., Chulalongkorn University B.Eng., Chulalongkorn University 			<ul style="list-style-type: none"> Executive Board Member 	<ul style="list-style-type: none"> Banpu Power Public Company Limited 	
Begin Date August 1, 2017		Training of Thai Institute of Directors Association			Other companies		
		<ul style="list-style-type: none"> Director Certification Program (DCP) 110/2009 					
		Other Trainings			Other organizations		
		<ul style="list-style-type: none"> Energy Executive Program (Class 6), Ministry of Energy Power of the Kingdom (Bhumipalung Phandin) (Class 3), Chulalongkorn University Executive Program (2014) Temasek Foundation-NUS Programme for Leadership in University Management 			<ul style="list-style-type: none"> President Board Member Honorary Board Member Dean Director 	<ul style="list-style-type: none"> Chulalongkorn University National Reform Committee in Energy, National Reform Committee Thailand Institute of Scientific and Technological Research Faculty of Engineering, Chulalongkorn University Energy Research Institute, Chulalongkorn University 	

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Miss Penchun Jarikasem - Director - Member of the Risk Management Committee	63	Education ● Master of Science (Business Administration), Thammasat University ● Bachelor of Arts, Faculty of Arts, Chulalongkorn University	0.00025 (10,000 shares)	None	Other listed companies		
					2016 - Present	● Chairman of the Audit Committee	● Osotspa Public Company Limited
Begin Date February 1, 2018		Training of Thai Institute of Directors Association ● Ethical Leadership Program (ELP) 11/2018 ● Risk Management Program for Corporate Leaders Class (RCL) 13/2018 ● Board Matters and Trends (BMT) 6/2018 ● Role of Chairman Program (RCP) 36/2015 ● Advanced Audit Committee Programs (AACP) 7/2012 ● Director Certification Program (DCP) 113/2009			Other companies		
					2016 - Present	● Independent Director	● Osotspa Public Company Limited
					2011 - 2015	● Executive Vice President, Finance and Accounting Group	● PTT Exploration and Production Public Company Limited
					Other organizations		
					Apr 2018 - Present	● Chairman of the Audit Committee	● Ritta Holdings Company Limited
					Mar 2018 - Present	● Independent Director	● Ritta Holdings Company Limited
					May 2018 - Present	● Chairman of the Sub-committee for Finance and Accounting	● State Railway of Thailand
					Apr 2018 - Present	● Director	● State Railway of Thailand



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> Director Accreditation Program (DAP) 75/2008 <p>Other Trainings</p> <ul style="list-style-type: none"> The Executive Program in Energy Literacy for a Sustainable Future TEA (Class 6), Thailand Energy Academy (TEA) Bhumipalung Phandin for Top Executives (Class 3), Chulalongkorn University Senior Executive Program no.77 (SEP 77), London Business School (LBS) Capital Market Academy Leadership (CMA 4), Capital Market Academy (CMA) 			<ul style="list-style-type: none"> 2017 - Present <ul style="list-style-type: none"> Advisory Committee for Fund Raising and Listed Company Oversight 2016 – Dec 2018 <ul style="list-style-type: none"> Sub-committee for Finance and Budgeting Improvement 	<ul style="list-style-type: none"> The Securities and Exchange Commission (SEC) Office of The Public Sector Development Commission (OPDC) 	

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Chansin Treenuchagron	58	Education <ul style="list-style-type: none"> ● Master Degree of Economic, Chulalongkorn University ● Bachelor Degree of Economic, Thammasat University Training of Thai Institute of Directors Association <ul style="list-style-type: none"> ● Chartered Director Class (CDC) 10/2015 ● Director Accreditation Program (DAP) 93/2011 ● Financial Statements for Directors (FSD) 12/2011 ● Director Certification Program (DCP) 85/2007 Other Trainings <ul style="list-style-type: none"> ● The Executive Program in Energy Literacy for a Sustainable Future (Class 7/2015), Thailand Energy Academy (TEA) ● Diploma, The National Defence Course (Class 57/2014), National Defence College 	None	none	Other listed companies <ul style="list-style-type: none"> Aug 2018 - Present <ul style="list-style-type: none"> ● President and Chief Executive Officer ● Director and Secretary of the Board of Directors Aug 2018 - Present <ul style="list-style-type: none"> ● Chairman ● Chief Technology and Engineering Officer Jan - Aug 2018 <ul style="list-style-type: none"> ● Director, Member of the Risk Management Committee, and Member of the Nomination and Remuneration Committee 2015 - Aug 2018 <ul style="list-style-type: none"> ● Director and Member of the Risk Management Committee Oct - Dec 2017 <ul style="list-style-type: none"> ● Chief Operation Officer, Infrastructure and Sustainability Management Business Group 		
- Director					Aug 2018 - Present	● PTT Public Company Limited	
Begin Date					Aug 2018 - Present	● PTT Public Company Limited	
September 1, 2018					Aug 2018 - Present	● RPC Public Company Limited	
					Jan - Aug 2018	● PTT Public Company Limited	
					2017 – Aug 2018	● Global Power Synergy Public Company Limited	
					2015 - Aug 2018	● RPC Public Company Limited	
					Oct - Dec 2017	● PTT Public Company Limited	



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					2016 - 2017	<ul style="list-style-type: none"> Senior Executive Vice President, Downstream Business Group Alignment 	<ul style="list-style-type: none"> PTT Public Company Limited
					Oct - Dec 2015	<ul style="list-style-type: none"> Senior Executive Vice President, Petrochemicals & Refining Business Unit 	<ul style="list-style-type: none"> PTT Public Company Limited
					Apr - Oct 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Thaioil Public Company Limited
					2014 - 2015	<ul style="list-style-type: none"> Senior Executive Vice President, Corporate Strategy 	<ul style="list-style-type: none"> PTT Public Company Limited
					2013 - 2014	<ul style="list-style-type: none"> Executive Vice President, PTT, working on a secondment as Senior Executive Vice President, Corporate Commercial and Marketing 	<ul style="list-style-type: none"> IRPC Public Company Limited
					2012 - 2014	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> UBE Chemical (Asia) Public Company Limited

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					2011 - 2013	<ul style="list-style-type: none"> Executive Vice President, PTT, working on a secondment as Senior Executive Vice President, Port & Asset Management Business nit 	<ul style="list-style-type: none"> IRPC Public Company Limited
Other companies							
					2017 - Aug 2018	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT Digital Solutions Company Limited
					Apr - Dec 2017	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT Asahi Chemical Company Limited
					2015 - 2017	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT Polymer Marketing Company Limited
					2015 - 2017	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT Polymer Logistics Company Limited
					2014 - 2015	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT Green Energy (Thailand) Company Limited
					2012 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTT Polymer Logistics Company Limited
					2012 - 2014	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTT Polymer Marketing Company Limited
					2012 - 2014	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Rayong Acetylene Company Limited



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					2011 – 2014	<ul style="list-style-type: none"> ● Director 	<ul style="list-style-type: none"> ● Technology IRPC Company Limited
					2011 – 2014	<ul style="list-style-type: none"> ● Director 	<ul style="list-style-type: none"> ● IRPC Polyol Company Limited
					2011 – 2014	<ul style="list-style-type: none"> ● Chairman 	<ul style="list-style-type: none"> ● Rak Pa Sak Company Limited
					Other organizations		
					Sep 2018 - Present	<ul style="list-style-type: none"> ● Member 	<ul style="list-style-type: none"> ● PTIT Council of Trustees
					Sep 2018 - Present	<ul style="list-style-type: none"> ● Director and Vice Chairman 	<ul style="list-style-type: none"> ● Thai Listed Companies Association
					Sep 2018 - Present	<ul style="list-style-type: none"> ● Member of Thailand Foundation Committee 	<ul style="list-style-type: none"> ● Thailand Foundation
					Sep 2018 - Present	<ul style="list-style-type: none"> ● Chief Advisor 	<ul style="list-style-type: none"> ● PTT Saving and Credit Cooperative, Limited
					Aug 2018 - Present	<ul style="list-style-type: none"> ● Member of Committee 	<ul style="list-style-type: none"> ● Social Participation Committee, Princess Maha Chakri Award Foundation
					June 2018 - Present	<ul style="list-style-type: none"> ● Board member 	<ul style="list-style-type: none"> ● Faculty of Economics, Thammasat University
					Feb 2018 - Present	<ul style="list-style-type: none"> ● Board member 	<ul style="list-style-type: none"> ● College of Innovation, Thammasat University
					2017 - Present	<ul style="list-style-type: none"> ● Member of Committee 	<ul style="list-style-type: none"> ● Thammasat Association

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Patchara Anuntasilpa	47	Education	None	none	Other listed companies		
		<ul style="list-style-type: none"> Master Degree in Business Administration (M.B.A.), Shenandoah University, U.S.A. Bachelor Degree in Business Administration, Bangkok University 			None		
- Director	-	Training of Thai Institute of Directors Association	-	-	Other companies		
		<ul style="list-style-type: none"> Director Certification Program (DCP) 221/2016 			None		
- Member of the Remuneration Committee	-	Other Trainings	-	-	Other organizations		
		<ul style="list-style-type: none"> Capital Market Leader Program (Class 24), Capital Market Academy Financial Analysis Program, Haas School of Business, University of California at Berkeley, U.S.A. Resource management for National Defense (Class 7), Office of the Army Comptroller 			None		
Begin Date	November 1, 2018		-	-	Other organizations		
					<ul style="list-style-type: none"> Oct 2018 - Present: Director-General Apr 2018 - Present: Director 2015 - Present: Director 2017 - Sep 2018: Director-General 2016 - 2017: Deputy Permanent Secretary of the Expense and Debt Cluster 2015 - 2016: Fiscal Analyst Advisory Level Mar 2015 - Dec 2015: Deputy Director 	<ul style="list-style-type: none"> The Excise Department, Ministry of Finance State Railway of Thailand The Government Lottery Office, Ministry of Finance The Treasury Department, Ministry of Finance The Expense and Debt Cluster, Ministry of Finance The Comptroller General's Department, Ministry of Finance The Comptroller General's Department, Ministry of Finance 	



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> Executive Program (Additional Program) (Class 3), Office of the Civil Service Commission (OCSC) Foreign Affairs Executive Program (Class 3), Ministry of Foreign Affairs Fundamentals of Public Procurement, United Nations Development Programme: UNDP, Denmark Executive Program (Class 46), Office of the Civil Service Commission (OCSC) WTO Advanced Regional Workshop on Government Procurement for Asia and Pacific Economies, World Trade Organization: WTO, China Executive Program for Senior Management in collaboration with Kellogg School of Management, Maxwell School of Citizenship and Public Affairs, and Schulich School of Business by Fiscal Policy Research Institute Foundation 			<ul style="list-style-type: none"> 2014 - 2015 Director Non Budgetary Development Division, The Comptroller General's Department 		

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Phongsthorn Thavisin - Director - Chief Executive Officer - Acting President, Exploration and Production	59	Education	0.00204 (81,037 shares)	none	Listed companies	Oct 2018 – Present	<ul style="list-style-type: none"> Chief Executive Officer and Acting President, Exploration and Production PTT Exploration and Production Public Company Limited
		<ul style="list-style-type: none"> B.Sc. (Petroleum and Natural Gas Engineering), The Pennsylvania State University, U.S.A. Training of Thai Institute of Directors Association 					
Begin Date October 1, 2018		<ul style="list-style-type: none"> Director Certification Program (DCP) 223/2016 Other Trainings <ul style="list-style-type: none"> Energy Literacy for a Sustainable Future (Class 7), Thailand Energy Academy Capital Market Leader Program (Class 24), Capital Market Academy Senior Executive Program (SEP-19), Sasin Graduate Institute of Business Administration of Chulalongkorn University Advanced Naval Studies Program (Class 40/2008), Institute of Advanced Naval Studies 			<ul style="list-style-type: none"> 2017 - Sep 2018 2016 - 2017 	<ul style="list-style-type: none"> President, Exploration and Production and Acting Executive Vice President, Business Transformation and Organization Group Chief Operating Officer, Production Asset and Operations Support Group and acting Executive Vice President, Operations Support Group PTT Exploration and Production Public Company Limited 	



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> ● PTT Group EVP Leadership Development ● PTT Executive Leadership, General Electric, GE, New York, U.S.A. ● Breakthrough Program for Senior Executive, IMD ● The National Defense Course (2013 - 2014), Thai National Defense College 			<ul style="list-style-type: none"> ● Jan - Dec 2015 ● 2012 - 2014 	<ul style="list-style-type: none"> ● Executive Vice President, Technology and Sustainability Development Group ● Executive Vice President, Engineering and Development Group 	<ul style="list-style-type: none"> ● PTT Exploration and Production Public Company Limited ● PTT Exploration and Production Public Company Limited
					Other companies		
					None		
					Other organizations		
					None		


Director who retired in year 2018

Name/Position	Age (year)	Education/Training	% of Shareholding among Directors and Executives	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Tevin Vongvanich Ex-Director (information as of last date of directorship on August 30, 2018)	60	Education	0.00369 (146,543 shares)	None	Other listed companies		
	<ul style="list-style-type: none"> ● Honorary Doctorate of Engineering, Chulalongkorn University ● Honorary Doctorate of Philosophy, Civil Engineering Department, Faculty of Industry and Technology, Rajamangala University of Technology Isan ● M.Sc. (Petroleum Engineering), University of Houston, U.S.A. ● M.Sc. (Chemical Engineering), Rice University, U.S.A. ● B.E. (Chemical Engineering), Chulalongkorn University Training of Thai Institute of Directors Association <ul style="list-style-type: none"> ● Ethical Leadership Program (ELP) 7/2017 ● Anti-Corruption: Leadership Role of the Board 	<ul style="list-style-type: none"> ● Director and President and Chief Executive Officer ● Chairman ● Chairman and Independent Director ● President and Chief Executive Officer 			<ul style="list-style-type: none"> ● PTT Public Company Limited ● IRPC Public Company Limited ● MCOT Public Company Limited ● PTT Exploration and Production Public Company Limited 		
Other companies					None		
Other organizations					Jan 2018 - Present	● Chairman	● Vidyasirimedhi Institute of Science and Technology (MSTEC)
					2017 - Present	● Member	● National Reform for Thailand 4.0 Policy Steering Committee
					2017 - Present	● Board Member	● National Reform Committee in Economics, National Reform Committee

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> ● Anti-Corruption for Executive Program (ACEP) 15/2015 ● Director Certification Program (DCP) 21/2002 ● Financial Statements for Directors (FSD) 6/2009 ● Role of the Compensation Committee (RCC) 13/2011 			2017 – Present	<ul style="list-style-type: none"> ● Advisor 	<ul style="list-style-type: none"> ● Chulalongkorn University Alumni Association under the Patronage of His Majesty the King
		<p>Other Trainings</p> <ul style="list-style-type: none"> ● Senior Executive Program (S.E.P. 7), Sasin Graduate Institution of Business Administration of Chulalongkorn University ● Program for Global Leadership (PGL), Harvard Business School, U.S.A. ● Advanced Certificate Course in Politics and Governance in Democratic System for Executives (Class 10), Political and Governance College, King Prajadhipok's Institute 					
					2016 - Present	<ul style="list-style-type: none"> ● Honorary Board Member 	<ul style="list-style-type: none"> ● Office of the Public Sector Development Commission (OPDC)
					2015 - Present	<ul style="list-style-type: none"> ● Chairman, Information and Public Communication Management Sub-committee 	<ul style="list-style-type: none"> ● National Committee on Competitive Advantage (NCC)

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> Capital Market Academy Leadership Program (Class 6), Capital Market Academy The Joint State - Private Sector Course (Class 2552), National Defence College Energy Literacy for a Sustainable Future (Class 3), Thailand Energy Academy 			<ul style="list-style-type: none"> 2014 - Present 2014 - Present 2014 - Present 2013 - Aug 2018 2015 - 2017 2014 - 2016 	<ul style="list-style-type: none"> Honorary Board Member Chairman Board of Trustees Honorary Board Member Chairman Advisor 	<ul style="list-style-type: none"> National Committee on Competitive Advantage (NCC) TMA Center for Competitiveness Thailand Management Association Thailand Management Association (TMA) National Science and Technology Development Agency Chulalongkorn University Alumni Association under the Patronage of His Majesty the King The Board of Investment of Thailand



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Kulit Sombatsiri Ex-Director (information as of last date of directorship on September 9, 2018)	55	Education	None	None	Other listed companies		
		<ul style="list-style-type: none"> ● Master of Business Administration, University of Southern California, U.S.A. ● Master of Public Administration, San Diego State University, U.S.A. ● B.A. Political Science, Ramkhamhaeng University, Thailand 			None		
		Training of Thai Institute of Directors Association			Other organizations		
		<ul style="list-style-type: none"> ● Directors Certification Program (DCP) 124/2009 			Apr 2018 - Present	● Chairman	● State Railway of Thailand
		Other Trainings			2015 - Present	● Director General	● The Customs Department, Ministry of Finance
		<ul style="list-style-type: none"> ● The Rules of Law for Democracy (Class 6), College of the Constitutional Court ● Energy Literacy for a Sustainable Future (Class 6), Thailand Energy Academy 			2015 - Present	● Chairman of the Board of Directors	● Government Saving Bank
					2015 - 2016	● Director	● The Government Lottery Office, Ministry of Finance
					2014 - 2015	● Director General	● State Enterprise Policy Office (SEPO), Ministry of Finance
					2011 - 2014	● Inspector General	● Ministry of Finance

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> ● Capital Market Academy Leadership Program (Class 10), Capital Market Academy ● The Civil Service Executive Program for Senior Civil Servants (Class 40), Office of the Civil Service Commission ● The National Defence Course (Class 54), National Defence College 					

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Somporn Vongvuthipornchai Ex-Director (information as of last date of directorship on September 29, 2018)	60	Education	Self: 0.00664 (263,677 shares) Spouse: 0.00009 (3,500 shares) Total: 0.00673 (267,177 shares)	None	Other listed companies		
		<ul style="list-style-type: none"> ● Ph.D. (Petroleum Engineering), University of Tulsa, Oklahoma, U.S.A. ● Master of Sciences (Petroleum Engineering), University of Tulsa, Oklahoma, U.S.A. ● Bachelor of Sciences (Petroleum Engineering), University of Tulsa, Oklahoma, U.S.A. 			<ul style="list-style-type: none"> ● Chief Executive Officer ● Senior Executive Vice President, working on secondment as Chief Executive Officer of PTT Exploration and Production Public Company Limited 	<ul style="list-style-type: none"> ● PTT Exploration and Production Public Company Limited ● PTT Public Company Limited 	
		Training of Thai Institute of Directors Association <ul style="list-style-type: none"> ● Anti-Corruption: Leadership Role of the Board ● Directors Certification Program (DCP) 224/2016 			<ul style="list-style-type: none"> ● Chief Executive Officer ● Executive Vice President, Strategy and Business Development Group ● Executive Vice President, International Asset Group 	<ul style="list-style-type: none"> ● PTT Exploration and Production Public Company Limited ● PTT Exploration and Production Public Company Limited 	
		Other Trainings <ul style="list-style-type: none"> ● Anti-Corruption Strategic Management Course for Senior Executive (Class 6), Sanya Dharmasakti Anti-Corruption Institute (SDI), Office of the National Anti-Corruption Commission (NACC) 			Other companies		
					2017 – Sep 2018	Director	PTT Exploration and Production Public Company Limited
					2015 – Sep 2018	Senior Executive Vice President, working on secondment as Chief Executive Officer of PTT Exploration and Production Public Company Limited	PTT Public Company Limited
					2015 - 2017	Chief Executive Officer	PTT Exploration and Production Public Company Limited
					Jan - Oct 2015	Executive Vice President, Strategy and Business Development Group	PTT Exploration and Production Public Company Limited
					2010 - 2014	Executive Vice President, International Asset Group	PTT Exploration and Production Public Company Limited
					Other companies		
					2017 – Dec 2017	Director	PTT Global LNG Company Limited

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years				
					Period	Position	Function/Company/Type of Business		
		<ul style="list-style-type: none"> Advanced Management Program 2006 (Executive Education Program), Harvard Business School, U.S.A. Energy Literacy for a Sustainable Future (Class 2), Thailand Energy Academy GE Energy Customer Executive Leadership Program (2012), GE Global Learning, Crotonville, U.S.A. Leadership Development Program III (2013), PTT Leading and Learning Institute (PLLI) 			2014 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTT FLNG Limited 		
					2012 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTTEP FLNG Holding Company Limited 		
					2008 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTTEP Southwest Vietnam Company Limited 		
					2008 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTTEP Hoan-Vu Company Limited 		
					2007 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTTEP Africa Investment Limited 		
					Other organizations				
					2017 - Present	<ul style="list-style-type: none"> VISTEC Council member 	<ul style="list-style-type: none"> Vidyasirimedhi Institute (VISTEC) 		
					2015 - Present	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Thailand Energy Academy 		
					2016 - Sep 2018	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Association 		
					2015 - Sep 2018	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PIN & P Learning Foundation 		
2014 - 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Thailand Energy Academy Thai-Myanmar Association for Friendship 							



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
Mr. Ampon Kittiampon Ex-Director (information as of last date of directorship on September 30, 2018)	63	Education	None	None	Other listed companies		
		<ul style="list-style-type: none"> Ph.D. Applied Economics Clemson University, South Carolina, U.S.A. M.S. Economics Northeastern University, Boston, U.S.A. B.A. Social Sciences, Kasetsart University 			<ul style="list-style-type: none"> 2009 - 2014 Chairman ● Thai Airways International Public Company Limited Mar - Jul 2014 Independent Director ● Thai Airways International Public Company Limited 	<ul style="list-style-type: none"> 2013 - 2014 Chairman ● Thai Smile Airways Company Limited 	
		Training of Thai Institute of Directors Association <ul style="list-style-type: none"> Director Certification Program (DCP) 80/2006 Other Trainings <ul style="list-style-type: none"> Chief Information Officer (CIO) (Class 3), The Office of the Civil Service Commission (OCSC) and National Science and Technology Development Agency The National Defence Course (Class 45), National Defence College 			Other organizations		
					Jan 2018 - Present	Sub-committee Member	<ul style="list-style-type: none"> State Enterprise Director's Screening Sub-committee, State Enterprise Policy Office (SEPO)
					2017 - Present	Chairman and Ex officio Member of the National Strategy Committee	<ul style="list-style-type: none"> The National Economic and Social Development Board (NESDB)
					2017 - Present	Director	<ul style="list-style-type: none"> Prime Minister Delivery Unit
					2016 - Present	Honorary Board Member in Economics, Public Sector Development Commission	<ul style="list-style-type: none"> Office of the Public Sector Development Commission (OPDC)

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
		<ul style="list-style-type: none"> ● Innovation for Economic Development (IFED), Harvard Kennedy School, U.S.A. ● Senior Executive Program on Industrial Business Development and Investment (Class 1), Institute of Business and Industrial Development 			2016 - Present	<ul style="list-style-type: none"> ● Commission Member by Expertise (Economics) 	<ul style="list-style-type: none"> ● Office of Insurance Commission
					2016 - Present	<ul style="list-style-type: none"> ● Advisor to Prime Minister, Honorary Member of The Secretariat of the Cabinet 	<ul style="list-style-type: none"> ● The Prime Minister's Office
					2014 - Present	<ul style="list-style-type: none"> ● Chairman of the Risk Oversight Committee 	<ul style="list-style-type: none"> ● The Bank of Thailand
					2014 - Present	<ul style="list-style-type: none"> ● Member 	<ul style="list-style-type: none"> ● The National Legislative Assembly
					2012 - Present	<ul style="list-style-type: none"> ● Committee 	<ul style="list-style-type: none"> ● The Council of Chulalongkorn University
					2012 - Present	<ul style="list-style-type: none"> ● Property Management Office 	<ul style="list-style-type: none"> ● Chulalongkorn University
					2012 - Present	<ul style="list-style-type: none"> ● Chairman of the Board of Directors 	<ul style="list-style-type: none"> ● Highland Research and Development Institute (Public Organization)
					2011 - Present	<ul style="list-style-type: none"> ● Honorary Committee 	<ul style="list-style-type: none"> ● The Council of Walailak University
					2011 - Present	<ul style="list-style-type: none"> ● Civil Service Commissioner 	<ul style="list-style-type: none"> ● The Office of the Civil Service Commission (OCSC)

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working experiences in the 5 preceding years		
					Period	Position	Function/Company/Type of Business
					2010 - Present	● Board Member	● His Royal Highness Crown Prince Maha Vajiralongkorn Scholarship Foundation
					2010 - Present	● President	● Research and Development Institute of Sufficiency Economy Philosophy Foundation
					2008 - Present	● Chairman	● State Resources Preparation
					2006 - Present	● Member	● The Office of the Council of State
					2013 – Aug 2018	● Chairman	● The Bank of Thailand
					2013 - 2017	● Board Member	● The National Economic and Social Development Board (NESDB)
					2013 - 2016	● Honorary Board Member	● National Science and Technology Development Agency
					2010 - 2016	● Secretary General	● The Cabinet
					2011 - 2015	● The Expert Judicial Administration Commissioner	● The Office of Judiciary
					2004 - 2013	● Board Member	● The Bank of Thailand
					2004 - 2013	● Member	● Monetary Policy Committee, Bank of Thailand

Criminal offense record during the past 10 years

- | | |
|---|----|
| a) Being adjudged of convicting a crime or being on trial for convicting a crime | No |
| b) Being adjudged bankrupt or a receiver is appointed | No |
| c) Being a management in the company or partnership which is adjudged bankrupt or a receiver is appointed | No |

Remarks: The name and number(s) of the authorized directors who may sign to bind the Company from November 6, 2018 are Mr. Wirat Uanarumit, Mr. Twarath Sutabutr, and Mr. Pitipan Teparitimgorn. Two of the above three directors can sign jointly and affix the Company's seal, or Mr. Phongsthorn Thavisin, the President, can sign singly.

2. Management

2.1 As of January 1, 2019, PTTEP management team had 19 personnel as defined by the Capital Market Supervisory Board. Details are shown below.

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years		
					Period	Position	Function/ Company/ Type of Business
Mr. Phongsthorn Thavisin President and Chief Executive Officer	Please see part 1 for details						
Mr. Montri Rawanchaikul Executive Vice President, Strategy and Business Development Group	54	M.Sc. (Exploration Geophysics), University of New South Wales, Australia B.Sc (Physics), Chiang Mai University	0.00049 (19,550 shares)	None	Oct. 2017 – Present	Executive Vice President, Strategy and Business Development Group	PTTEP
					Aug. – Dec. 2018	Project Champion, Spend Smart	PTTEP
					Nov. 2017 – Sep. 2018	Acting Senior Vice President, New Business Unit	PTTEP
					Oct. 2016 – Sep. 2017	Acting Executive Vice President, Strategy and Business Development Group	PTTEP
					Sep. – Oct. 2016	Senior Vice President, International Asset	PTTEP
					Jul. – Aug. 2016	Senior Vice President, attached to Production Asset and Operations Support Group	PTTEP
					Jul. 2013 – Jul. 2016	Senior Vice President, Australia Asset, seconded as General Manager, Australia Asset, PTTEP Australasia, Australia	PTTEP
					Nov. 2009 – Jun. 2013	Vice President, Oman Asset, seconded as General Manager, Oman Asset, PTTEP Oman, Oman	PTTEP

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years		
					Period	Position	Function/ Company/ Type of Business
Mr. Vuthiphon Thuampoomngam Chief Operating Officer, Production Asset and Supply Chain Management Group	58	M.E. (Chemical Engineering), Chulalongkorn University B.Sc. (Material Science), Chulalongkorn University	0.00148 (58,889 shares)	None	Jan. 2019 - Present	● Chief Operating Officer, Production Asset and Supply Chain Management Group	PTTEP
					Oct. - Dec. 2018	● Executive Vice President, Production Asset Group	PTTEP
					Oct. 2018	● Acting Senior Vice President, International Asset	PTTEP
					Aug. - Sep. 2018	● Executive Vice President, Engineering and Development Group and Acting Senior Vice President, Development Project Division	PTTEP
					Jan. - Jul. 2018	● Executive Vice President, Engineering and Development Group	PTTEP
					Jan. 2015 - Dec. 2017	● Senior Vice President, Thai Offshore Asset	PTTEP
					Apr. 2013 - Dec. 2014	● Senior Vice President, Arthit Asset	PTTEP
					Oct. 2018 - Present	● Executive Vice President, Geosciences, Subsurface and Exploration Group	PTTEP
					Jul. - Sep. 2018	● Acting Executive Vice President, Geosciences and Exploration Group	PTTEP
					Jan. 2016 - Jun. 2018	● Senior Vice President, Geosciences and Technology Division	PTTEP
Mr. Kanok Intharawijitr Executive Vice President, Geosciences, Subsurface and Exploration Group	57	B.Sc. (Geology), Chiangmai University	0.00101 (40,231 shares)	None	Nov. 2014 - Dec. 2015	● Senior Vice President, Exploration Project Division	PTTEP
					Oct. 2011 - Oct. 2014	● Senior Vice President, Myanmar Asset, seconded as General Manager, PTTEP International Limited, Union of Myanmar	PTTEP



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years		
					Period	Position	Function/ Company/ Type of Business
Mr. Chayong Borisuitsawat Executive Vice President, Business and Organization Transformation Group	51	B.E. (Petroleum), Chulalongkorn University	0.00139 (55,096 shares)	None	Nov. 2018 - Present	● Executive Vice President, Business and Organization Transformation Group	PTTEP
					Oct. 2018	● Executive Vice President, Operations Support Group	PTTEP
					Nov. 2017 - Sep. 2018	● Acting Executive Vice President, Operations Support Group	PTTEP
					Jul. 2016 - Oct. 2018	● Senior Vice President, assigned as Project Champion, SPEND SMART Project	PTTEP
					2015 - Aug. 2016	● Senior Vice President, Thai Onshore Asset	PTTEP
					Nov. - Dec. 2014	● Senior Vice President, Safety, Security, Health and Environment Division	PTTEP
					Nov. 2013 - Oct. 2014	● Acting Senior Vice President, Safety, Security, Health and Environment Division	PTTEP
					Jan. 2019 - Present	● Executive Vice President, Finance and Accounting Group	PTTEP
					2016 - 2018	● Executive Vice President, Group Corporate Finance and Strategy	PTT
					2014 - 2015	● Vice President, Financial Strategy and Policy	PTT
2011 - 2014	● Vice President, Financial Strategy & Policy	PTT					
Mr. Sumrid Sumneing Executive Vice President, Finance and Accounting Group	54	M.BA (Business Administration), Kasetsart University B.Sc. (Accounting), Thammasart University	0.00006 (2,500 shares)	None	Jan. 2019 - Present	● Executive Vice President, Finance and Accounting Group	PTTEP
					2016 - 2018	● Executive Vice President, Group Corporate Finance and Strategy	PTT

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years		
					Period	Position	Function/ Company/ Type of Business
Mr. Chatchawal Eimsiri Executive Vice President, seconded to PTT Natural Gas Distribution Company Limited (PTT NGD)	59	M.Sc. (Operation Research), London School of Economics and Political Science, University of London, United Kingdom B. Sc. (Mathematics), Imperial College of Science and Technology University of London IOD: DCP 91 (2007)	0.00101 (40,078 shares)	None	Feb. 2015 - Present Aug. 2014 - Jan. 2015 2011 - Jul. 2014	<ul style="list-style-type: none"> Executive Vice President, seconded as President, PTT Natural Gas Distribution Company Limited Executive Vice President, attached to President and Chief Executive Officer Executive Vice President, seconded to PTT Public Company Limited 	PTT NGD PTTEP PTT
Mrs. Suchitra Suwansinpan Executive Vice President, seconded to PTT Global LNG Company Limited	58	M.E. (Energy Technology), Asian Institute of Technology B.E. (Chemical), King Mongkut Institute of Technology Thonburi	Self: 0.00268 (106,465 shares) Spouse/ Cohabiting Couple: 0.00001 (300 shares) Total: 0.00269 (106,765 shares)	None	Oct. 2016 - Present Dec. 2015 - Oct. 2016 2011 - Nov. 2015	<ul style="list-style-type: none"> Executive Vice President, seconded as Managing Director, PTT Global LNG Executive Vice President, Strategy and Business Development Group Senior Vice President, Corporate Strategy Division 	PTT Global LNG PTTEP PTTEP
Mr. Yongyos Krongphanich Executive Vice President, seconded as Executive Vice President, Group Corporate Finance and Strategy at PTT	58	M.Sc. (Accounting), Thammasat University B.Sc. (Accounting), Chulalongkorn University	0.00268 (106,445 shares)	None	Jan. 2019 - Present Oct. - Dec. 2018 Oct. - Dec. 2018 Jul. 2014 - Sep. 2018 Jan. 2013 - Jun. 2014	<ul style="list-style-type: none"> Executive Vice President, seconded as Executive Vice President, Group Corporate Finance and Strategy at PTT Executive Vice President, Finance and Accounting Group Acting Senior Vice President, Finance Division Senior Vice President, Finance Division Senior Vice President, Finance and Strategic Information Technology Division 	PTT PTTEP PTTEP PTTEP PTTEP

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years		
					Period	Position	Function/ Company/ Type of Business
Mr. Suksant Ongvises Acting Executive Vice President, Engineering, Development and Operations Group	54	B.E. (Chemical), University of Newcastle, Australia	0.00070 (27,681 shares)	None	Oct. 2018 - Present	● Acting Executive Vice President, Engineering, Development and Operations Group	PTTEP
					Mar. 2017 - Oct. 2018	● Senior Vice President, Engineering and Construction Division	PTTEP
					Apr. - Sep. 2018	● Acting Vice President, M3 Development Project	PTTEP
					Jul. 2016 - Feb. 2017	● Acting Senior Vice President, Engineering and Construction Division	PTTEP
					Jan. 2015 - Jun. 2016	● Vice President, Algeria Development Project	PTTEP
					Feb. 2010 - Dec. 2014	● Vice President, Myanmar Construction Project	PTTEP
					Oct. 2018 - Present	● Acting Executive Vice President, Corporate Affairs and Assurance Group	PTTEP
Ms. Natruedee Khositaphai Acting Executive Vice President, Corporate Affairs and Assurance Group	53	M.BA (Business Administration), Sasin Graduate Institute of Business Administration Chulalongkorn University B.E. (Petroleum), Chulalongkorn University	Self: 0.00271 (107,457 shares) Spouse/ Cohabiting Couple: 0.00025 (10,000 shares) Total: 0.00296 (117,457 shares)	None	Oct. 2018 - Present	● Acting Executive Vice President, Corporate Affairs and Assurance Group	PTTEP
					Oct. - Dec. 2018	● Acting Senior vice President, Corporate Communications and Public Affairs Division	PTTEP
					Nov. 2017 - Sep. 2018	● Senior vice President, International Asset	PTTEP
					Jul. - Nov. 2017	● Acting Senior vice President, International Asset	PTTEP
					May 2016 - Jun. 2017	● Vice President, assigned as Project Manager, SAVE to be SAFE Project	PTTEP
					Jan. 2015 - Apr. 2016	● Vice President, Strategic Planning Department	PTTEP
					Feb. - Dec. 2014	● Vice President, International Asset Planning Department	PTTEP
Jun. 2011 - Jan. 2014	● Vice President, Myanmar JV Asset	PTTEP					

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years		
					Period	Position	Function/ Company/ Type of Business
Ms. Jaroonsri Wankertphon Senior Vice President, Accounting Division	53	M.Sc. (Financial Accounting), Thammasat University B. BA. (Business Administration) (2 nd Class Honours), Chulalongkorn University IOD: DCP 220 (2016)	0.00184 (73,228 share)	None	Jul. 2016 - Present	● Senior Vice President, Accounting Division	PTTEP
					Oct. - Dec. 2018	● Acting Vice President, Financial Accounting Department	PTTEP
					Jul. - Sep. 2018	● Acting Vice President, Accounting Policy and Solution Department	PTTEP
					Oct. 2015 - Jun. 2016	● Acting Senior Vice President, Accounting Division	PTTEP
					Jul. 2014 - Jun. 2016	● Vice President, Accounting Policy and Solutions Department	PTTEP
					Jul. 2013 - Jun. 2014	● Vice President, Managerial and Accounting Department	PTTEP
					Jan. 2019 - Present	● Senior Vice President, Finance Division	PTTEP
Mrs. Chanamas Sasnanand Senior Vice President, Finance Division	49	M.B.A. (Business Administration), University of South Carolina, U.S.A. B. BA. (Business Administration), Chulalongkorn University	0.00114 (45,411 shares)	None	Apr. - Dec. 2018	● Senior Vice President, Internal Audit Division	PTTEP
					Jan. - Apr. 2018	● Acting Senior Vice President, Internal Audit Division	PTTEP
					Jul. 2014 - Dec. 2017	● Vice President, Capital and Investor Relations Department	PTTEP
					2010 - Jun. 2014	● Vice President, Finance Department	PTTEP
					Aug. 2017 - Present	● Vice President, Insurance Department	PTTEP
Mrs. Netrsuda Pokkasorn Vice President, Insurance Department	53	M.Sc. (Economics), University of Missouri, U.S.A. B.Sc.(Economics) Chulalongkorn University	0.00217 (86,005 shares)	None	Jan. 2011 - Jul. 2017	● Manager, Insurance	PTTEP



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years		
					Period	Position	Function/ Company/ Type of Business
Mr. Anutra Bunnag Vice President, attached to Finance Division, assigned as Managing Director, PTTEP Treasury Center Company Limited	55	M.Sc. (Finance), University of Massachusetts, U.S.A. B.Sc. (Chemistry), University of Bradford	None	None	May 2017 - Present	● Vice President, attached to Finance Division, assigned as Managing Director, PTTEP Treasury Center Company Limited	PTTEP Treasury Center
					Oct. 2016 - Apr. 2017	● Vice President, Treasury Department	PTTEP
					2011 - Sep. 2016	● Vice President, seconded as Vice President, Corporate Administration and Finance Department, Energy Complex (EnCo)	Energy Complex (EnCo)
Mr. Semsak Satchawannakul Vice President, Financial Accounting Department and Acting Vice President, Office Facility Management Department	50	M.Sc. (Business Administration), Thammasat University B.Sc. (Accounting), Thammasat University	0.00114 (45,215 shares)	None	Jan. 2019 - Present	● Vice President, Financial Accounting Department	PTTEP
					Jan. 2019 - Present	● Acting Vice President, Office Facility Management Department	PTTEP
					Jul. 2015 - Dec. 2018	● Vice President, Myanmar Business Support Department, seconded as Myanmar Business Support Manager, PTTEP International Limited, Union of Myanmar	PTTEP
Ms. Kanchanan Panananda Vice President, Capital and Investor Relations Department	48	M.Sc. (Business Administration), Thammasat University B.Sc. (Accounting), Thammasat University	0.00143 (56,604 shares)	None	Feb. 2014 - Jun. 2015	● Vice President, IT and Information Management Department	PTTEP
					Jan. 2017 - Present	● Vice President, Capital and Investor Relations Department	PTTEP
					Apr. 2015 - Dec. 2016	● Vice President, Managerial Accounting Department	PTTEP
					Jan. 2014 - Mar. 2015	● Manager, Accounting Policy	PTTEP
					Jan. 2010 - Dec. 2013	● Manager, seconded as Finance Manager, Indonesia Asset, Indonesia	PTTEP

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years		
					Period	Position	Function/ Company/ Type of Business
Mrs. Maneeya risukhumbowomchai Vice President, Tax Department and Acting Vice President, Accounting Policy and Solutions Department	44	B.Sc. (Accounting) Chulalongkorn University M.Sc. (Business Administration), Thammasat University	None	None	May 2015 – Present	● Vice President, Tax Department	PTTEP
					Oct.2018-Present	● Acting Vice President, Accounting Policy and Solutions Department	PTTEP
					Jan.2014 – Apr. 2015	● Manager, Tax Compliance	PTTEP
Ms. Pratamaporn Deesinthum Vice President, Managerial Accounting Department	46	M.Sc. (Business Administration), Thammasat University B.Sc. (Accounting), Chulalongkorn University	0.00134 (53,249 shares)	None	Apr. 2018 - Present	● Vice President, Managerial Accounting Department	PTTEP
					Jan. - Apr. 2018	● Acting Vice President, Managerial Accounting Department	PTTEP
					Jun. - Dec. 2017	● Senior Accountant, Thai Offshore Asset	PTTEP
					Apr. 2016 - May 2017	● Senior Accountant, assigned as Finance and Accounting Manager PTTEP Australasia, Australia	PTTEP
					Jan. - Jun. 2016 Jul. 2013 - 2015	● Senior Accountant ● Manager, Group Accounting Section	PTTEP PTTEP



2.2 As of January 1, 2019, PTTEP management who retired or rotated or resign during the Year 2018 had 9 personnel as defined by the Capital Market Supervisory Board. Details are shown below.

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the Past 5 Years		
					Period	Position	Function/ Company/ Type of Business
Mr. Somporn Vongvuthipornchai	60	Please see part 1 for details					
Mrs. Pranot Tirasai	60	LL.B (Laws), Thammasat University IOD: DCPU 5 (2015) CSP (2014) DCP 185 (2014)	0.00437 (173,657 shares)	None	Jan. 2019 - Present Oct. - Dec. 2018 Jan. 2017 - Sep. 2018 Jan. 2017 - Present Oct. 2013 - Dec. 2016 Apr. 2010 - Sep. 2013	<ul style="list-style-type: none"> Secretary to the Board of Directors Executive Vice President, assigned as Secretary to the Board of Directors Executive Vice President, Corporate Affairs and Assurance Group Acting Senior Vice President, Corporate Secretary Division Senior Vice President, Corporate Secretary Division Senior Vice President, Legal Division 	PTTEP PTTEP PTTEP PTTEP PTTEP PTTEP
Mr. Waranon Laprabang	60	B.Sc. (Geology), Chiang Mai University	0.00278 (110,521 shares)	None	Oct. - Dec. 2018 Nov. 2017 - Sep. 2018 Sep. 2016 - Dec. 2017 Nov. 2014 - Aug. 2016 Apr. 2013 - Oct. 2014 Feb. 2011 - Mar. 2013	<ul style="list-style-type: none"> Senior Advisor Acting Executive Vice President, Production Asset Group Senior Vice President, Thai Onshore Asset Senior Vice President, Myanmar Asset, seconded as General Manager, PTTEP International Limited, Union of Myanmar Senior Vice President, Exploration and New Venture Division Senior Vice President, Arthit Asset 	PTTEP PTTEP PTTEP PTTEP PTTEP PTTEP

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the Past 5 Years		
					Period	Position	Function/ Company/ Type of Business
Mr. Prapat Sophonpongipat	60	M.Sc. (Geology), New Mexico, Institute of Mining and Technology, U.S.A.	0.00178 (70,589 shares)	None	Jan. 2016 - Jun. 2018	● Executive Vice President, Geosciences and Exploration Group	PTTEP
					Jan. - Dec. 2015	● Senior Vice President, Geosciences and Technology Division	PTTEP
					Oct. 2011 - Dec. 2014	● Senior Vice President, International Asset	PTTEP
Mr. Thiti Mekavichai	57	B.Sc. (Geography), Srinakharinwirot (Prasarnmitr) University	0.00241 (95,843 shares)	None	Sep. 2012 - Sep. 2018	● Executive Vice President, Human Resources and Business Services Group	PTTEP
					2011 - Aug. 2012	● Senior Vice President, Human Resources Division	PTTEP
Ms. Pannalin Mahawongtikul	54	M.Sc. (Business Administration), Thammasat University	0.00092 (36,587 shares)	None	Oct. 2018 - Present	● Chief Financial Officer	PTT
					Jan. 2016 - Sep. 2018	● Executive Vice President, Finance and Accounting Group	PTTEP
					2014 - 2015	● Executive Vice President, Corporate Finance	PTT
					2012 - 2014	● Vice President, Strategy and Financial Policy	PTT
Mrs. Sirirat Sararattanakul	57	M.Sc. (Accounting), Thammasat University	0.00565 (224,139 shares)	None	Oct. 2018	● Vice President, attached to Finance and Accounting Group	PTTEP
					Jan. 2014 - Sep. 2018	● Vice President, Financial Accounting Department	PTTEP
					2008 - 2013	● Vice President, Office Facility Management Department	PTTEP



Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the Past 5 Years			Function/ Company/ Type of Business
					Period	Position	Period	
Mr. Sakchai Sarawek	49	M.Sc. (Accounting Information System), Chulalongkorn University B.Sc. (Accounting), Thammasart University	Self: 0.00081 (32,012 shares) Spouse/ Cohabiting Couple: 0.00010 (4,000 shares) Total: 0.11191 (36,012 shares)	None	Jul. 2018 - Present	● Vice President, assigned as Senior Manager Support Division, CPOC, Malaysia	PTTEP	
					Jul. 2016 - Jun. 2018	● Vice President, Accounting Policy and Solutions Department		
					Jan. 2009 - Jun. 2016	● Vice President, attached to Australia Asset, seconded as Finance and Accounting Manager, PTTEP Australasia, Australia		
Mrs. Thanyaporn Vangvasu	60	B.BA (Accounting), Assumption University	0.00391 (155,147 shares)	None	May 2015 - Feb. 2018	● Specialist	PTTEP	
					2009 - Apr. 2015	● Vice President, Tax Department	PTTEP	

3. Corporate Secretary

Name/Position	Age (year)	Education/Training	% of Shareholding	Family Relationship among Directors and Executives	Working Experiences in the 5 Preceding Years			Function/ Company/ Type of Business
					Period	Position		
Mr. Yongsith Kosawititkul Acting Senior Vice President, Corporate Secretary, assigned as Company Secretary, and Vice President, Corporate Management Department	47	M.CL (Laws), The University of Virginia M.CL (Laws), The University of Pennsylvania LL.B (Laws), Thammasat University <u>IOD:</u> <ul style="list-style-type: none"> ● Company Secretary Program ● Board Reporting Program ● Company Reporting Program <u>Other Trainings:</u> <ul style="list-style-type: none"> ● 2016 - 2017 GRC online : Anti-Corruption by PTTEP ● Management Skills for New Supervisor by APM Learning Co., Ltd. 	0.00100 (39,737 shares)	None	Oct. 2018 - Present May 2017 - Present Jul. 2014 - Apr. 2017 Jan. - Jun. 2014 Apr. 2006 - Dec. 2013	<ul style="list-style-type: none"> ● Acting Acting Senior Vice President, Corporate Secretary, assigned as Company Secretary ● Vice President, Corporate Management Department ● Vice President, Subsidiary Secretariat and Governance Department ● Senior Legal Counselor ● Legal Counselor 	PTTEP PTTEP PTTEP PTTEP PTTEP	

▶ Attachment 2: Directors of Subsidiaries and Associated Companies



1. **List of PTTEP's Subsidiaries:** As of December 31, 2018, there were 63 subsidiaries.

Name (the list only includes directors designated by the PTTEP Group)	Subsidiary														
	PTTEP AU	PTTEP AO	PTTEP AP	PTTEP AB	PTTEP AAA	PTTEP AAO	PTTEP AT	PTTEP AAS	PTTEP BL	PTTEP CA	PTTEP CIF	CEEAL	CEMROL	PTTEP MZA1	PTTEP FH
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mr. Vuthiphon Thuampoomngam			/	/	/	/	/	/							
Mr. Kanok Intharawijitr			/	/	/	/	/	/							
Mr. Nirandorn Rojanasomsith	/	/	/	/	/	/	/	/							
Mr. Pakawet Booranawat	/	/	/	/	/	/	/	/							
Ms. Sirlene Santos Brêtas de Noronha									/						
Ms. Ratchada Lertwanichwatana										/	/				
Mr. Don Greenfield										/					
Mr. Yongyos Krongphanich											/				
Mr. Chaiyaphon Chirakorn											/				
Mr. Direk Wangudomsuk												/	/	/	
Ms. Stella Kattashi												/	/	/	
Ms. Kanchanan Panananda															/
Ms. Montana Chai-oon															/

Remarks: / = Director

¹ Notification of the Securities and Exchange Commission No. Kor Chor. 17/2551, Re: Determination of Definitions in Notifications Relating to Issuance and Offer for Sale of Securities

Name (the list only includes directors designated by the PTTEP Group)	Subsidiary														
	PTTEP HK	PTTEP HKO	PTTEP MENA	CEKL	PTTEPO	PTTEPH	SHL	PTTEP IH	PTTEP ID	PTTEP AI	JV Marine	PTTEP NL	ATL	PTTEP SVPC	PTTEP SD
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ms. Jaroonsri Wankertphon	/					/									/
Ms. Kanchanan Panananda	/							/							
Mr. Noppadol Pinpipat		/										/			
Mr. Montri Rawanchaikul		/			/										
Mr. Kanok Intharawijitr		/													
Mr. Anusorn Tepjitar			/												
Ms. Pratamaporn Deesrinthum			/												
Mr. Direk Wangudomsuk				/											
Mr. Suksant Ongvises				/						/		/			
Mr. Soraphol Asavathevakiet					/										
Mr. Polasant Kullavanijaya							/								/
Mr. Nopadon Chinabutr							/								
Mr. Titi Thongjen									/						/
Mr. Vuthiphon Thuampoomngam											/				
Mr. Denkey Thatchaichawalit											/				
Mr. Piya Sukhumpanumet													/		
Mr. Kittisak Hiranyaprathip													/		

Remarks: / = Director

Name (the list only includes directors designated by the PTTEP Group)	Subsidiary														
	PTTEP AG	PTTEP HV	PTTEP HL	PTTEP KV	PTTEP SV	PTTEP SA	PTTEP SMD	PTTEP ML	PTTEP SS	PTTEP SM	PTTEP MEP	PTTEP NH	PTTEP BI	PTTEP NC	PTTEP Services
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Mr. Peerapong Chailapo	/														
Mr. Suksant Ongvises	/														
Mr. Monton Santivongskul		/	/		/										
Mr. Anun Chonchawalit				/			/	/				/			
Mr. Kittisak Hiranyaprathip				/											
Mr. Supakorn Krisadasima					/										
Mr. Piya Sukhumpanumet						/									
Mr. Prawat Thong-In						/									
Mr. Titi Thongjen							/	/	/	/					
Mr. Wanchai Mahasuwannachai										/					
Mr. Piya Wichitchanya											/				
Mr. Noppadol Pinpipat											/		/		
Vistra Management Services (Netherlands) B.V.												/	/	/	
Mrs. T.S.M. Van Dijk												/	/	/	
Mr. Chalongrut Ya-anan													/		
Ms. Ratchada Lertwanichwatana														/	
Mr. Putikarn Aurat															/
Ms. Sujinda Phloi-Montri															/

Remarks: / = Director

Name (the list only includes directors designated by the PTTEP Group)	Subsidiary														
	PTTEP TC	PTTEPI	PTTEP G7	PTTEPS	Orange	PTTEP BC	PTTEP EH	PTTEP ED	EP-Tech	ARV	COVE	PTTEP SP	EnCo	PTT GL	CPOC
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ms. Jaroonsri Wankertphon	/														
Mr. Anutra Bunnag	/											/			
Mr. Chayong Borisuitsawat		/					/								
Mr. Chula Manonda		/							/						
Mr. Denkey Thatchaichawalit			/		/										
Mr. Veerawat Aumsoi				/											
Mr. Nopadon Chinabutr				/											
Mr. Kitchai Pitiwiwat								/							
Mr. Nopasit Chaiwanakupt					/										
Mr. Sermsak Satchawannakul					/										
Mr. Terapol Phoonsiri						/									
Mr. Chalongrut Ya-anan						/									
Ms. Kanchanan Panananda							/								
Ms. Kanita Sartwattayu								/							
Mr. Bundit Pattanasak									/	/					
Mr. Thanasit Vichaiapirojwong													/		
Mr. Anusorn Wuthijaroen													/		
Mr. Vuthiphon Thuampoomngam														/	/
Mr. Montri Rawanchaikul														/	
Mr. Bundhit Eua-arporn										/					
Mr. Yongyos Krongphanich										/			/		
Mr. Mana Rojpibulstit											/				
Mr. Direk Wangudomsuk											/				
Mr. Tawee Limsoontorn												/			
Mr. Anun Chonchawalit															/

Remarks: / = Director

Name (the list only includes directors designated by the PTTEP Group)	Subsidiary		
	Mangalalu	Troughton Island	Natuna
	61	62	63
Mr. Gavin Ryan	/	/	
Mr. Peerapong Hansakwong	/	/	
Mrs. T.S.M. Van Dijk			/
Mr. Titi Thongjen			/

Remarks: / = Director

2. List of PTTEP's Associated Companies: As of December 31, 2018, there were 13 associated companies.

Name (the list only includes directors designated by the PTTEP Group)	Associated Company						
	PTT Digital	B 8/32 Partners	MGTC	Erawan FSO 2 Bahamas	SPSE	MZ LNG 1	PTTGLI
	1	2	3	4	5	6	7
Mr. Suksant Ongvises	/						
Mr. Sermsak Satchawannakul		/					
Mr. Denkey Thatchaichawalit		/		/			
Mr. Piya Sukhumpanumet			/				
Mr. Nopasit Chaiwanakupt*			/				
Mr. Siriphong Fuenglikhit					/		
Ms. Patchara Romyanan						/	
Mr. Luck Tanasomwang							/

Remarks: / = Director

* = Alternate Director

Six associated companies which do not have any directors from PTTEP are:

- (1) TPC and Asia Pacific Marine Service which are governed by shareholders' meetings.
- (2) HV JOC, HL JOC, GBRS and LAL which are governed by the Management Committee.

Attachment 3: Details of Head of the Internal Audit Division and Head of the the Compliance Function



1. Details of Head of the Internal Audit Division as of January 1, 2019 are shown in the table below.

Name/Position	Education	Trainings	Work Experience in the Past 5 Years	
			Period	Position/Unit
Ms. Yaninee Wajepratubjitt Acting Senior Vice President, Internal Audit Division	<ul style="list-style-type: none"> M.B.A. (Business Administration), Chulalongkorn University B.Acc. (Accounting), University of the Thai Chamber of Commerce 	<ul style="list-style-type: none"> Safety Officer Training for Management Level The 4 Disciplines of Execution, PacRim Consultancy Co., Ltd. Stakeholders in the Supply Chain Management, CP Training Consortium Ltd. EP-LEAD III Program, IMD Behavioral Based Safety (BBS), Ken Knowledge International Pte Ltd. GRC Online Training: Anti-Corruption, PTTEP 	<ul style="list-style-type: none"> Jan. 2019 – Present Jul. – Dec. 2018 Jul. 2015 – Jun. 2018 Nov. 2011 – Jun. 2015 	<ul style="list-style-type: none"> Acting Senior Vice President, Internal Audit Division, PTTEP Acting Senior Vice President, Enterprise Risk Management and Internal Control Division, PTTEP Vice President, attached to International Asset, seconded as Senior Manager, Business Support Division, Carigali-PTTEPI Operating Company Sdn. Bhd., (CPOC), Malaysia, PTTEP Vice President, Myanmar Business Services Department, Myanmar Asset, PTTEP

In addition, details of Mrs. Chanamas Sasnanand who held the position of Head of the Internal Audit Division during 2018 are as shown under the "Management" part of the "Attachment 1: Information of the Board of Directors, Management, Controlling Persons, and Corporate Secretary" section.

2. Details of Head of the Compliance Function as of January 1, 2019 are shown in the table below.

Name/Position	Education	Trainings	Work Experience in the Past 5 Years	
			Period	Position/Unit
Mr. Kanes Supyaboontrod Vice President, Governance, Compliance, and Internal Control Department	<ul style="list-style-type: none"> LLM., University of Pennsylvania, U.S.A. B.A. (Laws), Chulalongkorn University 	<ul style="list-style-type: none"> New Trade Competition Act, the Ministry of Commerce FCPA and UK Bribery Act, Allen & Overy LLP 	Jan. 2019 – Present	<ul style="list-style-type: none"> Vice President, Governance, Compliance, and Internal Control Department, PTTEP
			Oct. – Dec. 2018	<ul style="list-style-type: none"> Vice President, Compliance Department, PTTEP
			2014 – Jun. 2018	<ul style="list-style-type: none"> Legal Counsel, Thai Union Group Public Company Limited

Details of Head of the Compliance Function who retired during 2018

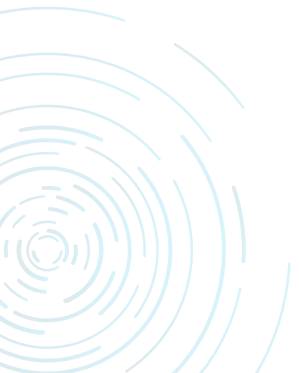
Name/Position	Education	Trainings	Work Experience in the Past 5 Years	
			Period	Position/Unit
Mr. Verasak Manchuwong Vice President, Compliance Department	B.B.A. (Accounting), Thammasat University	<ul style="list-style-type: none"> Thailand's 8th National Conference on Collective Action Against Corruption: "Bright Spot" SD Forum 3/2017 "Sustainable Investment: Opportunity of Long Term Growth for Businesses and Investors", the Stock Exchange of Thailand (SET) 2017 IIA Thailand Annual Conference Contract Management under the Government Procurement and Supplies Management Act, B.E. 2560 FCPA Investigations: Combating Corruption in International Business Annual Compliance & Ethics Institute, the Society of Corporate Compliance and Ethics (SCCE) Fraud and Corruption Super Strategies The Audit Best Practices Chief Audit Executive Summit 	Oct. 2013 – Sep. 2018	<ul style="list-style-type: none"> Vice President, Compliance Department, PTTEP
			2003 – Sep. 2013	<ul style="list-style-type: none"> Vice President, Internal Audit Department, PTTEP

Remarks: Since January 1, 2019, the Compliance Department has been renamed to the Governance, Compliance, and Internal Control Department, as part of the organizational restructuring of PTTEP to centralize all compliance works into the same function.



▶▶ Attachment 4: Asset Revaluation

- None -



▶ Abbreviations

BBL	Barrel
BOE	Barrel of Oil Equivalent
BOED	Barrels of Oil Equivalent per Day
BPD	Barrels per Day
BSCF*	Billion Standard Cubic Feet
BTU	British Thermal Unit
CNG¹	Compressed Natural Gas
DCQ	Daily Contract Quantity
GSA	Gas Sales Agreement
HOA	Heads of Agreement
KBD	Thousand Barrels per Day
LNG²	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MMBBL	Million Barrels
MMBOE	Million Barrels of Oil Equivalent
MMBPD	Million Barrels per Day
MMSCF*	Million Standard Cubic Feet
MMSCFD*	Million Standard Cubic Feet per Day
MMSTB*	Million Stock-Tank Barrels
MMSTBD*	Million Stock-Tank Barrels per Day
NGV	Natural Gas for Vehicles
STB*	Stock-Tank Barrel
STBD*	Stock-Tank Barrel per Day
TCF	Trillion Cubic Feet
TPD	Tons per Day
USD	US Dollar

* Referring to gas and oil at standard condition, 60° F and 1 atmosphere (ATM)

¹ Natural gas liquefied by increasing pressure

² Natural gas liquefied by decreasing temperature



PTT Exploration and Production Public Company Limited

555/1 Energy Complex Building A, 6th Floor & 19th - 36th Floor,
Vibhavadi-Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand
Phone: 66 (0) 2537 4000 Fax: 66 (0) 2537 4444

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Carbon Dioxide uptake	10.42	Tons
Water saving	29,447	Liters
Steam Power saving	4.05	Tons
Total Power saving	674	Units

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