



2017 ANNUAL REPORT



RESPONSIBLE ORGANIZATION

PTTEP is aware of the responsibilities in the areas we have operations to achieve a balance between energy exploration and energy security and to ensure the well-being of the community and the environment towards being a sustainable organization. As such we continue to develop our knowledge, technology and innovation and stress the importance to comply with the corporate governance, related laws and regulations. We strongly support safety and fundamental human rights. The company takes into account all impacts to our stakeholders by ensuring a balance between business, society and the environment.



OPERATIONAL EXCELLENCE

PTTEP operates its business to ensure we grow sustainably through maintaining a balance of operational excellence and emphasizing research and development of technology and innovation as the keys to exploration success and production efficiency. The continual analysis and management of opportunities and risks associated with the business will ensure the company maintains its competitive advantages and consistently delivers long-term value to all stakeholders.





GOOD CORPORATE GOVERNANCE

PTTEP conducts its business with transparency and equality as reflected in the principles of our Good Corporate Governance & Business Ethics. PTTEP is committed to doing its business within the Universal Declaration of Human Rights as well as ensuring the regular promotion and development of all employees on good corporate governance and the code of conduct.

GOOD CORPORATE CITIZENSHIP

PTTEP is committed to improving the quality of life in the communities surrounding our operations under the concept of 'An Explorer and Guardian for Environmental Protection and Sustainable Community Development', which focuses on developing 4 primary aspects: environment, basic needs, education and culture. Not only does it respond to the immediate communities' needs and stakeholders' expectations, but also it reflects our commitment to be a socially responsible company to create a long-term value and sustainable growth for society as a whole.

Contents

04

Financial Highlights

06

Message from
Chairman and CEO

08

Our Business

09

Policy and Business
Operations Overview

27

Nature of Business Operation

47

Risk Factors

55

PTTEP and Our
Subsidiaries' Assets

62

Legal Dispute

63

General and Other
Significant Information

83

Corporate Governance

84

Securities and Shareholders

92

Management Structure

121

Corporate Governance

170

Corporate Social Responsibility

172

Internal Controls
and Risk Management

180

Connected Transactions



191

Financial Position and Performance

192

Significant Financial Information

198

Management Discussion
and Analysis of Operating Results

215

Attachments

216

Information of the Board of Directors,
Management, Controlling Persons,
and Corporate Secretary

262

Directors of Subsidiaries
and Associated Companies

267

Details of Head of the Internal Audit Division
and Head of the Compliance Department

270

Asset Revaluation

Financial Highlights

Net Cash from Operating Activities*

2,864	2,308	2,687
2015	2016	2017

Net Cash Used in Investing Activities

(1,872)	(1,002)	(1,576)
2015	2016	2017

Net Cash Used in Financing Activities

(1,662)	(544)	(665)
2015	2016	2017

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

3,930	3,260	4,022
2015	2016	2017

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

3,260	4,022	4,468
2015	2016	2017

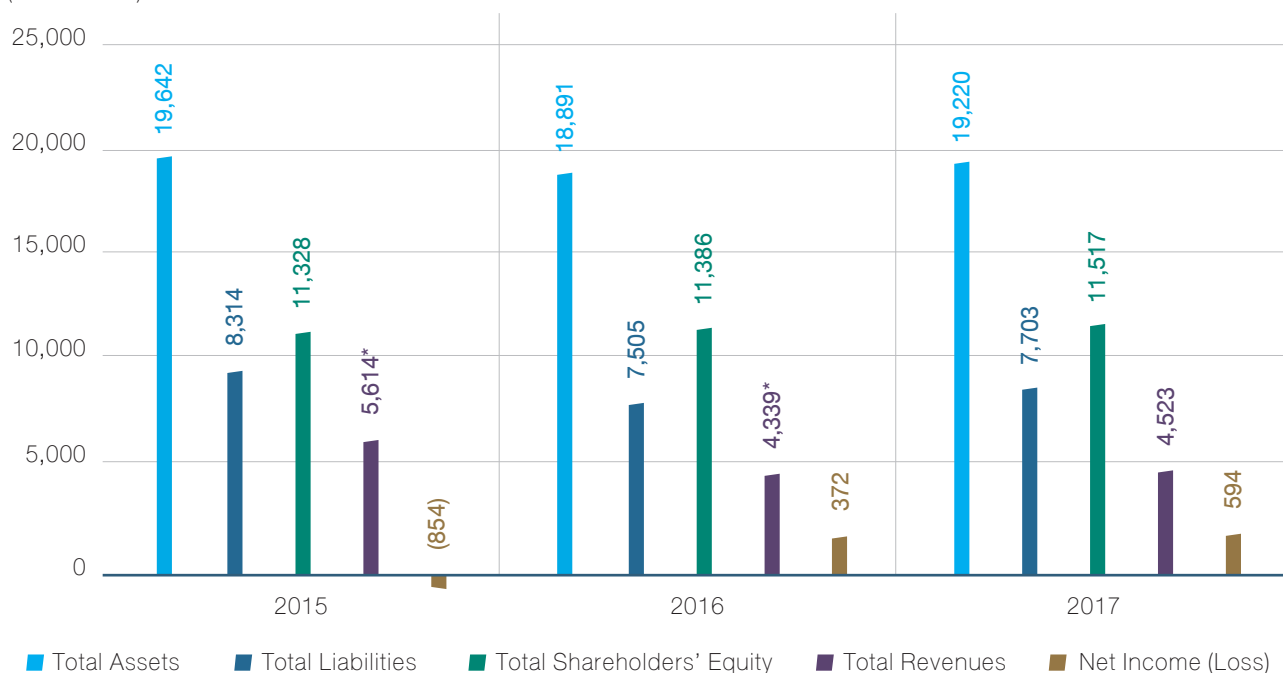
(Million USD)

* Including effect of exchange rate changes

** Including short term investment

Financial Highlights

(Million USD)







* Revenue of PTTEP OM was represented in discontinued operations

	Dividend per Share (Baht)	3.00	3.25	4.25*
		2015	2016	2017
	Dividend Yield (%)**	5.24	3.38	4.25
		2015	2016	2017

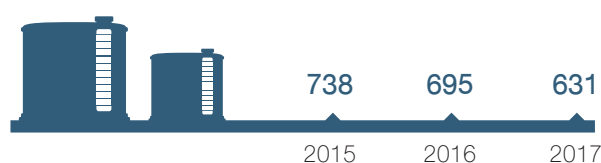
* The total dividend of 2017 will be 4.25 Baht per share including the interim dividend at the rate of 1.50 Baht per share and the second half-year operations dividend at the rate of 2.75 Baht per share. Payment of the interim dividend and the second half-year operations dividend will be proposed in the 2018 General Shareholder's Meeting on April 2, 2018 for acknowledgement and approval, respectively.

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

Financial Ratios		2015	2016	2017
	EBITDA to Revenue from Sales (%)	71	71	70
	Debt to Equity (times)	0.27	0.25	0.25
	Return on Equity (%)	(7)	3	5
	Return on Assets (%)	(4)	2	3

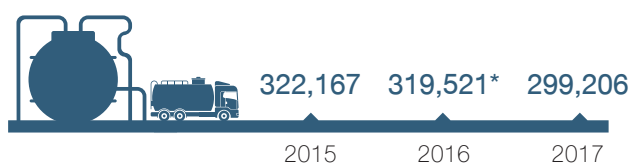
Petroleum Proved Reserves

(MMBOE)



Petroleum Sales Volumes

(BOED)



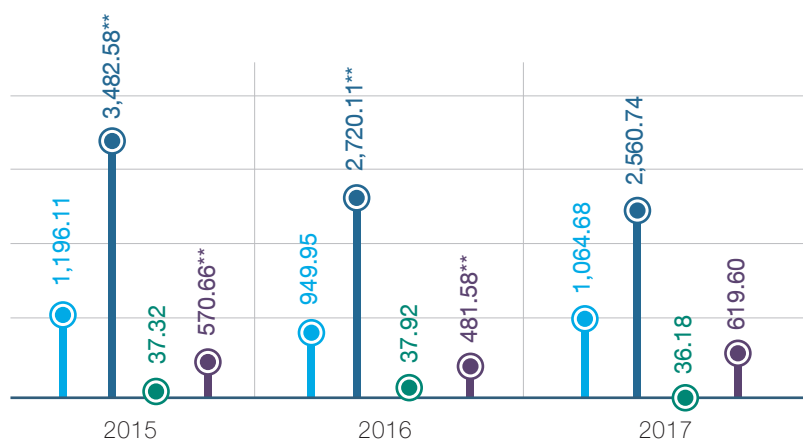
Volume

Products	2015	2016	2017
Crude Oil (MMBBL)	23.63	23.06	20.35
Natural Gas (MMSCF)	505,840.79	505,337.18*	473,696.75
Natural Gas (MMBOE)	81.05	81.05	76.29
LPG (Metric Tons)	96,529.19	96,731.01	88,981.10
LPG (MMBOE)	0.80	0.80	0.74
Condensate (MMBBL)	12.11	12.03*	11.83

Value

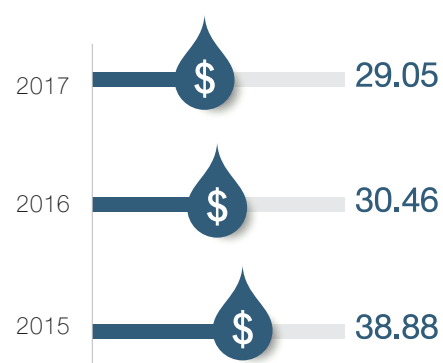
(Million USD)

-  Crude Oil
-  LPG
-  Natural Gas
-  Condensate



Unit Cost

(USD per BOE)



* Included sales volume of Oman 44 Project until August 2016

** Revenue of PTTEP OM was represented in discontinued operations

Message from Chairman and CEO

Dear Shareholders,

Despite the volatility and changes in business environment in the oil and gas industry in 2017, PTTEP remained resilient and was able to adjust our business plan and strategy to maintain our competitiveness and profitability. Oil prices remained the key factor affecting the performance of PTTEP. In spite of continued volatility, the prices recovered in 2017 with the Dubai crude oil price averaging 53.14 USD per barrel, compared to 41.27 USD per barrel in 2016. The LNG market continued to be in oversupply largely because of the start-up of new LNG projects in Australia, Russia and the United States. This kept the prices at a low level with the Asian Spot LNG price averaging 7.1 USD per million BTU in 2017. Weakened LNG prices in the global market negatively affected PTTEP's sales volume as Thailand increased LNG imports, resulting in reduced demand for domestic gas from the Gulf of Thailand.

PTTEP continued to operate under the "RESET REFOCUS RENEW" strategy with the direction and progresses made in 2017 as summarized below:

Manage Investment and Reduce Cost

To maintain profitability and provide returns to shareholders, PTTEP set the target to sustain production from existing projects at low operating costs by maximizing condensate and crude oil production in key projects in Thailand, Myanmar and Australia. With our ongoing commitment to reduce costs and increase efficiency, PTTEP was able to reduce unit costs from 30.46 USD per barrel of oil equivalent in 2016 to 29.05 USD per barrel of oil equivalent in 2017 maintaining its competitiveness against leading companies in the same industry.

Expand Investment to Increase Petroleum Reserves

Current global energy consumption still relies heavily on fossil fuels with crude oil, natural gas, and coal accounting for 84% of the global consumption. Nevertheless in the next 20 years, oil demand is projected to recede while demand for natural gas would grow from the industrial sector as the global economy expands. PTTEP's focus is on natural gas as reflected in our current sales volume mix of 70:30 natural gas to liquids, in line with the trend in increasing global gas demand. The Company is determined to increase petroleum reserves in the short and long terms through investment expansion in the areas that we have competitive advantage and experiences. We recently acquired 22.2222% in the Bongkot Project from SHELL and continue to look for new investment opportunities in producing or near-to-production assets



in the focus regions especially the Southeast Asia. We also place our focus on the preparation for bidding of expiring Bongkot and Erawan concessions in the Gulf of Thailand, accelerating investment decisions of key pre-development projects particularly the Mozambique Rovuma Offshore Area 1 Project and the Cash Maple Field in Australia as well as pursuing exploration of projects in our portfolio while also seeking new exploration projects in low cost areas such as Malaysia, where we recently submitted bids for two exploration blocks, and the Middle East and in high potential areas such as Mexico.

Enhance and Prepare for a New Business Future

PTTEP started to explore for diversification opportunities to enhance revenues and returns to shareholders in business relating to E&P. In 2017, the Company expanded cooperation with PTT in the LNG value chain by setting up a jointly-owned company, PTT Global LNG, through which, the Company invested in a 10% stake in the MLNG Train 9 Project, an LNG liquefaction project in Malaysia with a nameplate capacity of 3.6 million tons per annum.

PTTEP recognizes changes that are taking place in the energy sector, in particular global rise in renewable energy usage driven by concerns over pollution and global warming issues. As for Thailand, the government is revising Power Development Plan (PDP) to reflect this trend and the changing electricity consumption pattern. To prepare for these changes, PTTEP was restructured in November 2017. New Business unit was set up to review opportunities to invest in new areas, both E&P and non-E&P related, that offer long-term growth and can build upon PTTEP's expertise and experiences. The Business and Organization Transformation Unit was also created to transform people and process and embrace digital technology to enhance efficiency in E&P operations and support diversification efforts into new business. More concrete strategic direction and framework for new business and transformation program will be defined in 2018.



Annual Turnover of 2017

PTTEP's net profit totaled 594 MMUSD, increasing by 222 MMUSD or 60% compared to 2016 which had a net profit of 372 MMUSD. Sales revenue was 4,281 MMUSD, up 2% from 2016, with sales volume delivered on target at 299,206 barrels of oil equivalent despite lower gas nomination from buyers for PTTEP projects in the Gulf of Thailand. PTTEP reported a recurring net profit of 836 MMUSD and a loss on non-recurring items of 242 MMUSD, mainly derived from impairment charge from the revision of the Mariana Oil Sands development plan which was done in accordance with the accounting standards and had no impact on the Company's cash on hand or cash flows.

At the end of 2017, PTTEP upheld its strong financial position with total assets amounting to 19,220 MMUSD and total liabilities of 7,703 MMUSD; while a debt-to-equity ratio stood at less than 0.3 times which is in accordance with the Company's strategic policy with cash on hand of 4,468 MMUSD, ready to fund capital expenditures to maintain production, develop future projects in our pipeline, participate in bidding for expiring concession areas in the Gulf of Thailand as well as support investment opportunities through Merger and Acquisitions (M&A).

Sustainable Organization

PTTEP's Sustainable Development is aligned with global indices and UN principles. In 2017, PTTEP was selected as a member of the Dow Jones Sustainability Indices (DJSI) for the fourth consecutive year in the Oil and Gas Upstream & Integrated Industry sector; and for the second consecutive year, PTTEP was one of the 32 oil and gas companies selected as a member of the FTSE4Good

Index Series, in the category of FTSE4Good Emerging Index 2017. In addition, PTTEP received the Sustainability Report Award 2017 – Best Category and is also listed on the Thailand Sustainability Investment for 2017 (THSI), compiled and announced by the Stock Exchange of Thailand (SET) for listed companies with outstanding performance in business as well as on environmental, social and governance aspects.

Moreover, PTTEP recognizes the importance of technology development and innovation to enhance the Company's efficiency in the exploration and production of petroleum. In 2017, PTTEP promoted technology research and development in several areas including technology for subsea pipeline inspection, technology for decommissioning based on international standards, the use of electromagnetics to detect the flow of water and oil in petroleum reservoirs, and the development of Autonomous Underwater Vehicle (AUV) for performing subsea inspection. In recognition of these efforts, the Stock Exchange of Thailand (SET) announced PTTEP as a winner of the Outstanding Innovative Company Awards 2017.

PTTEP carries out its business operations in a socially responsible way in all its operating areas with CSR programs that focus on four core areas: basic needs, education, environment and culture. In 2017, PTTEP proudly coordinated numerous social projects, providing assistance to local people, preserving the environment, and performing community services. The Company has received numerous awards in this regard, such as the Bronze Stevie Award of the Asia Pacific Stevie Awards and the Platinum Award from the 9th Annual Global CSR Summit Awards for the SIOLA Pre-School Development Center project in Indonesia and the Crab Hatchery Learning Center in Songkhla Province in the southern part of Thailand.

Throughout the years, PTTEP has proven its commitment to sustainable development. It will continue to dedicate itself to contributing to economic, social and environmental development. The Board of Directors, PTTEP management and staff would like to thank the shareholders for their continued cooperation and support. PTTEP remains unwavering in its commitment to conduct its business with prudence, transparency, and adherence to the principles of good corporate governance in order to ensure the sustainable development and prosperity which benefits all concerned stakeholders in Thailand and every country where we have operations.

(Prajya Phinyawat)

Chairman

(Somporn Vongvuthipornchai)

Chief Executive Officer

Section 1

Our Business



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, low oil price environment, 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: Leading Asian E&P company driven by competitive performance, advanced technology, and green practices.

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 600,000 barrels of oil equivalent per day (BOED) in the same year

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

(1) **RESET:** To enhance competitiveness and efficiency under low oil price environment, strategizing in reducing operating cost in all of the three phases of the Company's existing assets including Organizational Capability Development

(1.1) **Producing Assets:** To focus on maintaining the production level and increasing petroleum reserves through technological advancement, while reducing costs of all major projects and work plans to ensure their economic return under the ongoing low oil price environment

(1.2) **Development Projects:** To focus on increasing proved reserves and replacing existing producing assets which are declining by ensuring that our development projects are executed as planned and able to generate revenue as well as positive economic value under the ongoing low oil price environment

(1.3) **Exploration Projects:** To focus on increasing future reserves and production to sustain the Company's growth by managing the exploration portfolio, implementing of higher technology, and enhancing capability and efficiency for higher exploration success rate

(1.4) **Organizational Capability Development:** To support corporate strategy, PTTEP Group has enhanced our organizational capabilities and developed new capability enablers in four main areas, namely, funding and financial management, human resources management, systems & process development, and acceleration of knowledge base and technology and innovation.

From RESET strategy under “SAVE to be SAFE” and “SPEND SMART” campaigns, there are more than 200 initiatives aiming to reduce cost and increasing efficiency, such as logistics and supply chain management, drilling operation, engineering and modification, and maintenance process.

(2) **REFOCUS:** To expand growth driven by portfolio rationalization which is divided between two dimensions

(2.1) **E&P Conventional:** To focus on value creation from new exploration acreage, and merger and acquisition (M&A) in Southeast Asia which is the Company’s experienced area, as well as to continue to search and invest in prolific areas and low cost producing countries.

(2.2) **E&P Transformative:** To focus on expansion of investment in Liquefied Natural Gas (LNG) projects by establishing new joint ventures with PTT to carry out businesses related to LNG value chain

(3) **RENEW:** For long-term sustainability and growth, to develop a new strategy driven from technology and business opportunities.

To expand the range of PTTEP Group’s future growth, we have also studied other business investment opportunities. Currently, there are three major aspects that we are focusing on, namely, to increase exploration success rate, to enhance production, and to promote green practices.

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 and, particularly in this year, taking into account the current low oil price 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.

1.2 PTTEP Sustainability Management

1.2.1 Sustainability Management Overview

PTTEP’s Sustainability Management is an integration of our business, environmental, and social risks and opportunities to make us a company of choice for stakeholders, investors, shareholders, business partners, host governments, communities, and employees. The Company continuously emphasizes effective management of the three pillars of sustainability to reflect the ongoing concerns regarding environmental and social issues as well as create value for the Company and our

stakeholders. Sustainability targets, strategies, and implementation are driven by efficient business processes, funding, Governance, Risk, Control & Compliance (GRC) management, innovation and technology, cost reduction, and human capability development to enhance production and achieve work efficiency. To achieve this, PTTEP aligns our sustainability practices with His Majesty King Bhumibol Adulyadej's (Rama IX) Sufficiency Economy Philosophy (SEP) and also adopts the United Nations Sustainable Development Goals (UN SDGs) which is a global agenda for sustainable development that is adopted and implemented across the world by both public and private sectors. Currently, we prioritize our sustainability contributions to five UN Sustainable Development Goals or SDGs which are Goals 3, 4, 7, 8, and 16, while continuing our support for the rest of the SDGs in our routine operations.

To measure and benchmark our sustainability performance with our peers, the Company's goal is to maintain the status as a listed company in the Dow Jones Sustainability Index (DJSI) World Oil and Gas Industry which is the most internationally accepted measurement for sustainability performance. In 2017, we were selected as a DJSI member in the World Oil and Gas Upstream & Integrated Industry for the fourth consecutive year. In addition, we were chosen as a member of the FTSE4Good Index Series out of 32 companies in the Oil and Gas Industry for the FTSE4Good Emerging Index category for the second consecutive year, as well as being recognized as a "2017 Top 100 Global Energy" by Thomson Reuters.

1.2.2 PTTEP Materiality Assessment and 2017 Material Issues

PTTEP's materiality assessment process engages both internal and external stakeholders by using international standards, such as the Global Reporting Initiative (GRI G4) Sustainability Reporting Guideline: Oil and Gas Sector Supplement (OGSS) framework – core level, IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability, AA1000 AccountAbility Principles Standard (2008) (AA1000APS), and SASB Materiality Map™ by Sustainability Standards Board (SASB) to identify and prioritize the Company's material sustainability issues. This includes a thorough review of current and future business risks and opportunities in the economic, social and environmental dimensions which are significant issues to our business and stakeholders in terms of sustainability. The materiality issues are then used to develop the Sustainable Development Master Plan and integrated to our short-term and long-term strategy.

In 2017, 16 material sustainability issues were identified and prioritized from the process of engaging with our stakeholders and top management through the standard materiality assessment process. The issues are grouped into 10 issues for sustainability reporting, which were also included in the Company's KPI, and can be categorized as follows:

Material Economic Issues

- GRC – Governance, Risk Management, Control & Compliance
- Human Capital Management
- Reserves and Production
- Technology and Innovation
- Supply Chain Management

Material Social Issues

- Occupational Health and Safety
- Contribution to Society

Material Environmental Issues

- Climate Change
- Environment Management
- Spills

The Company's materiality assessment process includes a structured and systematic review of the issues which reflect significant economic, environmental and social impacts to the Company as well as those which are important to our internal and external stakeholders. The assessment is conducted by identifying material issues by addressing these issues from the Company's and stakeholder's perspectives, defining reporting boundaries of the material aspects, prioritizing the issues by their level of significance using agreed criteria and stakeholder engagement, and validating the issues through review and endorsement by the SD Working Team and SD Council. Details of our materiality assessment process can be found in the website: <https://www.pttep.com/en/Sustainabledevelopment/Disclosure/Approachtoreporting.aspx>.

1.2.3 Benefits to Society and Environment

PTTEP's sustainable development targets and plans include several key environmental and social initiatives. In 2017, key environmental initiatives and continuation projects included flare gas recovery and utilization at Nong Toom-A, heat recovery steam generator and methane (CH₄) emissions reduction at the S1 Project, Flash Gas Recovery Unit (FGRU) at the Greater Bongkot South Field, maintaining partial operation of seawater cooling water pump at the Arthit Project, and the logistics fleet management project. These 2017 greenhouse gas emissions initiatives were able to reduce more than 300,000 tonnes of carbon dioxide equivalent (CO₂e) per year, while reducing approximately THB 52,700,000 in fuel and operating cost through logistics fleet management. Meanwhile, the other projects except the logistic fleet management project were able to generate a revenue of approximately THB 564,000,000 from hydrocarbon recovery.

As for the Company's business programs which enhance socio-economic values such as tourism within the local communities, the "H.T.M.S. Sattakut Diving" site where PTTEP and the Royal Thai Navy placed the decommissioned historical battleship beneath the sea near Tao Island as a diving site to be an underwater learning center and a world class diving site is a good example of what we are trying to achieve, providing us with a social license to explore and operate in the given areas. The H.T.M.S. Sattakut diving site became a popular tourist attraction and in 2017, a report showed that there were more than 166 divers per day or 60,500 divers per year, the direct benefit received by local businesses and communities is approximately THB 55 million per year in terms of revenue alone that are generated from diving tours. We believe that these efforts will help to prevent operation disruption from community protests which can potentially lead to additional impacts on the society as well as higher operating cost to the Company.

1.3 Development and Significant Changes in 2017

During 2017, PTTEP has updated the Company's organization to cope with the changing energy industry landscape, as well as improve portfolio management and operational efficiency, and implement appropriate risk management. The Company also successfully expanded our investment to support growth. The following are the highlights of these developments and changes by region.

Thailand

In September 2017, the B6/27 Project received an approval from the Minister of Energy on the termination of another partner in the project, as a result, the Company currently holds 100% participating interests.

In November 2017, the Company has updated our organization structure. Mr. Somporn Vongvuthipornchai as Chief Executive Officer (CEO), is in charge of the Company's overall performance, strategic planning and business development on E&P related and new business opportunities; and Mr. Phongsthorn Thavisin as President of Exploration and Production (PEP), is responsible for management of the Upstream Value Chain business including Exploration, Development and Production activities per the Company's strategic plans.

South East Asia

In February 2017, the Myanmar MD-7 Project received the official approval from the Government of Myanmar on the divestment of 50% participating interest to Total E&P Myanmar (TOTAL). Hence, the Company's participating interest is 50% and is an operator. The transaction would balance the risk management as well as enhance the value of the project.

In July 2017, PTTGL Investment Limited (PTTGLI), a 50:50 joint venture company between PTTEP and PTT, acquired a 10% stake in the MLNG Train 9 Project in Malaysia from Petronas. The MLNG Train 9 Project is an LNG Liquefaction plant with a current production capacity of 3.6 million tons per annum of LNG. Also, the Myanmar PSC G & EP2 Project submitted the relinquishment letter to the Government of Myanmar after completed the exploration activity commitment under PSC with an effective date from August 31, 2017. Moreover, the Company implemented liability management activities through buy-back and issuance of USD debenture with the identical amount, however, there is no impact to outstanding interest-bearing debt of the Company. The transaction reduced interest burden and leveraged PTTEP Treasury Center Company Limited as the financial center of the PTTEP Group.

North America

In October 2017, the Company established a new subsidiary PTTEP Mexico E&P Limited, S. de R.L. de C.V. to participate in the bidding for exploration and production rights in Mexico. Furthermore, there was a revision of development plan for the Mariana Oil Sands Project in Canada to reflect current industry circumstances, which involved delaying the project's Final Investment Decision (FID) and resulted in the recognition of impairment loss on asset of 558 MMUSD. The impairment charge was done in accordance with accounting standards without any impact the Company's cash on hand and cash flows.

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, 2017, PTTEP Group had 36¹ petroleum exploration and production projects in 10 countries. 13 projects were under the exploration phase and 23 projects were under the commercial production phase.

¹ Excluding Indonesia Semai II and Indonesia Malunda projects for which PTTEP has submitted relinquishment documents to the Governments of Indonesia and is waiting for the official approval.

No.	Project Name	Phase	Location	Participation Interest	Operator
Thailand: 14 projects					
1.	Bongkot Project	Production	Gulf of Thailand	44.4445%	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% ²	PTTEP
5.	Arthit Project	Production	Gulf of Thailand	80%	PTTEP
6.	L22/43 Project	Production	Upper Central	100%	PTTEP
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: 20³ 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 ⁴	Exploration	Andaman Sea	50%	PTTEP
7.	Myanmar MOGE 3 Project	Exploration	Onshore	75%	PTTEP

² PTTEP received an approval from the Ministry of Energy to receive the transfer of the participating interests in the B6/27 Project from other joint partners on September 22, 2017. As a result, its participating interests increased from 60% to 100%.

³ Excluding the Myanmar PSC G & EP 2 Project for which PTTEP had submitted a request to terminate and return the exploration block to Government of Myanmar, after fulfilling of the requirements of the Production Sharing Contract which was effective on August 31, 2017.

⁴ PTTEP received the official approval from the Government of Myanmar for the transfer of the participating interests in the Myanmar MD-7 Project to TOTAL E&P Myanmar on February 22, 2017. As a result, its participating interests decreased from 100% to 50%.

No.	Project Name	Phase	Location	Participation Interest	Operator
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
Algeria					
14.	Algeria Hassi Bir Rekaiz Project	Exploration	Onshore	24.5%	PTTEP
15.	Algeria 433a & 416b Project	Production	Onshore	35%	GBRS
Australia					
16.	PTTEP Australasia Project	Production	Offshore	90 - 100% ⁵	PTTEP
Canada					
17.	Mariana Oil Sands Project	Exploration	Onshore	100%	PTTEP
Mozambique					
18.	Mozambique Rovuma Offshore Area 1 Project	Exploration	Offshore	8.5%	Anadarko
Brazil					
19.	Barreirinhas AP1 Project	Exploration	Offshore	25%	BG Brasil
20.	Brazil BM-ES-23 Project	Exploration	Offshore	20%	Petrobras

Principal Projects in Operation

The following is a summary of project activities undertaken during 2017. 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 2017.

Bongkot Project

The Bongkot Project is located in the southern part of the Gulf of Thailand, consisting of Bongkot North and Bongkot South fields. The Company holds 44.4445% interest and 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 sales agreements.

⁵ PTTEP Australasia Project holds many petroleum blocks which have varying participation interests ranging from 90 – 100%.

In the year 2017, the project continuously drilled production wells, installed wellhead platforms and constructed gas pipeline in order to maintain steady production levels. The project is the process of concession bidding preparation since the current concession of the project will be expired in 2022-2023. Sales volume from the project averaged 856 million standard cubic feet per day (MMSCFD) of natural gas (equivalent to 139,101 barrels of oil equivalent per day (BOED)) and 26,109 barrels per day (BPD) of condensates.

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 Thai Oil Public Company Limited, Bangchak Petroleum 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).

In the year 2017, the project has continuously drilled additional production wells with exploration drilling plan in 2018. Environment impact assessments were also undertaken in both existing and new production areas. The project's average crude oil sales volume during the year was 25,919 BPD, while sales volume of natural gas averaged 21 MMSCFD (equivalent to 4,034 BOED), and average LPG sales volume was 244 metric tons per day (equivalent to 2,020 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 PTTEP 1 is sold to PTT which is transported via truck to the Bangchak refinery.

In the year 2017, the project carried on the production wells drilling activities to maintain production plateau. The project's average crude oil sales volume was 253 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 as well as assessing the environmental impacts.

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 also the operator. The project entered into long-term GSA and condensate agreement with PTT on a take-or-pay basis.

In the year 2017, the project continued to drill production wells as well as constructed and installed wellhead platforms and gas pipelines in order to maintain production levels. For G8/50 Project, which is located adjacent to the northern of Arthit Project, the Company holds 80% participating interest and is an operator. DMF approved the development area together with the associated development plans in March 2012. The project achieved its first production in 2016 through Arthit's Central Processing Platform. As a part of Arthit Project, natural gas from the project will be sold to PTT under Arthit's gas sales contract. Average natural gas sales volume in 2017 from the project was 218 MMSCFD (equivalent to 35,321 BOED) and average condensates sales volume was 9,767 BPD.

L22/43 Project

The L22/43 Project is located in the 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 the year 2017, the project implemented the Artificial Lift techniques in order maintain crude oil production. The project's average crude oil sales volume was 141 BPD.

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 also the operator. Crude oil produced from the project is sold to PTT which is transported via truck to the Bangchak refinery.

In the year 2017, the project carried out the exploration and development drilling activities to uphold production level. The project's average crude oil sales volume was 627 BPD.

E5 Project

The E5 Project is located in the 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 2017, average natural gas sales volume for the project amounted to 9 MMSCFD (equivalent to 1,466 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 Contract 3 is sold to PTT on a take-or-pay basis pursuant to long-term GSA and condensate agreement, whilst produced crude oil is under yearly sales agreement and spot cargo with other purchasers.

In the year 2017, the project continued to carry out development drilling activities in order to maintain production levels. The project sold natural gas at an average rate of 577 MMSCFD, equivalent to 97,767 BOED, crude oil at an average rate of 21,980 BPD and condensates at an average rate of 21,092 BPD.

Contract 4 Project

The Contract 4 Project, inclusive of the G7/50 Block, is located in the Gulf of Thailand, off the coast of Songkhla province. The Company holds a 60% interest (formerly 45%) in the project, with Chevron as the operator. The change of the participating interest is the result of PTTEP's acquisition of Hess Corporation's subsidiaries which was completed on April 22, 2014. All of the natural gas and condensate produced from Contract 4 is sold to PTT on a take-or-pay basis pursuant to a long-term GSA and condensate agreements.

In the year 2017, the project sold natural gas at an average rate of 347 MMSCFD (equivalent to 58,863 BOED) and condensates at an average rate of 15,769 BPD. The project continued to drill additional development wells aiming to maintain production plateau as well as accelerating the development of Ubon oil Field, a part of the Contract 4 Project, which is currently in the process of negotiation with current partners on development preparation with expected first oil production by 2022 at planned capacity of 25,000-30,000 barrel per day (BPD).

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 2017, the project continued to carry out development drilling activities to sustain production level. The sales volume of crude oil and natural gas averaged 6,107 BPD and 2 MMSCFD (equivalent to 393 BOED), respectively.

Sinphuhorm Project (EU-1 and E5-North)

The project is located in the Udon Thani and Khon Kaen provinces. The Company owns a 55% interest (formerly 20%) in the project and is also the operator. The increase in participating interest is the result of PTTEP's acquisition of Hess Corporation's subsidiaries which held stakes in the Sinphuhorm Project. The acquisitions were completed on April 22, 2014. Natural gas produced from the project has long-term GSAs with PTT.

In the year 2017, sales volume of the project averaged 78 MMSCFD for natural gas (equivalent to 12,794 BOED) and 250 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 for the produced crude oil is sold through annual sale agreements and spot cargo with other purchasers.

In the year 2017, the project continued to carry out development drilling and waterflood operations in order to maintain the crude oil production levels. Sales volume averaged 25,434 BPD for crude oil and 94 MMSCFD for natural gas (equivalent to 16,836 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 GSAs with PTT and crude oil sale agreements with the Contract 3 Project.

In the year 2017, sales volume from the G4/48 Project averaged 5 MMSCFD for natural gas (equivalent to 861 BOED) and 1,323 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 100% ownership and operatorship of the project. Activities at this project have been suspended pending to 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 condensate produced from the project were sold through auction.

In the year 2017, the project completed production drilling activities as planned in accordance with phase 3 of the development plan, and is currently in the process of construction and preparation of drilling activities in development plan phase 4 in order to maintain production volume. Current sales volume from the project averaged 263 MMSCFD (equivalent to 42,316 BOED) for natural gas and 6,991 BPD for condensates.

(2) **International Projects:** PTTEP has 20 projects overseas, broken down into the following regions.

(2.1) **Project Activity Highlights in South East Asia:** PTTEP has 13 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. PTTEP is the operator, and holds 80% participating interest in the project.

The project is currently in the process of negotiating on commercial framework with the Government of Myanmar for future development.

Myanmar M11 Project

The Myanmar M11 Project is located in the Gulf of Moattama, Myanmar. PTTEP holds 100% interest in the project and is the operator. On March 7, 2017, the Government of Myanmar has extended the exploration period to 4 years (October 23, 2014 to October 22, 2018).

In the year 2017, the project is currently assessing for the fields' resource potential with a plan to drill 1 exploration well in 2018 as well as seeking a joint partners for project risk management.

Zawtika Project

The Zawtika Project is located in the Gulf of Moattama, Myanmar. The Company owns 80% interest and is also the operator, with Myanmar Oil and Gas Enterprise (MOGE) holding the remaining 20% interest. The gas production will be sold to PTT supplying into Thai market under long-term GSA on a take-or-pay basis and MOGE for domestic use in Myanmar. To transport natural gas from Zawtika 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.

In the year 2017, the project has maintained its production as planned and completed the construction of 1 production platform in Phase 1C in 2017 while the remaining 3 production platforms have been scheduled to set up in 2018. The project also continues to carry out drilling activities in order to support the production plateau of the project. Current gas sales volume was 301 MMSCFD (approximately 47,747 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.

In the year 2017, the project completed the construction phase of Badamyar wellhead platform and started to deliver gas production from 4 development wells. During year 2017, total gas sales volume averaged 741 MMSCFD (equivalent to 90,223 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.

In the year 2017, the project was in the process of evaluating result from 3D seismic survey with the plan to drill exploration and development wells to maintain production plateau. The project's total sales volume averaged 215 MMSCFD (equivalent to 33,948 BOED) for natural gas and 5,458 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. During 2017 TOTAL E&P Myanmar (TEPM) has been selected to be a joint venture partner with 50% participating interests.

In the year 2017, the project was in the process of evaluating the fields' resources potentials in order to prepare exploration drilling plan.

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 (August 21, 2015 to August 20, 2020) and was in the process of evaluating the fields' resources potentials to prepare exploration drilling plan in 2018.

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 Vietnam Oil and Gas Group, a state own enterprise, for domestic consumption.

In the year 2017, the project's sales volume of crude oil averaged 4,164 BPD, while sales volume of natural gas averaged 12 MMSCFD (equivalent to 2,623 BOED).

Vietnam 16-1 Project

The Vietnam 16-1 Project is located offshore, southeast 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.

In the year 2017, the project started production from 4 developed wells as planned in order to maintain the production levels. During the year, sales volume from the project averaged 21,087 BPD of crude oil and 2 MMSCFD of natural gas (approximately 486 BOED).

Vietnam B & 48/95 Project

The Vietnam B & 48/95 Project is located offshore of Vietnam. The Company owns an 8.5% interests in the project with Petrovietnam as the operator.

In the year 2017, the project signed a letter of agreement between joint venture partners on wellhead gas prices and transportation costs and currently is in the negotiation process on commercial contracts in order to push forward the Final Investment Decision (FID) with targeted first production with the Vietnam 52/97 Project at 490 MMSCFD by the end of 2021.

Vietnam 52/97 Project

The Vietnam 52/97 Project is located offshore of Vietnam. The Company owns 7% interests in the project with Petrovietnam as the operator.

In the year 2017, the project signed a letter of agreement between joint venture partners on wellhead gas prices and transportation costs, and currently is in the negotiation process on commercial contracts in order to push forward the Final Investment Decision (FID) with targeted first production with the Vietnam B & 48/95 Project at 490 MMSCFD by the end of 2021.

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.

In the year 2017, the project has accelerated project development plan to maintain production plateau. The sales volume of natural gas at an average rate of 221 MMSCFD (equivalent to 38,797 BOED) and condensates at averaged at 1,491 BPD.

Sarawak SK410B Project

The Sarawak SK410B Project is located in offshore Sarawak, Malaysia. The Company has a 42.5% interest in the project and is the operator.

In the year 2017, the project completed 3D seismic survey and is currently in the process of evaluating field's resources potential with exploration drilling plan in 2018.

(2.2) Project Activity Highlights in Africa and the Middle East: PTTEP has three 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.

In the year 2017, the project's development plans was submitted to the Algerian government since December 2017 and expected to receive the approval within the first quarter of 2018. The project is expected to start production within 2019 with the first phase capacity of around 10,000-13,000 BPD. Subsequently, further investment will be considered to ramp up to full capacity at around 50,000 BPD.

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 Operator. Production for the year 2017 averaged 17,360 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 2017, the project made a significant progress by achieving several key milestones including the receipt of government approval on Legal & Contractual Framework and the official approval on the marine concessions as well as resettlement which has been commenced since November 2017. The project's development plan is currently in the process of

final approval by the Government of Mozambique which is expected to achieve by early 2018. The project also expedites the finalization of LNG off-take agreements, and is negotiating project finance with financial institutions in order to support the Final Investment Decision (FID), with planned first phase of production at 12 Million tons per annum (MTPA) starting in 2023.

(2.3) Project Activity Highlights in Australasia: PTTEP has one project in this region which is located in the Commonwealth of Australia (Australia) comprising of 12 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 12 permits with two key oil and gas fields, including Montara, which is in the production phase and the Cash Maple which is still under feasibility studies. 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. In the year 2017, the project completed the drilling of producing well in order to accelerate production levels. The project has average sales volume for the year 2017 of 10,580 BPD in accordance with the production plan.

Cash-Maple Field

The Company holds 100% interest in the Project. The project has achieved the Pre-FEED study and is currently in the process of FEED study preparation which is scheduled to complete by 2018.

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 America: PTTEP has three projects in this region which located in Canada and the Federative Republic of Brazil (Brazil). The following are significant activities in this region:

The Mariana Oil Sands Project

The Mariana Oil Sands Project (formerly known as the Canada Oil Sands KKD Project) is located in Alberta, Canada. PTTEP Canada Limited (PTTEP CA), a subsidiary of the Company, has 100% ownership 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. Currently, the project has revised its development plan and is determining appropriate approach for development.

Barreirinhas AP1 Project

The Barreirinhas AP1 Project is located in the Barreirinhas Basin, offshore to the northeast of Brazil. The Company owns 25% interest of the project, with Shell Brasil as an operator. The project comprises four exploration blocks called BAR-M-215, BAR-M-217, BAR-M-252 and BAR-M-254. The project is currently studying 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 BM-ES-23 Project, with Petrobras as an operator. The project is currently studying the petroleum potential.

Projects Divestment and Relinquishment in 2017

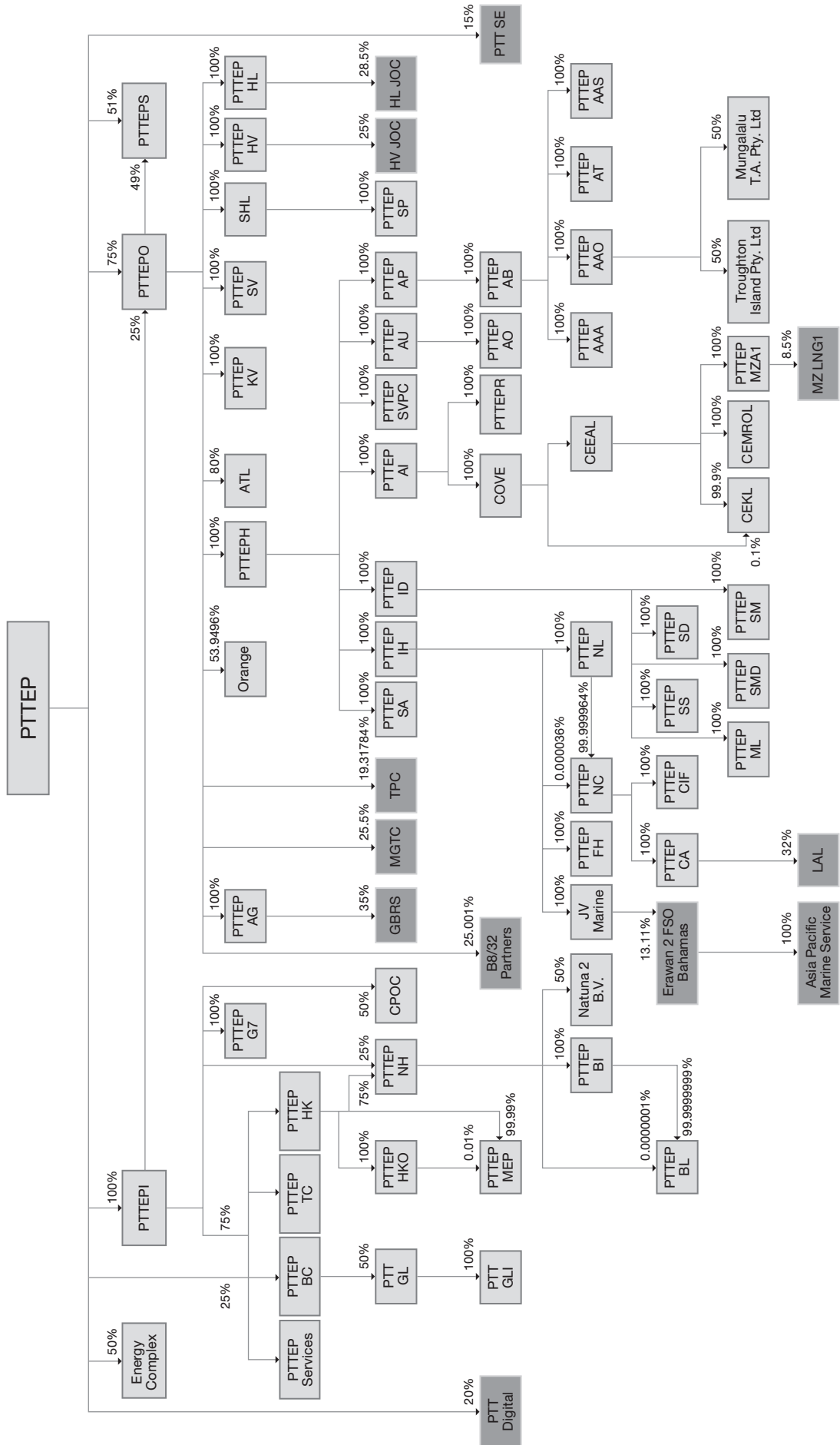
The Myanmar PSC G and EP2 Project is located in onshore Myanmar. The Company has 70% interest in the project, and is also the operator. The project completed drilling exploration wells in accordance with the requirements of the Production Sharing Contract and found no commercial discovery. The Company had submitted a request to terminate and return the exploration block to the Government of Republic of the Union of Myanmar on July 17, 2017 which was effective since August 31, 2017 and is in the process of receiving official approval from the government.

1.4.2 Structuring Policy of PTTEP Group

PTTEP has continuously expanded our E&P business both domestically and overseas. The establishment of subsidiaries and associated companies in various regions is necessary for the investment purpose, efficiency and competitive advantages comparable to other international oil companies as well as operational flexibility by taking into account of various factors, such as laws and regulations, financial structure, tax regimes, business and investment conditions, and risk management.

PTTEP's policy is to manage our subsidiaries strictly in line with the Company's business direction and strategy. PTTEP assigns our executives and staff to second as employees in the subsidiaries to run the projects in the similar standards and terms as PTTEP. Meanwhile, in managing our associated companies, the Company nominates representatives to serve as a shareholder and/or a member of the Board of Directors according to the terms of the investment in order to be able to effectively define the overall business strategy and policy of these entities. To manage both the subsidiaries and associated companies, the Company adheres to the Good Corporate Governance and Business Ethics of the PTTEP Group to ensure effectiveness, transparency, fairness, and achievement of our business goals.

With respect to the directors of the Company's subsidiaries and associated companies, we assign the executives who are responsible for the project under such entities as directors to ensure that they are managed in line with the Company's business direction and strategy. The Company however in some cases must also appoint a local director, if required by the laws and regulations or investment conditions of the specific countries. The subsidiaries and associated companies meanwhile are obligated to report their performance to the Company on a quarterly basis to ensure their performance and effectiveness.



1.5 Relationship with the Major Shareholder

PTTEP's major shareholder is PTT Public Company Limited (PTT), a state-owned company which engages in fully integrated petroleum and petrochemical businesses by strategically investing directly and indirectly through its group of companies both in the upstream and downstream businesses.

Currently, PTT holds 65.29% of the Company'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 2017, the Company supplied crude oil, natural gas, LPG, and condensate to PTT. Conditions and price settings of all transactions undertaken between PTTEP and PTT follow normal business operations 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.

Nature of Business Operation

2.1 Revenue Structure

PTTEP and our subsidiary's 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 2015 – 2017 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 of December 31, 2017 comprised 23 projects: the Bongkot, Arthit, B6/27, MTJDA, Contract 4, B8/32 & 9A, G4/43, Contract 3, G4/48, S1, L22/43, PTTEP1, L53/43 & L54/43, Sinphuhorm, E5, Zawtika, Yadana, Yetagun, Vietnam 16-1, Vietnam 9-2, Natuna Sea A, PTTEP Australasia and Algeria 433a&416b 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 2015-2017

Product	Operated by	% of interest	2015		2016		2017	
			Revenue (Million USD)	%	Revenue (Million USD)	%	Revenue (Million USD)	%
Sales								
Crude	PTTEP	-	141.37	2.51	115.46	2.66	137.42	3.03
	PTTEPI	100	40.18	0.71	36.30	0.83	45.38	1.00
	PTTEPS	100	367.76	6.54	290.41	6.68	346.92	7.65
	Orange	53.9496	87.69	1.56	75.49	1.74	87.08	1.92
	B8/32 Partners	25.0009	35.04	0.62	28.75	0.66	36.84	0.81
	PTTEP HV	100	22.34	0.40	17.34	0.40	20.49	0.45
	PTTEP AP	100	334.62	5.95	235.79	5.42	220.59	4.87
	PTTEP HL	100	162.18	2.88	114.77	2.64	113.58	2.51
	Natuna 2	50	2.05	0.04	1.54	0.04	2.80	0.06
	PTTEP AG	100	2.88	0.05	34.10	0.78	53.58	1.18
Natural Gas	PTTEP	-	1,899.45	33.78	1,560.28	35.89	1,492.21	32.92
	PTTEPI	100	1,218.06	21.66	856.73	19.71	789.76	17.42
	PTTEPS	100	45.42	0.81	36.34	0.84	42.44	0.94
	Orange	53.9496	28.66	0.51	31.84	0.73	23.95	0.53
	B8/32 Partners	25.0009	11.02	0.20	9.90	0.23	10.09	0.22
	PTTEP HV	100	1.54	0.03	1.36	0.03	1.51	0.03
	PTTEP OM*	100	-	-	-	-	-	-
	PTTEP HL	100	2.52	0.04	1.70	0.04	0.32	0.01
	Natuna 2	50	64.64	1.15	43.97	1.01	61.35	1.35
	PTTEP SP	100	211.27	3.76	177.99	4.09	139.11	3.07
LPG	PTTEP	-	9.33	0.17	9.48	0.22	9.04	0.20
	PTTEPS	100	27.99	0.50	28.44	0.65	27.14	0.60

Product	Operated by	% of interest	2015		2016		2017	
			Revenue (Million USD)	%	Revenue (Million USD)	%	Revenue (Million USD)	%
Condensate	PTTEP	-	480.31	8.54	401.05	9.22	522.10	11.52
	PTTEPI	100	48.08	0.85	43.02	0.99	49.70	1.10
	PTTEPS	100	1.32	0.02	1.07	0.02	0.76	0.02
	PTTEP OM*	100	-	-	-	-	-	-
	PTTEP SP	100	40.95	0.73	36.44	0.84	47.04	1.04
Total Sales			5,286.67	94.01	4,189.56	96.36	4,281.20	94.44
<u>Revenue from Pipeline Transportation</u>								
Gas Pipeline Transportation	MGTC	25.5	53.16	0.95	28.20	0.65	36.20	0.80
	TPC	19.3178	19.80	0.35	9.30	0.21	9.35	0.21
	ATL	80	45.53	0.81	28.99	0.67	32.26	0.71
Total Revenue from Pipeline Transportation			118.49	2.11	66.49	1.53	77.81	1.72
<u>Other Income</u>								
Gain On Foreign Exchange			-	-	11.59	0.27	51.40	1.13
Interest Income			31.92	0.57	30.06	0.69	59.58	1.31
Gain On Financial Derivatives			132.16	2.35	-	-	-	-
Other Income			45.20	0.80	41.48	0.95	53.27	1.18
Total Other Income			209.28	3.72	83.13	1.91	164.25	3.62
Total Revenues			5,614.44	99.84	4,339.18	99.80	4,523.26	99.78
Share of Gain of Associates and Joint ventures			9.03	0.16	8.55	0.20	9.75	0.22
Grand Total after include Share of Gain of Associates and Joint ventures			5,623.47	100.00	4,347.73	100.00	4,533.01	100.00

*Revenue of PTTEP OM was represented in discontinued operations. The additional information is disclosed in Note 14 - Divestment of PTTEP Oman Company Limited and Discontinued Operations

For 2017, total revenues for PTTEP and our subsidiaries was 4,533 MMUSD (equivalent to 153,526 MMTHB), an increase of 185 MMUSD or 4% when compared with the revenues in 2016 which was 4,348 MMUSD (equivalent to 153,047 MMTHB). The increase was primarily due to an increase in sales revenue of 92 MMUSD from an increase in condensate and crude sales revenue. The increase was primarily due to an increase in the average selling price of operating projects operated by PTTEP and PTTEP Siam Limited (PTTEPS).

2.2 Products and Services

2.2.1 Petroleum

Petroleum is defined as a naturally occurring hydrocarbon mixture, including 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 crude oil refinery or natural gas separation process, primarily consisting of butane and propane.

Crude oil, condensate, and LPG are measured in barrel, while natural gas is measured in cubic foot at the standard conditions (One atmosphere or atm at 60 degree Fahrenheit). All petroleum products can be converted to barrel 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 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 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 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. 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 from two branches in, namely, Songkhla province and Ranong province.

1. *Petroleum Development Support Base (Songkhla Branch)* solely provides marine jetty berthing and warehousing services and 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 berthing six supply vessels with a size of more than 500 gross tonnes simultaneously. The jetty is also equipped with storage facilities and operated with a high standard of material-handling equipment. The support base also operates under the international management system for Safety, Security, Health and Environment, while strictly following the International Ship and Port Facilities Security Code (ISPS Code) which is awarded 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 base 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 purpose of materials and equipment as well as for the privilege of taxes and custom duties.

2. *Petroleum Development Support Base (Ranong Branch)* provides marine jetty berthing and warehousing services and is owned and operated by PTTEPI; though the jetty service which is operated through Ranong multi-purpose port is owned by the Port Authority of Thailand, operating from a 150-meter wharf which is capable of berthing two supply vessels with a size of more than 500 gross tonnes simultaneously. 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 purpose of materials and equipment as well as for the privilege of taxes and custom duties.

To ensure that the services of both support base branches meet the international standards and top safety level, performance audit is continuously conducted to emphasize on the Safety, Security, Health and Environment. Both are also operated and equipped with high security systems, such as parameter and high mast lights, barb wire fence, CCTV system, and 24-hour security guards.

PTTEP regularly exercises awareness and gets involved with the local community in the operating areas. The Company holds several certificates which are accredited by the International Environment Control Program (ISO 14001 certification), and the Occupational Health Control Program (OHSAS 18001 certification). The Company has also prepared the Emergency Response Plan under the ISO 22301 standard to handle unexpected and emergency cases as well as to rehearse and exercise our response plan to ensure that our support base is capable to respond 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 according to the resolution of PTTEP's Board of Directors Meeting No. 10/2549/254 on September 29, 2006. The agreement includes infrastructure design and implementation services, consultancy services, procurement services, and outsourcing services to support the Company's needs in information technology and communication, 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 to PTT Digital Solutions Company Limited on 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, and 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 needed to support PTTEP Group's operational activities, the company additionally ensures that PTTEP is sufficiently staffed overall for both its domestic and international expansion.

To fulfill the objective, the company has recruited and hired various types of staff, such as specialists, operators, engineers, technicians, both Thai and foreign, to serve PTTEP since July 1, 2004. The company has continuously developed and improved its compensation, welfare and benefits policies, and practices to ensure competitiveness and fairness.

To enhance staff's capability to effectively support PTTEP operations, PTTEP Services has provided several training and development programs, focusing on the compulsory Safety, Security, Health and Environment (SSHE) training as well as functional training based on PTTEP's business requirements. In addition, the company has provided training to enhance basic skills required by the staff to perform their duties effectively. This includes soft skills and computer skills training.

2.2.7 PTT Global LNG Company Limited (PTT GL)

PTTEP and PTT have jointly established PTT GL 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, 2017, PTT GL 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.

2.3 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 a 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 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 2017, total sales by the Company and our subsidiaries averaged 299,206 barrels of oil equivalent per day (BOED). The total sales ratio of natural gas to liquid was 70%:30% by volume and 60%:40% by revenue, as shown below.

Product	Volume	Value (million USD)
Natural Gas	473,697 MMSCF or 76.29 MMBOE	2,560.74
Condensate	11.83 MMBBL	619.60
Crude Oil	20.35 MMBBL	1,064.69
LPG	88,981 metric tons or 0.74 MMBOE	36.18

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 2017 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 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.
- Montara Project in the Commonwealth of Australia: All of the crude oil produced from the Montara Field is sold to PTT as a long-term sales agreement

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 Petroliaam 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 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 2017, PTTEP's petroleum production accounts for 31% of the total domestic production in 2017, making the Company the leader among the domestic producers.

Producers	% Domestic Production Volume
PTTEP	31
Chevron	29
Total	9
MOECO	8
Petronas	5
Shell	4
Others	14

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) Exploration stage: This is the first step to identify the areas with reservoir potential. The main activities conducted in this stage include:
 - Primary geological and geophysical surveys
 - Seismic acquisition, processing and interpretation
 - Exploration well drilling and testing
- (2) Appraisal/Delineation stage: This stage mainly involves with additional study to increase the certainty of estimating size and properties of the reservoirs. The main activities conducted in this stage include:
 - Detailed study of petroleum geology and additional seismic survey
 - Reservoir formation evaluation and conceptual development design
 - Appraisal/Delineation well drilling and testing
- (3) Development stage: This is the last stage prior to production. The main activities conducted in this stage include:
 - 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 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, 2017, the total amount of Proved Reserves of PTTEP Group's projects was 156 million stock-tank barrels (MMSTB) of crude oil and condensate^{*}, and 3,049 billion standard cubic feet (BSCF) of natural gas or 475 million barrels of oil equivalent (MMBOE). The total amount of Proved Reserves in terms of oil equivalent in consolidation was therefore 631 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, 2017

	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, 2016	108	62	170	2,018	1,353	3,371	438	257	695
1) Revision of previous estimates	11	(0)	11	77	(50)	27	24	(7)	17
2) Improved recovery	2	1	3	9	0	9	4	1	5
3) Extensions and discoveries	4	3	7	109	111	220	22	19	41
4) Purchases/Sales of petroleum in place	-	-	-	-	-	-	-	-	-
5) Production	(26)	(9)	(35)	(389)	(189)	(578)	(90)	(37)	(127)
Proved Reserves as of Dec 31, 2017	99	57	156	1,824	1,225	3,049	398	233	631

(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

2.5.3 PTTEP Petroleum Production

In 2017, the total production of PTTEP Group was 127 MMBOE, consisting of 35 MMSTB of crude oil and condensate* and 578 BSCF or 92 MMBOE of natural gas. This was equivalent to a production rate of approximately 347,508 barrels of oil equivalent per day (BOED) which was approximately 20,795 BOED or 5.6% decrease from the previous year. The decrease was mainly due to the low nomination from buyers of MTJDA, Bongkot North (GBN), Sinphuhorm and Contract 4 projects, and the suspension of production of S1 Project in areas under the oversight of the Agricultural Land Reform Office (ALRO). However, the production of S1 Project in these areas has already returned to normal operation since June 26, 2017.

2.5.4 Environmental Impact Mitigation and Management

PTTEP has strictly conducted business with environmental impacts mitigation and minimization. In 2017, an effective and standardized environmental management system of PTTEP has been updated and implemented to ensure that the following potential environmental impacts are mitigated and controlled:

- Water and soil contamination from discharges of drilled cuttings as per the Environmental Impact Assessment (EIA) Report
- Air pollution from hydrocarbon releases and atmospheric emissions from gas flaring, venting, fugitive and fuel combustion from the production process
- Accidental spills of hydrocarbons (oil and condensate) and chemical substances during drilling and production activities

In 2017, PTTEP conducted the environmental impact assessment study prior to commencing new exploration and production projects, which is legally required to ensure that the environmental mitigation and monitoring programs have been put in place to minimize environmental impacts arising from operations for both domestic and international projects.

Currently, mitigation and monitoring of the above environmental programs are controlled and regulated by local government agencies. In Thailand, there are two main agencies, namely, the Department of Mineral Fuels (DMF) of the Ministry of Energy which plays a major role in regulating the activities of exploration and production companies, and the Office of Natural Resources and Environmental Policy and Planning (ONEP) of the Ministry of Natural Resources and Environment which issues directives and approvals of environmental impact assessments study report prior to the commencement of exploration, drilling, and production projects.

In an effort to reduce environmental impacts and endorse environmental sustainability, the Company has introduced and implemented, with continuous improvement and monitoring, the following initiatives:

- (1) Implementation of a sustainable development philosophy and framework for the Company's business and daily operations to achieve our current corporate vision and mission, resulting in sustainable values for all stakeholders

* LPG included

The Company's sustainable development framework focuses on three dimensions of business, namely, social, environmental, and economic. In line with our SD G.R.O.W.T.H Policy and Framework, the PTTEP Sustainable Development (SD) Guideline as well as the PTTEP SD Roadmap are developed and implemented to secure the Company's path towards sustainability.

(2) Implementation of the ISO 14001:2015 Environmental Management System (EMS) Standard for PTTEP's operational projects. The Company, as a result, has become the first petroleum exploration and production company in Thailand and in the Southeast Asian region to achieve the ISO14001 Certification from AJA Registrars Limited under accreditation of the United Kingdom Accreditation Service (UKAS).

(3) EIA mitigation measures and monitoring program are also conducted for each project during each phase to ensure that the environmental programs stated in the environmental impact assessment study report are implemented and up to the standards for domestic and international projects.

(4) Establishment of the short-term and medium-term target for greenhouse gas emissions reduction to be at 20% by 2020 and 25% by 2030 from base year 2012. Details of the Company's greenhouse gas emission are disclosed in the 2017 Sustainability Report.

(5) Implementation of the ISO14064-1:2006 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) Guidelines

The GHG Reporting system is implemented to quantify, account, report, and monitor the Company's GHG emissions accurately. In addition, Climate Change Risk Assessment has also been conducted, and updated annually in the Enterprise Risk Management System on corporate level.

(6) Development of Green Practices Roadmap to achieve environmental sustainability with a long-term implementation plan towards 2020 to ensure that the Company's business operations are environmental-friendly and that those environmental impacts from operations are mitigated.

The Roadmap includes plans for reduction of ecological footprint, namely, (1) carbon footprint, for example, to reduce greenhouse gas emissions from our operations and other initiatives through Clean Development Mechanism (CDM), and (2) water footprint, while increasing biodiversity through environmental and CSR initiatives. The Roadmap also includes eco-efficiency projects, energy consumption schemes and reduction plan development, resource efficiency initiatives, such as recovery of flare gas for electricity generation and water scarcity study, mitigation of environmental impacts, waste management, green supply chain initiatives to become more eco-friendly, and green practices for decommissioning at project's end of life. Details on the Company's Green Practices Roadmap as well as projects and initiatives are disclosed in the 2017 Sustainability Report.

(7) Since 2008, the Company has re-injected produced water to subsurface reservoirs to ensure no overboard discharging which could affect the environment at the Bongkot Project, Arthit Project, S1 Project, PTTEP 1 Project, and L53/43 & L54/43 Project.

(8) Controlling and monitoring of synthetic drilling fluid concentration in cuttings to ensure that drilling fluid on cutting discharge is complied with the standards as stated in the Environmental Impact Assessment Report.

(9) Monitoring of discharged wastewater quality from production process, seawater quality, sediment quality, benthos, and fish habituating around the operation platform to ensure limited exposure to environmental hazards. In addition, Environmental Compliance Monitoring Reports of the above must be submitted to local regulators, namely, 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 annually.

(10) Implementation of the Spill Response

Spill response and management plans, equipment, trainings and exercises are provided to ensure environmentally sound operations for Tier 1. The Company is also registered as a member in the Oil Industrial Environmental Safety Group Association (IESG) for Tier 2. As for Tier 3, the Company is registered as a member of the Oil Spill Response Limited (OSRL) and cooperates with the PTT Group in response to and mitigation of environmental impacts. In 2017, the Company's representatives participated in the National Oil Spill Response Plan Improvement, Sensitive Map Verification and Oil Spill Response Thailand Seminar.

(11) Provision of appropriate technologies for waste management system (disposal, storage, treatment, and transport) for hazardous and non-hazardous wastes from production process for environmental impact abatement.

The Company complies with local legislations and requirements concerning waste management to ensure that waste generated was properly controlled and disposed in compliance with legislations or standards. In addition, the Company complies with the Basel Convention for the transportation and disposal of mercury contaminated wastes with the control of the Department of Mineral Fuels and the Department of Industrial Works.

(12) Provision of appropriate support and coordination with other exploration and production companies, government agencies, the Petroleum Institute of Thailand, and other related agencies/associations to encourage knowledge sharing and experience aimed to avoid environmental impacts and problems as well as to allow for further continuous improvement of environmental issues in the oil and gas sector.

2.5.5 Performance over the Past Three Years

PTTEP strives to manage operational and process safety as a fundamental and critical element in our SSHE philosophy and practice. To achieve this, SSHE risks are identified, eliminated, and minimized to be As Low As Reasonably Practicable (ALARP). The Company continuously monitors, benchmarks, and improves safety performance by using various safety performance indicators such as Lost Time Injury Frequency (LTIF) and Total Recordable Injury Rate (TRIR). In 2017, both LTIF and TRIR were better than the IOGP average and have been expected to be even lower in the future.

To be in line with the Company's sustainable growth objectives, proactive reinforcement of the SSHE Management System is carried out throughout the business life cycle in both domestic and international units. This includes periodically updating documents (standards, procedures, guidelines, etc.), conducting SSHE awareness training for all staff, encouraging use of identical standard practices to minimize the number and severity of incidents, conducting SSHE audits, and becoming a target-zero company.

During 2015 - 2017, PTTEP has strictly complied with both Thai and International legislation, and other regulations and requirements concerning the area of Safety, Security, Health and Environment (SSHE), the following performances and recognitions are:

(1) PTTEP was honored with Thailand Sustainability Investment Award 2017 from Stock Exchange of Thailand. The award was presented to PTTEP as one of the listed companies recognized for outstanding performance in the areas of Environment, Social, and Governance along with good business performance.

(2) PTTEP improved and developed our Environmental Management System Standard to comply with the revised edition of international standards ISO 14001 (ISO 14001:2015), and certified by AJA Registrars Limited under accreditation of the United Kingdom Accreditation Service (UKAS). By adopting the ISO 14001 "One Common System" for all certified sites, the Company has improved the efficiency of our environmental management system by continuously upgrading the environmental practices in maintaining, developing, and reducing environmental impacts in the following areas:

- Headquarters
- Greater Bongkot North and Bongkot South fields of the 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) – with the scope of "provision of logistic services to offshore oil and gas operations"
- PTTEP Core Research Center – with the scope of "building management and maintenance service, core research center and logistic support for storage of core, slab samples, and archive"
- Montara Field, Darwin base, and Perth office of PTTEP Australasia (Ashmore Cartier) Pty Ltd in Australia

In 2017, PTTEP implemented the ISO 14001:2015 in Zawtika Project and expected to achieve the certification by 2018.

(3) PTTEP has continued to maintain the OHSAS 18001:2007 Occupational Health and Safety Standard, being certified by AJA Registrars Limited and accredited from ANSI-ASQ National Accreditation Board (ANAB) for our safety management system which enables us to control occupational health and safety risks as well as to improve the performance. The projects which have received the certification and accreditation are, namely, S1, PTTEP 1, L53/43 & L54/43, Sinphuhorm, PTTEP Petroleum Development Support Base (Ranong), Arthit, and Bongkot (for both North & South fields). The Company also plans to expand coverage of the OHSAS to international assets meanwhile.

(4) PTTEP conducted Environmental Impact Assessment Studies prior to commencement of all exploration and production development projects as required by local regulations. In addition, EIA Compliance Audit Reports including Environmental Monitoring Reports were also conducted and submitted periodically to local authorities and regulators as required.

(5) PTTEP was certified by the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) from the implementation of Carbon Neutral Event in SD Day 2017. The amount of 4.42 tonnes CO₂ equivalent was offset. PTTEP reported the greenhouse gas emission performance on a monthly and annually basis to evaluate the Company's performance against target. Details are disclosed in the 2017 Sustainability Report.

(6) PTTEP submitted Safety, Security, Health and Environment performance reports to the Department of Mineral Fuels on a monthly and annual basis, while SSHE implementation at operating sites is audited by the local regulator.

(7) PTTEP achieved a member status from the Dow Jones Sustainability Index (DJSI) World in Oil and Gas Upstream & Integrated Industry for the fourth consecutive year (2014 – 2017).

(8) Since 2014, PTTEP has been rated for four consecutive years by the Carbon Disclosure Project, a well-known organization which compiles and evaluates information regarding environmental governance, and shortlisted in the Carbon Disclosure Leadership Level as one of the best companies in the Southeast Asia plus Hong Kong for disclosure of information on greenhouse gas emissions as well as for prevention of climate change. The Company has been also rated in Water Management Sustainability with A-list, and we are only company in the region who received both leader-level awards.

(9) SSHE performance report as included in the Company's Sustainability Report has been assured by an independent external third party since 2012 and rated to receive the highest level of Global Report Initiative (GRI) for six consecutive years.

Regarding the spill which is one of the key performance indicators of environment management, during 2015 and 2017, the spills accounted for 17.14, 0.74 and 4.65 tonnes, respectively. Details of spill incident and mitigation actions are disclosed in the 2017 Sustainability Report.

SSHE competency development for the Company's employees meanwhile is crucial to reduce human errors in daily operations especially in high risk activities. We continuously provides SSHE training to employees more than that is required by legislation to improve work efficiency, effectiveness and safety. Since 2015, the Company has conducted additional in-house training for personal and process safety, environmental impact prevention, contractor safety management, and SSHE culture for all operating assets.

2.5.6 Disputes or Lawsuits Regarding the Environment and Solutions

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 according to a long-term roadmap to achieve our ultimate goal to prevent any accident that may result in injury, occupational illness, and major accident event. In 2017, PTTEP's SSHE strategy was mainly focused on improving SSHE Management System in both operational and process safety, strengthening SSHE Culture to reach the generative level or level 5, improving SSHE competency for employees and contractors, and creating environmental sustainability.

In 2017, PTTEP conducted the third SSHE Culture Survey, using the International Association of Oil and Gas Producers (IOGP) methodology as a reference. The survey results showed that PTTEP has achieved a SSHE culture maturity level 4 or Proactive Level, which reflects our continuous improvement in SSHE performance from level 3 or Calculative Level in the first survey in 2011. It also reflects that all PTTEP employees take SSHE as the first priority in everyday operations.

In addition, PTTEP's 2017 Safety Key Performance Indicators of Lost Time Injury Frequency Rate (LTIF) and Total Recordable Injury (TRIR) turned out to be the best in the Company's history and in the Top Quartile of IOGP's performance for the group of companies with more and less than 50 million work hours, respectively. This is a direct result of our ongoing incident prevention campaigns in operations focusing on equipment moving/lifting activities, land transportation and chemical and hydrocarbon spills which are major contributors to PTTEP's statistics.

PTTEP operates according to the SSHE standards and legislation in all areas and follows up incidents via the Incident Management System (IMS). In 2017, the Company registered a patent of the IMS with the Department of Intellectual Property and is the first organization in Thailand that received a runner-up award in the Communication Category of the 2017 Global Duty of Care Awards from the International SOS Foundation. Those achievements are great credits to PTTEP that we put a priority on and 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.

Risk Factors

Due to technical and operational complications of the petroleum exploration and production business, together with high investment cost in new investment opportunities, exploration activities, development activities, as well as production activities, PTTEP therefore places a great importance on risk management by setting Risk Governance Framework to define roles and responsibilities for each level of authority, ranging from Board of Directors, management, and business units/functions to ensure that all the risks are taken care of, monitored, and reported with a systematic and efficient risk management.

In 2017, crude oil price improved from the previous year; however, a number of uncertainties led to the persistence of oil price volatility. As such, PTTEP has continued our strategies in maintaining unit cost and increasing operational efficiency, while striving for long-term sustainable growth. PTTEP is also shaping the organization to enhance our competitiveness in E&P business which is the 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

3.1.1 New Investment Risks

PTTEP continues to focus on E&P opportunities in the Southeast Asia, particularly Thailand, Malaysia, and Myanmar, which is the area that the Company is familiar with. We also continue to search for business opportunities in prolific petroleum areas with acceptable geopolitical risk and low cost of development and production. Certain risks and uncertainties must also be considered. These are such as political stability, energy policy changes, and clarity in regard to decommissioning decree and profit splits of the fiscal regimes.

The Company has mitigated those risks which may have potentially impacted our operations and investment growth in various ways, including conducting of due diligence, securing of proficient consultants, promoting of the understanding among stakeholders, proactively conducting public relations, monitoring and providing opinions for appropriate decommissioning in terms of the technical aspects, regulatory requirements, economic feasibility as well as study of the environmental and social impacts. In addition, we also regularly assess and analyze influence of the climate change in relation to the business, as well as identify our “Low Carbon Footprint Reduction” roadmap, targets and action plans to manage the risks and their impacts, such as carbon tax in the countries where we operate, and physical damage to our asset structures from the rise in global temperatures.

Investment in new countries or unfamiliar territories contains a number of inherent risks. The Company therefore has instituted risk mitigation guidelines for the assessment of each investment. The guidelines provide considerations 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, international relations, economic and financial stability. The risks are then taken into account from which prevention measures and options are formulated and integrated into the return-on-investment analysis or the 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 a given project must be intensively screened by the Investment Committee and Management Committee whose responsibility is to assess and ensure that the project adheres to the Company's investment direction and policy and that it is economically and technologically, whether conventional or unconventional resources are involved, feasible before proposing it to the Risk Management Committee prior to the final approval of the Board of Directors.

3.1.2 Organization Capability Risks

Organizational capability is a key factor towards the achievement of a Company's targets. Human resources are therefore inevitably of a great importance. Potential risks that may occur under this circumstance are, such as risk of 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 process and organizational capability.

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

(2) Systems, procedures, and organization structure are developed according to PTTEP's growth strategy and business plan. These are such as 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. Meanwhile, development of our financial and accounting management capability is aimed to take the Company to a world-class finance level. The development includes enhancement of efficiency of our managerial accounting data analysis for M&A decision making, establishment of the Shared Service Center and the Financial Academy training.

(3) To prepare for future overseas investment and to be in Thailand's Top Quartile by 2020, the Company has Human Resources Development plans for recruiting of the required and qualified staff members in operating and targeted countries, developing of their capabilities and leadership, as well as enhancing of their employee engagement. 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 & Market

3.2.1 Financial Risks

PTTEP systematically sets cash management policy with emphasis on sources of funds, debt financing, and liquidity management, while properly and timely managing financial risk 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 in support of the Company's investment planning and execution in both 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 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 risk which may arise from our inability to maintain adequate working capital necessary for the operations, PTTEP Group has a policy to eliminate and minimize such risk by preparing an appropriate and discreet cash flow management and maintaining both committed and uncommitted credit facilities with banks and financial institutions well in advance.

3.2.2 Commercial 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 25-30 years. To mitigate market risks which can result in refusals from buyers to purchase contracted volumes of natural gas, GSAs stipulate buyer and seller obligations for committed 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 energy market, 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 which 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 Price Risks

PTTEP Group's product prices vary, depending on those of the world's crude oil prices, which are subject to multiple factors beyond our control, for example, market demand and supply, political and economic stability of various countries, OPEC's production policy, capability and production plan of major oil producer countries (e.g. the United States of America, Russia), oil reserves in each country, and seasonal changes of the global climate.

Fluctuations in the world's oil prices immediately affect the prices of PTTEP Group's crude oil and condensate, while natural gas prices tend to follow the oil prices. Most of PTTEP Group's contractual natural gas prices are adjusted every 6 or 12 months, depending on the gas price formula of each project; as a result, natural gas price will move correspondingly, to a certain degree, to the prices of crude oil and condensate.

As of December 31, 2017, PTTEP Group has implemented an oil price hedging program for a volume of 7.7 million barrels for the year 2018 according to the objectives of the risk management framework.

3.2.4 Exchange Rate Risks

PTTEP Group uses the U.S. Dollar (USD) as the functional currency according to the International Financial Reporting Standards (IFRS) since the USD is 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 bear an exchange rate risk from the Thai Baht (THB) movement against the USD as most of the Company's revenue is in THB which is linked to the 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, the PTTEP Group has minimized the foreign exchange risk 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 a great effort to maintain a proper balance between our non-USD assets and liabilities, mainly in THB, as well as enter 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, and the cost and the Company's acceptable risk limits.

3.3 Political and Legal/Regulatory

3.3.1 Political Risk in Investment Countries

According to PTTEP's foreign investment policy to secure resources to meet the expanding domestic energy market and ensure long-term sustainable growth, the Company has prudently maintained our growth strategy of expanding business in countries which have been experiencing geopolitical risks. Under the circumstance, the Company appoints a geopolitical risk team to monitor all these factors and periodically analyze as well as report on the development, including political stability, macro-economics, legal and regulatory, and security, across a range of investment countries. In 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. Comprehensive assessments of these risks are immediately conducted and responded by the Company, especially when they are of significance. We, in such cases, have a process of evaluating the risks in various scenarios which assists our management and relevant departments to efficiently mitigate the risks related to the countries in which we invest.

Analysis is also conducted to formulate geopolitical risk's rating scores which will be used as part of the assessment process before making investments in new projects. In addition, PTTEP liaises closely with the Ministry of Foreign Affairs and Thai embassies in our invested countries to ensure that the Company's business operations are well-supported by these groups and that the projects are aligned with the respective national energy policies.

3.3.2 Compliance Risk

Generally, these risks can result from a variety of factors, such as complexity of specific laws, continual changes of laws and regulations, incorrect interpretation of laws, or even nuances of the language in which the laws are written. The risks can potentially lead to incorrect compliance, ultimately causing a violation of or non-compliance with applicable laws which may lead to pecuniary punishments, such as fines and operational difficulties, potential revocation, suspension of licenses, and possible damage to PTTEP's reputation. To minimize these risks, the Company has established the Compliance Department to be responsible for assuring that all of the business units strictly comply with their relevant laws, thereby building confidence among the Company's Board, management, and employees that we are fully compliant with laws relating to our business operations.

In 2015, there was a significant amendment to the Organic Act on Counter Corruption (No. 3) B.E. 2558 which extended the punishment to legal entity which relates to government official bribery. PTTEP immediately recognized the importance and impact of the latest amendment to the Act and, since, has prioritized the anti-corruption risk as an important risk which needs to be closely monitored as well as improved the internal control measures, so that they can effectively prevent all possible forms of corruption. The monitoring program continued in 2017. Details are disclosed in the "Corporate Governance" section, "Anti-Corruption" part.

3.4 Operational

3.4.1 Exploration Risks

Exploration activities are essential for the E&P business as it is 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 petroleum resources which are sizable enough for commercial development. The risk in exploration activities is related to geological risks and the uncertainty of finding a petroleum field of commercial size (Resources Volume Uncertainty).

The risks in exploration activities are largely associated with the chance of success of the exploration and appraisal drilling, and resource and size estimation. The risks, whether being high or low, however depends on several other factors, such as exploration period and planned expenditures, thoroughness of geological studies, seismic acquisition and interpretation, exploration economic evaluation, the government and parties involved, and the terms of contracts, as well.

PTTEP establishes a best practice process, 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 portfolio reflects and remains in line with changing of the environment, outcome of the overall exploration activities, and agreement with the corporative targets.

In addition, the Company also nominates a special and expert advisory team to review and ensure the quality and completeness of the investigation and that it is in compliance with the Company's standard and guideline of studies and evaluation prior to decision makings.

3.4.2 Project Development Risks

Following the oil price fluctuation, PTTEP has continued to adjust the Company's development plans as well as cost-cutting plans. Development projects which will contribute to increase of the reserves and production in the near future are such as those in the Mozambique Rovuma Offshore Area 1 Project, Algeria Hassi Bir Rekaiz Project, Mariana Oil Sands Project, and the Cash-Maple Field in PTTEP Australasia Project. Meanwhile, for new projects in which there are potential for project development delays and cost overruns, the Company has implemented the following risk mitigation measures to ensure that they all remain within the 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 our project team's skills which help us to better prepare for and protect ourselves from the increased competition in the employment market for those with extensive skills and experience in the field. Information and experience sharing from previous projects is 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 in line and realized.

(3) Commercial contracts: To ensure maximum efficiency to minimize the risks associated with non-contractual compliance and disputes while working with our contractors, the Company focuses on contract drafting, terms and conditions identification and contract administration. These risks can, however, be controlled by negotiations based on comprehensive competency, knowledge, and concerted effort from various departments, such as construction, engineering, procurement, finance, accounting, and legal. Prudent contract management also lessens the risks and possible damages which can potentially result from delays which, in turn, can affect 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 bottom of the well at the production process until the point of sale. These risks include, for example, 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, and production and sales targets.

Mitigation of the production risks focuses on the areas of process planning and platform design, production control systems, and preventive maintenance. The Asset Reliability & Integrity Management System (ARIMS) which is a part of the Operational Excellence Project has been continuously improved to ensure the highest standards of production integrity and safety. 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 attaining zero unplanned shutdown. Work procedures, operation manuals, and extensive training programs have meanwhile been developed and employed to instill greater understanding and efficiency among the Company's operation 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 the 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 impact the Company'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 the employees and contractors to understand the implementation process and objectives. This is in addition to allowing the SSHE awareness to be embedded in the corporate culture by providing training in regard to safety and risk management to improve the knowledge and performance as well as to keep the risks as low as reasonably practicable (ALARP).

PTTEP has monitored the 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 disaster, security status, and health infection in high risk countries to ensure that all situations are being monitored to determine the suitable mitigation plans for improvements, corrections, and preventions towards an even higher social and business sustainability.

3.4.5 Digital Security Threats Risks

In 2017, cybercrime became increasingly prominent across multiple business sectors through various channels, such as software vulnerability attack, ransomware, and malware which can potentially lead to business disruption. PTTEP recognizes the importance of digital security threats and has addressed 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.

The measures include upgrading of antivirus programs for early detection, raising IT security awareness and understanding among the Company's staff through IT security e-learning program, establishing of the Security Operation Center (SOC) to be responsible for IT network surveillance, and exercising of the Cyber Security Response Drill and Recovery Plan on a regular basis to ensure prompt response to disruptive situations.

3.5 Emerging Risk

3.5.1 Climate Change

Climate plays an important role in PTTEP's operation. A Cyclone or a flood, for example, can cause a serious damage to the Company's production platforms or make new exploration areas or production sites inaccessible. Meanwhile, global warming can cost the Company's in the form of carbon tax depending on the countries in which we operate.

PTTEP has developed, implemented, and incorporated greenhouse gas reduction initiative projects, energy efficiency improvement and other carbon offsetting schemes into our operations as the Company is targeting to reduce greenhouse gas emissions by at least 20% by 2020. The Company has also engaged with Thailand Greenhouse Gas Management Organization (TGO) to develop a set of protocols and methodologies to reduce greenhouse gases under the Thailand – Voluntary Emission Reduction (T-VER) project.

3.5.2 Risk 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, while appearing in all forms, such as more reliable and efficient energy storages, battery-powered cars (Electric Vehicle), as well as other renewables and EV businesses whose production costs have been driven down exponentially over the years. Oil demand has consequently been affected to the degree which some believe that days of the oil era can start to be numbered.

In this regard, PTTEP has formulated several mitigation plans to manage such risk, for example, establishing of the New Generation Exploration Team (NExT) to study diversified businesses. NExT however later became a transformative business unit titled “New Business” to go hand in hand with the corporate strategy (RENEW strategy). In addition, to minimize the Company’s financial reliance on Oil, we also focus on gas project acquisitions with committed market in short-term, gas potential exploration projects in long-term, and investment opportunities in the midstream, such as liquefaction, trading, and shipping through a joint cooperation with PTT in LNG Value Chain.

PTTEP and Our Subsidiaries' Assets

4.1 Property, Plant and Equipment

4.1.1 Oil and Gas Properties ¹

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, 2017, 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>
Contract 3 (B10, B11, B12 and B13)	5
E5	20
Sinphuhorm (E5 North)	20
Algeria Hassi Bir Rekaiz	24.5
S1	25
Bongkot	44.4445
Contract 4 (B12/27)	45
Arthit	80
<u>PTTEPI's joint ventures</u>	<u>Company's interest (%)</u>
G4/48	5
Yetagun	19.31784
G4/43	21.375
Yadana	25.5
Bongkot (G12/48)	44.4445
Contract 4 (G7/50)	45
MTJDA	50
Arthit (G8/50)	80
PTTEP1	100
G9/43	100
L22/43	100
Myanmar M3	80
Myanmar M11	100

¹ See more details in Attachment 5 – Supplemental Information on Petroleum Exploration and Production Activities (Unaudited)

Zawtika	80
L53/43 & L54/43	100
<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 ³	100
S1	75
<u>PTTEP SM's joint venture</u>	<u>Company's interest (%)</u>
Indonesia Semai II ⁴	28.33
<u>PTTEP SA's joint venture</u>	<u>Company's interest (%)</u>
Myanmar PSC G & EP 2 ⁵	-
Myanmar MD-7 ⁶	50
Myanmar MOGE 3	75
<u>PTTEP ML's joint venture</u>	<u>Company's interest (%)</u>
Indonesia Malunda ⁷	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 September 22, 2017, PTTEP Siam Limited (PTTEPS) received an approval from the Minister of Energy to receive the transfer of the participating interests in the B6/27 project from the other joint operation partners. As a result, its participating interests increased from 60% to 100%.

⁴ On November 7, 2014, PTTEP Semai II Limited (PTTEP SM) and joint operation partners had submitted a request to terminate and return the exploration block of Indonesia Semai II to the Government of Republic of Indonesia, after the fulfilment of the requirements of the Production Sharing Contract. The termination will be effective after receiving the official approval from the Government of Republic of Indonesia.

⁵ On July 17, 2017, PTTEP South Asia Limited (PTTEP SA) had submitted a request to terminate and return the exploration block of Myanmar PSC G & EP 2 Project to the Government of Republic of the Union of Myanmar, after the fulfilment of the requirements of the Production Sharing Contract which was effective since August 31, 2017.

⁶ On February 22, 2017, PTTEP South Asia Limited (PTTEP SA) received the official approval from the Government of the Republic of the Union of Myanmar for the transfer of the participating interests in the Myanmar MD-7 Project to the other joint operation partner. As a result, its participating interests decreased from 100% to 50%. PTTEP SA still is the operator of this project.

⁷ On May 8, 2015, PTTEP Malunda Limited (PTTEP ML) had submitted a request to terminate and return the exploration block of Indonesia Malunda Project after the fulfilment of the requirements of the Production Sharing Contract. The termination will be effective after receiving the official approval from the Government of Republic of Indonesia.

<u>PTTEP CA's joint venture</u>	<u>Company's interest (%)</u>
Mariana Oil Sands	100
<u>PTTEP AP's joint venture</u>	<u>Company's interest (%)</u>
PTTEP Australasia	
• AC/L7, AC/L8, AC/RL7, AC/RL12 and AC/P54	100
• AC/L1, AC/L2 and 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 Energy 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

As at December 31, 2017, 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	26,226.23	(17,688.42)	(1,225.49)	7,312.32
Exploration and Evaluation Assets	5,098.22	-	(1,791.24)	3,306.98
Goodwill	1,134.08	-	(119.70)	1,014.38
Pipeline and Others	1,192.10	(380.81)	(5.25)	806.04
Total	33,650.63	(18,069.23)	(3,141.68)	12,439.72

4.2 Investments

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

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2017	2016
<u>Subsidiaries</u>				
PTTEP International Limited (PTTEPI)	Thailand	Petroleum	100	100
PTTEP Offshore Investment Company Limited (PTTEPO)	Cayman Islands	Petroleum	100	100
PTTEP Services Limited (PTTEP Services)	Thailand	Human resource support	100	100
PTTEP Siam Limited (PTTEPS)	Thailand	Petroleum	100	100
PTTEP MEA Limited (PTTEP MEA) ¹	Cayman Islands	Petroleum	-	100
PTTEP HK Holding Limited (PTTEP HK)	Hong Kong	Petroleum	100	100
PTTEP Treasury Center Company Limited (PTTEP TC)	Thailand	Treasury center for the Group's business	100	100
PTTEP Business Center Company Limited (PTTEP BC)	Thailand	Petroleum	100	100
PTTEP Southwest Vietnam Company Limited (PTTEP SV)	Cayman Islands	Petroleum	100	100
PTTEP Kim Long Vietnam Company Limited (PTTEP KV)	Cayman Islands	Petroleum	100	100
PTTEP Hoang-Long Company Limited (PTTEP HL) ²	Cayman Islands	Petroleum	100	100
PTTEP Hoan-Vu Company Limited (PTTEP HV) ³	Cayman Islands	Petroleum	100	100
PTTEP Algeria Company Limited (PTTEP AG)	Cayman Islands	Petroleum	100	100
PTTEP Holding Company Limited (PTTEPH)	Cayman Islands	Petroleum	100	100
PTTEP Indonesia Company Limited (PTTEP ID)	Cayman Islands	Petroleum	100	100
PTTEP Africa Investment Limited (PTTEP AI)	Cayman Islands	Petroleum	100	100
PTTEP Rommana Company Limited (PTTEPR)	Cayman Islands	Petroleum	100	100
PTTEP Australia Pty Ltd (PTTEP AU)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australia Offshore Pty Ltd (PTTEP AO)	Commonwealth of Australia	Petroleum	100	100
PTTEP South Asia Limited (PTTEP SA)	Cayman Islands	Petroleum	100	100
PTTEP Semai II Limited (PTTEP SM)	Cayman Islands	Petroleum	100	100
PTTEP Australia Perth Pty Ltd (PTTEP AP)	Commonwealth of Australia	Petroleum	100	100

¹ On December 29, 2017, PTTEP MEA Limited (PTTEP MEA) received the approval of dissolution of the company from the registrar, as disclosed in Note 18.6 – Significant Transactions during the Year.

² PTTEP HL has a 28.5% shareholding in Hoang-Long Joint Operating Company.

³ PTTEP HV has a 25% shareholding in Hoan-Vu Joint Operating Company.

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2017	2016
<u>Subsidiaries</u> (continued)				
PTTEP Australia Browse Basin Pty Ltd (PTTEP AB)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australia International Finance Pty Ltd (PTTEP AIF) ⁴	Commonwealth of Australia	Investment funding for the Group's business	-	100
PTTEP Australasia Pty Ltd (PTTEP AA) ⁴	Commonwealth of Australia	Petroleum	-	100
PTTEP Australia Timor Sea Pty Ltd (PTTEP AT)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Finance) Pty Ltd (PTTEP AAF) ⁴	Commonwealth of Australia	Petroleum	-	100
PTTEP Australasia (Petroleum) Pty Ltd (PTTEP AAP) ⁴	Commonwealth of Australia	Petroleum	-	100
Tullian Pty Ltd (PTTEP AAT) ⁴	Commonwealth of Australia	Petroleum	-	100
PTTEP Australasia (Operations) Pty Ltd (PTTEP AAO)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AAA)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Staff) Pty Ltd (PTTEP AAS)	Commonwealth of Australia	Petroleum	100	100
PTTEP International Holding Company Limited (PTTEP IH)	Cayman Islands	Petroleum	100	100
PTTEP Southwest Vietnam Pipeline Company Limited (PTTEP SVPC)	Cayman Islands	Gas pipeline transportation	100	100
PTTEP FLNG Holding Company Limited (PTTEP FH) ⁵	Hong Kong	Petroleum	100	100
PTTEP Netherland Holding Limited (PTTEP NL)	Cayman Islands	Petroleum	100	100
JV Marine Limited (JV Marine)	Cayman Islands	Petroleum	100	100
PTTEP South Mandar Limited (PTTEP SMD)	Cayman Islands	Petroleum	100	100
PTTEP South Sageri Limited (PTTEP SS)	Cayman Islands	Petroleum	100	100
PTTEP Sadang Limited (PTTEP SD)	Cayman Islands	Petroleum	100	100
PTTEP Malunda Limited (PTTEP ML)	Cayman Islands	Petroleum	100	100

⁴ On March 19, 2017, the entities in the Group of PTTEP Australia Perth Pty Ltd (PTTEP AP) received the approval of dissolution of the company from the registrar, as disclosed in Note 18.6 – Significant Transactions during the Year.

⁵ On August 24, 2017, the Company approved for the registration for the dissolution of PTTEP FLNG Holding Company Limited (PTTEP FH), as disclosed in Note 18.6 – Significant Transactions during the Year.

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2017	2016
<u>Subsidiaries</u> (continued)				
PTTEP Netherlands Coöperatie U.A. (PTTEP NC)	Netherlands	Petroleum	100	100
PTTEP Canada Limited (PTTEP CA)	Canada	Petroleum	100	100
PTTEP Canada International Finance Limited (PTTEP CIF)	Canada	Investment funding for the Group's business	100	100
Cove Energy Limited (Cove)	United Kingdom of Great Britain and Northern Ireland	Petroleum	100	100
Cove Energy Mozambique Rovuma Onshore Limited (CEMROL) ⁶	Republic of Cyprus	Petroleum	100	100
Cove Energy East Africa Limited (CEEAL)	Republic of Cyprus	Petroleum	100	100
PTTEP Mozambique Area 1 Limited (PTTEP MZA1)	Republic of Cyprus	Petroleum	100	100
Cove Energy Kenya Limited (CEKL) ⁷	Republic of Kenya	Petroleum	100	100
PTTEP Netherlands Holding Coöperatie U.A. (PTTEP NH)	Netherlands	Petroleum	100	100
PTTEP Brazil Investment B.V. (PTTEP BI)	Netherlands	Petroleum	100	100
PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL)	Federative Republic of Brazil	Petroleum	100	100
Sinphuhorm Holdings Limited (SHL)	Cayman Islands	Petroleum	100	100
PTTEP SP Limited (PTTEP SP)	United Kingdom of Great Britain and Northern Ireland	Petroleum	100	100
PTTEP G7 Limited (PTTEP G7)	Thailand	Petroleum	100	100
PTTEP HK Offshore Limited (PTTEP HKO)	Hong Kong	Petroleum	100	100
PTTEP Mexico E&P Limited, S. de R.L. de C.V. (PTTEP MEP) ⁸	Mexico	Petroleum	100	-
<u>Associates</u>				
Energy Complex Company Limited (EnCo)	Thailand	Property rental services	50	50
PTT Digital Solutions Company Limited (PTT Digital) ⁹	Thailand	Information technology and communication Services	20	20

⁶ On May 22, 2017, the Company approved for the registration for the dissolution of Cove Energy Mozambique Rovuma Onshore Limited (CEMROL), as disclosed in Note 18.6 – Significant Transactions during the Year.

⁷ On May 22, 2017, the Company approved for the registration for the dissolution of Cove Energy Kenya Limited (CEKL), as disclosed in Note 18.6 – Significant Transactions during the Year.

⁸ On October 24, 2017, the Group established PTTEP MEXICO E&P LIMITED, S. DE R.L. DE C.V. (PTTEP MEP), as disclosed in Note 18.6 – Significant Transactions during the Year.

⁹ Changed the name from PTT ICT Solutions Company Limited (PTT ICT) to PTT Digital Solutions Company Limited (PTT Digital), as disclosed in Note 18.6 – Significant Transactions during the Year.

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2017	2016
<u>Associates (continued)</u>				
PTTEP AP Group’s Associates ¹⁰	Commonwealth of Australia	Air base services	50	50
PTT Global LNG Company Limited (PTT GL) ¹¹	Thailand	Petroleum	50	-
<u>Joint Ventures</u>				
PTT FLNG Limited (PTT FLNG) ¹²	Hong Kong	Produce and sale of petroleum product	-	50
Erawan 2 FSO Bahamas Limited (Erawan 2) ¹³	Bahamas	FSO rental services	13.11	13.11
<u>Joint Operations</u>				
Carigali – PTTEPI Operating Company Sdn Bhd. (CPOC)	Malaysia	Petroleum	50	50
Moattama Gas Transportation Company (MGTC)	Bermuda	Gas pipeline transportation	25.5	25.5
Taninthayi Pipeline Company LLC (TPC)	Cayman Islands	Gas pipeline transportation	19.3178	19.3178
Orange Energy Limited (Orange)	Thailand	Petroleum	53.9496	53.9496
B8/32 Partners Limited (B8/32 Partners)	Thailand	Petroleum	25.0009	25.0009
Leismer Aerodrome Limited (LAL)	Canada	Airports and flying field services	32	32
Groupement Bir Seba (GBRS)	People’s Democratic Republic of Algeria	Petroleum	35	35
Andaman Transportation Limited (ATL)	Cayman Islands	Gas pipeline transportation	80	80
Natuna 2 B.V. (Natuna 2)	Netherlands	Petroleum	50	50
Mozambique LNG1 Company Pte. Ltd (MZ LNG1) ¹⁴	Singapore	Petroleum	8.50	-

4.3 Net Book Value

As at December 31, 2017, PTTEP's net book value amounted to 11,517 MMUSD (equivalent to 376,375 MMTHB) or USD 2.90 per share (equivalent to THB 94.81 per share).

¹⁰ PTTEP AP's group associates are Mungalalu Truscott Airbase Pty Ltd and Troughton Island Pty Ltd.

¹¹ On June 23, 2017, PTTEP Business Center Company Limited (PTTEP BC), a subsidiary of the Group, had jointly invested with PTT Public Company Limited (PTT) to establish PTT Global LNG Company Limited (PTT GL), as disclosed in Note 18.6 – Significant Transactions during the Year.

¹² On June 16, 2017, PTT FLNG Limited (PTT FLNG) had received the approval of dissolution of the company from the Government of Hong Kong, as disclosed in Note 18.6 – Significant Transactions during the Year.

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

¹⁴ On March 21, 2017, PTTEP Mozambique Area 1 Limited (PTTEP MZA1), a subsidiary of the Group, has invested with its participating interests of 8.5% in Mozambique LNG1 Company Pte. Ltd. (MZ LNG1), as disclosed in Note 18.6 – Significant Transactions during the Year.

Legal Dispute

As of December 31, 2017, the outstanding legal disputes which PTTEP or one of the Company's subsidiaries is a party involved as well as those which can significantly affect our operation or the subsidiary's, excluding disputes from the normal operation and circumstance, are as follows:

5.1 PTTEP and PTTEP Australasia (Ashmore Cartier) Pty Ltd ("PTTEP AAA") were sued by the Ministry of Environment and Forestry of Indonesia at the Central Jakarta District Court of Indonesia for the environmental damages and environmental recovery costs.

On May 3, 2017, the Ministry of Environment and Forestry of Indonesia filed a lawsuit against PTTEP and PTTEP AAA at the Central Jakarta District Court of Indonesia, claiming for the damages of mangrove forests, seagrass meadows, and coral reefs, and environmental recovery costs at the total amount of IDR 27,482,674,332,000 (approximately USD 2.1 billion) from 2009 Montara incident in Australia. As of December 31, 2017, the case was still under the court proceeding.

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

On August 1, 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, 2017, the case was still under the court proceeding. This lawsuit did not state the amount of claim.

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 no lasting impact on the highly sensitive and biodiverse ecosystems in Australian waters in the areas closest to Indonesian waters, and that there is no long-term damage to the environment in the Timor Sea.

General 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, 2017

6.2 Subsidiaries' Information¹

As of December 31, 2017, there were 60 subsidiaries which can be categorized as follows:

- Subsidiaries which had the same contact address, telephone and facsimile as those of PTTEP. Details of directors designated by the PTTEP Group of each subsidiary are disclosed in Attachment 2.

No.	Company Name	Abbreviation	Number of Shares Sold	Shareholders
Petroleum Exploration and Production Business				
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	6,413,741	PTTEPI 100%
5.	JV Marine Limited	JV Marine	50,000	PTTEP IH 100%
6.	PTTEP Algeria Company Limited	PTTEP AG	50,000	PTTEPO 100%
7.	PTTEP Africa Investment Limited	PTTEP AI	50,000	PTTEPH 100%
8.	PTTEP Holding Company Limited	PTTEPH	50,000	PTTEPO 100%
9.	PTTEP Hoang-Long Company Limited	PTTEP HL	50,000	PTTEPO 100%
10.	PTTEP Hoan-Vu Company Limited	PTTEP HV	50,000	PTTEPO 100%
11.	PTTEP Indonesia Company Limited	PTTEP ID	50,000	PTTEPH 100%
12.	PTTEP International Holding Company Limited	PTTEP IH	50,000	PTTEPH 100%
13.	PTTEP Kim Long Vietnam Company Limited	PTTEP KV	50,000	PTTEPO 100%
14.	PTTEP Malunda Limited	PTTEP ML	50,000	PTTEP ID 100%
15.	PTTEP South Asia Limited	PTTEP SA	50,000	PTTEPH 100%
16.	PTTEP Netherland Holding Limited	PTTEP NL	50,000	PTTEP IH 100%

¹ Notification of the Securities and Exchange Commission Kor Chor. 17/2551 Determination of Definitions in Notifications relating to Issuance and Offer for Sale of Securities

No.	Company Name	Abbreviation	Number of Shares Sold		Shareholders	
17.	PTTEP Offshore Investment Company Limited	PTTEPO	6,667	Ordinary Share	PTTEP PTTEPI	75% 25%
18.	PTTEP Rommana Company Limited	PTTEPR	50,000	Ordinary Share	PTTEP AI	100%
19.	PTTEP Sadang Limited	PTTEP SD	50,000	Ordinary Share	PTTEP ID	100%
20.	PTTEP Semai II Limited	PTTEP SM	50,000	Ordinary Share	PTTEP ID	100%
21.	PTTEP South Mandar Limited	PTTEP SMD	50,000	Ordinary Share	PTTEP ID	100%
22.	PTTEP South Sageri Limited	PTTEP SS	50,000	Ordinary Share	PTTEP ID	100%
23.	PTTEP Southwest Vietnam Company Limited	PTTEP SV	50,000	Ordinary Share	PTTEPO	100%
24.	Sinphuhorm Holdings Limited	SHL	100	Ordinary Share	PTTEPO	100%
25.	PTTEP Australia Pty Ltd	PTTEP AU	50,000	Ordinary Share	PTTEPH	100%
26.	PTTEP Australia Offshore Pty Ltd	PTTEP AO	50,000	Ordinary Share	PTTEP AU	100%
27.	PTTEP Australia Perth Pty Ltd	PTTEP AP	50,000	Ordinary Share	PTTEPH	100%
28.	PTTEP Australia Browse Basin Pty Ltd	PTTEP AB	50,000	Ordinary Share	PTTEP AP	100%
29.	PTTEP Australasia (Staff) Pty Ltd	PTTEP AAS	10	Ordinary Share	PTTEP AB	100%
30.	PTTEP Australasia (Ashmore Cartier) Pty Ltd	PTTEP AAA	1,700,000	Ordinary Share	PTTEP AB	100%
31.	PTTEP Australasia (Operations) Pty Ltd	PTTEP AAO	106,686,517	Ordinary Share	PTTEP AB	100%
32.	PTTEP Australia Timor Sea Pty Ltd	PTTEP AT	50	Ordinary Share	PTTEP AB	100%
33.	PTTEP Netherlands Coöperatie U.A.	PTTEP NC	-	-	PTTEP IH PTTEP NL	0.00005% 99.99995%
34.	PTTEP Netherlands Holding Coöperatie U.A.	PTTEP NH	-	-	PTTEP HK PTTEPI	75% 25%
35.	PTTEP Brazil Investment B.V.	PTTEP BI	50,000	Ordinary Share	PTTEP NH	100%
36.	PTTEP Canada Limited	PTTEP CA	2,932,513,490	Ordinary Share	PTTEP NC	100%
37.	PTTEP FLNG Holding Company Limited	PTTEP FH	10,000	Ordinary Share	PTTEP IH	100%
38.	PTTEP HK Holding Limited	PTTEP HK	10,000	Ordinary Share	PTTEP PTTEPI	25% 75%
39.	Cove Energy Limited	COVE	508,912,947	Ordinary Share	PTTEP AI	100%

No.	Company Name	Abbreviation	Number of Shares Sold		Shareholders	
40.	Cove Energy East Africa Limited	CEEAL	1,000	Ordinary Share	COVE	100%
41.	Cove Energy Mozambique Rovuma Onshore Limited	CEMROL	1,000	Ordinary Share	CEEAL	100%
42.	PTTEP Mozambique Area 1 Limited	PTTEP MZA1	1,000	Ordinary Share	CEEAL	100%
43.	Cove Energy Kenya Limited	CEKL	1,000	Ordinary Share	CEEAL COVE	99.9% 0.1%
44.	PTTEP Brasil Investimentos Em Exploração e Produção de Petróleo e Gás Ltda.	PTTEP BL	790,293,700	Ordinary Share	PTTEP BI PTTEP NH	99.9999999% 0.0000001%
45.	PTTEP SP Limited	PTTEP SP	2	Ordinary Share	SHL	100%
			95,279,585	Ordinary Share		
46.	PTTEP HK Offshore Limited ²	PTTEP HKO	10,000	Ordinary Share	PTTEP HK	100%
47.	PTTEP Mexico E&P Limited, S. de R.L. de C.V.	PTTEP MEP	3,000	Ordinary Share	PTTEP HK PTTEP HKO	99% 1%
Service Business						
48.	PTTEP Services Limited (Personnel Services Support)	PTTEP Services	100,000	Ordinary Share	PTTEP PTTEPI	25% 75%
49.	Andaman Transportation Limited (Investments in gas pipeline projects in Myanmar)	ATL	62,500	Ordinary Share	PTTEPO MOGE	80% 20%
50.	PTTEP Southwest Vietnam Pipeline Company Limited (Investments in gas pipeline projects in Vietnam)	PTTEP SVPC	50,000	Ordinary Share	PTTEPH	100%
51.	PTTEP Canada International Finance Limited (Raise Fund for PTTEP Business)	PTTEP Cif	50,000	Ordinary Share	PTTEP NC	100%
52.	PTTEP Treasury Center Company Limited (Treasury Center for PTTEP and subsidiaries)	PTTEP TC	10,000,000	Ordinary Share	PTTEP PTTEPI	25% 75%
53.	PTTEP Business Center Company Limited (Business Center for PTTEP and subsidiaries)	PTTEP BC	521,572,300	Ordinary Share	PTTEP PTTEPI	25% 75%

² Formerly known as PTTEP HK Investment Limited

- Subsidiaries which had different contact address, telephone and facsimile from PTTEP³.

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
54.	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 Centre, 50088 Kuala Lumpur, Malaysia				
	Telephone: +603-2782-2555				
	Facsimile: +603-2713-9877				
55.	PTT Global LNG Company Limited	Petroleum Exploration and Production	PTT GL	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				
56.	PTT Global LNG Investment	Petroleum Exploration and Production	PTT GLI	309,800,000	<ul style="list-style-type: none"> PTT GL 100%
	Head Office: 1401 Hutchison House, 10 Harcourt Road, Hong Kong				
	Telephone: +852-2846-2345				
	Facsimile: +852-2845-0476				
57.	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				

³ 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
58.	Munglalalu Truscott Airbase Pty Ltd	Operation of Air Base	-	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				
59.	Troughton Island Pty Ltd	Operation of Air Base (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				
60.	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: -				

Remark: Name of other shareholders in subsidiaries

Abbreviation	Name
PTT	PTT Public Company Limited
PTT GL	PTT Global LNG 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 Company's Information⁴

As of December 31, 2017, PTTEP had 12 associated companies. Details of the directors designated by the PTTEP Group of 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	<ul style="list-style-type: none"> ● PTTEP 20% ● PTT 20% ● PTTGC 40% ● ThaiOil 20%
	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	<ul style="list-style-type: none"> ● PTTEPO 25.5% ● Unocal Myanmar 28.2625% ● Total E&P Myanmar 31.2375% ● MOGE 15%
	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	<ul style="list-style-type: none"> ● PTTEPO 19.31784% ● PCM III 30.00140% ● PCML 10.90878% ● MOGE 20.45414% ● Nippon 19.31784%
	Head Office: 16 Shwe Taung Kyar Bahan, Yangon, Myanmar				
	Telephone: +95-1-526-411-4 Facsimile: +95-1-525-698				

⁴ Notification of the Securities and Exchange Commission Kor Chor. 17/2551 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
4.	B8/32 Partners Limited	Petroleum Exploration and Production	B 8/32 Partners	110,000	Ordinary Share	<ul style="list-style-type: none"> ● PTTEPO 25% ● MOECO BV 16.71% ● KrisEnergy 4.63% ● Chevron Global 46.34% ● Chevron 7.32%
	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: -					
5.	Hoang Long Joint Operating Company	Petroleum Exploration and Production	HL JOC	⁵ -	-	<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	⁶ -	-	<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					

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

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

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
7.	Groupement Bir Seba	Petroleum Exploration and Production	GBRS	-	<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 Centre, Montagu Foreshore, East Bay Street, Nassau, New Providence, Bahamas P.O. Box SS-19084				
	Telephone: -				
	Facsimile: -				
9.	Leismer Aerodrome Limited	Operation of Air Base	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.	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, Teestone 8, 1043 BW Amsterdam, The Netherlands				
	Telephone: -				
	Facsimile: -				

⁷ No share was issued. Percentage of shareholding is subject to participation interest of the concession.

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Shareholders
11.	Mozambique LNG 1 Company Pte. Ltd.	Petroleum Exploration and Production	MZ LNG 1	250,000	Ordinary Share
	Head Office: 50 Raffles Place #60-00 Singapore Land Tower, Singapore 048623				
	Telephone: -				
	Facsimile: -				
12.	Sarn Palung Social Enterprise Company Limited	Execution of social enterprises of PTT group companies	PTT SE	1,000,000	Ordinary Share
	Head Office: 555/1 Energy Complex Building A, 10 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand				
	Telephone: +66-2537-2971				
	Facsimile: -				

Remark: Name of other shareholders in associated companies

Abbreviation	Name
PTT	PTT Public Company Limited
PTTGC	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.

Abbreviation	Name
Erawan 2 FSO	Erawan 2 FSO Bahamas Ltd.
ENH	Empresa Nacional De Hidrocarbonetos
FCCL	FCCL Partnership
KrisEnergy	KrisEnergy (Gulf of Thailand) Ltd.
MITSUI	Mitsui E&P Mozambique Area 1 Limited
MOGE	Myanmar Oil and Gas Enterprise
MOECO BV	MOECO International B.V.
MOECO	Mitsui Oil Exploration Co., Ltd.
Nippon	Nippon Oil Exploration (Myanmar) Ltd.
ONGC Videsh	ONGC Videsh Limited
OPECO	OPECO Vietnam Ltd.
PCML	Petronas Carigali Myanmar (Hong Kong) Ltd.
PCM III	Petronas Carigali Myanmar III Inc.
PTTOR	PTT Oil and Retail Business 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, Rachadaphisek Road, Dindaeng, Bangkok 10400, Thailand
	Telephone	+66-2009-9000
	SET Contact Center	+66-2009-9999
	Facsimile	+66-2009-9991
	E-mail	SETContactCenter@set.or.th
	Website	http://www.set.or.th/tsd

2) Registrar and Paying Agent

- 2.1) Registrar and paying agent for THB 2,500 million debentures issued in March 2003, 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 USD 700 million debentures issued in April 2011, outstanding USD 323 million debentures issued in September 2013, 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	#03-01 Millenia Tower, 1 Temasek Avenue, Singapore 039192
Telephone	+65-6632-0120, +65-6432-0351, +65-6432-0354
Facsimile	+65-6883-0338

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

Name	Citicorp International Limited
Address	39 th 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 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) Facility Agent

- 6.1) Facility agent for USD 500 million loan agreement dated in November 2010

Name	The Bank of Tokyo-Mitsubishi UFJ, Ltd.
Address	10 th Floor, AIA Central, 1 Connaught Road, Central, Hong Kong
Telephone	+852-2823-6698, +852-2823-6691, +852-2823-6962, +852-2823-6693
Facsimile	+852-2823-6686

7) Process Agent for Bank Loan

- 7.1) Process agent for USD 500 million loan agreement dated in November 2010

Name	Law Debenture Corporate Services Limited
Address	5 th Floor, 100 Wood Street, London EC2V 7EX
Telephone	+44-20-7606-5451
Facsimile	+44-20-7606-0643

8) Process Agent for Common Shares

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

9) Interest Rate Swap Counterparties

9.1)	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

10) Cross Currency Swap Counterparties

10.1)	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
10.2)	Name	Deutsche Bank AG, Bangkok Branch
	Division	Corporate Treasury Sales
	Address	63 Athenee Tower, 27 th -29 th Floor, Wireless Road, Lumpini, Pathumwan, Bangkok 10330, Thailand
	Telephone	+66-2646-5139
	Facsimile	+66-2651-5892
10.3)	Name	Siam Commercial Bank Public Company Limited
	Division	Financial Market Division
	Address	12 th Floor, Zone B, 9 Ratchadaphisek Road, Chatuchak, Bangkok 10900, Thailand
	Telephone	+66-2544-5741-9
	Facsimile	+66-2937-7968

11) FX Contracts Counterparties

11.1)	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
11.2)	Name	Krung Thai Bank Public Company Limited
	Division	Corporate Sales, Global Markets Group
	Address	Building 1 (Nana Nua), 8 th Floor, 35 Sukhumvit Road, Klongtoey Nua, Wattana, Bangkok 10110, Thailand
	Telephone	+66-2208-4644
	Facsimile	+66-2256-8398
11.3)	Name	Siam Commercial Bank Public Company Limited
	Division	Financial Market Division
	Address	12 th Floor, Zone B, 9 Ratchadaphisek Road, Chatuchak, Bangkok 10900, Thailand
	Telephone	+66-2544-5741-9
	Facsimile	+66-2937-7969
11.4)	Name	The Hongkong and Shanghai Banking Corporation Limited
	Division	Corporate Marketing and Sales
	Address	968 HSBC Building, Rama IV Road, Silom, Bangrak, Bangkok 10500, Thailand
	Telephone	+66-2614-4848
	Facsimile	+66-2632-4831
11.5)	Name	Bank of America, National Association
	Division	Fixed Income Currencies and Commodities (FICC) Sales
	Address	87/2 All Seasons Place, CRC Tower, 20 th Floor, Wireless Road, Bangkok 10330, Thailand
	Telephone	+66-2305-2988, +66-2305-2986
	Facsimile	+66-2685-3224

11.6)	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
11.7)	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
11.8)	Name	Bank of Ayudhya Public Company Limited
	Division	Sales & Trading Division Global Markets Group
	Address	1222 Rama III Road, Bang Phongphang, Yannawa, Bangkok 10120, Thailand
	Telephone	+66-2021-6207, +66-2021-6385
	Facsimile	+66-2266-3048
11.9)	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
11.10)	Name	Oversea-Chinese Banking Corporation Limited
	Division	Global Markets
	Address	1 Q.House Lumpini Building, 15 th Floor, Unit 2, South Sathon Road, Tungmahamek, Sathon, Bangkok 10120, Thailand
	Telephone	+66-2287-9852
	Facsimile	+66-2287-9898

11.11)	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
11.12)	Name	United Overseas Bank (Thai) Public Company Limited
	Division	Global Markets
	Address	191 South Sathon Road, Bangkok 10120, Thailand
	Telephone	+66-2028-9898
	Facsimile	+66-2285-1365
11.13)	Name	BNP Paribas Bangkok Branch
	Division	Global Markets Corporate Sales
	Address	990 Abdulrahim Place, 29 th Floor, Rama IV Road, Silom, Bangrak, Bangkok 10500, Thailand
	Telephone	+66-2659-8990-3
	Facsimile	+66-2636-1929
11.14)	Name	ANZ Bank (Thai) Public Company Limited
	Division	Markets
	Address	63 Athenee Tower, 8 th Floor, Unit 801-807, Wireless Road, Lumpini, Pathumwan, Bangkok 10330, Thailand
	Telephone	+66-2263-9722
	Facsimile	+66-2168-8780
11.15)	Name	Sumitomo Mitsui Banking Corporation
	Division	Treasury Department
	Address	1 Q.House Lumpini Building, 8 th -10 th Floor, South Sathon Road, Tungmahamek, Sathon, Bangkok 10120, Thailand
	Telephone	+66-2353-8188
	Facsimile	+66-2353-8815-16
12)	<u>Auditor</u>	
12.1)	Name	Office of the Auditor General of Thailand
	Address	Soi Areesampan, Rama VI Road, Phayathai, Bangkok 10400, Thailand
	Telephone	+66-2271-8112
	Facsimile	+66-2618-5790

13) Legal Advisors

- | | | |
|-------|--------------------|---|
| 13.1) | 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 |
| 13.2) | Name | Herbert Smith Freehills LLP |
| | Address (1) | Exchange House, Primrose Street,
London, United Kingdom EC2A 2EG |
| | Telephone | +44-20-7374-8000 |
| | Facsimile | +44-20-7374-0888 |
| | Address (2) | 50 Raffles Place, Singapore Land Tower # 24-01,
Singapore 048622 |
| | Telephone | +65-6868-8000 |
| | Facsimile | +65-6868-8001 |
| 13.3) | Name | Pracha Tooppoltup Law Office |
| | Address | 48/51 The Premium Place, Soi Praditmanutham 27,
Praditmanutham Road, Ladprao, Ladprao,
Bangkok 10230, Thailand |
| | Telephone | +66-2530-3173 |
| | Facsimile | - |
| 13.4) | Name | Siam Premier International Law Office Limited |
| | Address | 26 th Floor, The Offices of Central World,
999/9 Rama I Road, Pathumwan, Bangkok 10330, Thailand |
| | Telephone | +66-2646-1888 |
| | Facsimile | +66-2646-1919 |
| 13.5) | Name | Skrine |
| | Address | Unit No. 50-8-1, 8 th Floor, Wisma UOA Damansara, 50,
Jalan Dungun, Damansara Heights, 50490,
Kuala Lumpur, Malaysia |
| | Telephone | +603-2081-3906 |
| | Facsimile | +603-2094-3211 |

- | | | |
|--------|------------------|--|
| 13.6) | Name | Weerawong, Chinnavat & Partners Ltd. |
| | Address | 540 Mercury Tower 22 nd Floor, Ploenchit Road,
Lumpini, Pathumwan, Bangkok 10330, Thailand |
| | Telephone | +66-2264-8000 |
| | Facsimile | +66-2657-2222 |
| 13.7) | Name | EY Corporate Services Limited |
| | Address | 33 rd Floor, Lake Rajada Office Complex, 193/136-137,
Rachadaphisek Road, Khlong Toei, Bangkok 10110, Thailand |
| | Telephone | +66-2264-9090 |
| | Facsimile | - |
| 13.8) | Name | EH & Partners |
| | Address | 1 Bradman House, Abercorn Place,
London, United Kingdom NW8 9XY |
| | Telephone | +44-78-9195-0004 |
| | Facsimile | +44-20-7692-8979 |
| 13.9) | Name | Vietnam International Law Firm |
| | Address | MPlaza Saigon, Suite 404-406, 39 Le Duan Street,
District 1, Ho Chi Minh City, Vietnam 70000 |
| | Telephone | +84-28-3827-7300 |
| | Facsimile | +84-28-3827-7303 |
| 13.10) | Name | Fredrik J. Pinakunary Law Offices |
| | Address | Office 8 Building, 17 th Floor,
Jl. Jenderal Sudirman Kav. 52-53
SCBD Lot. 28, Jakarta, Indonesia 12190 |
| | Telephone | +62-21-2933-2990 |
| | Facsimile | +62-21-2933-2992 |
| 13.11) | Name | South Asia Law Co., Ltd. |
| | Address | 1-7 Zuellig House 5 th Floor, Silom Road,
Silom, Bangrak, Bangkok 10500, Thailand |
| | Telephone | +66-2636-0585 |
| | Facsimile | +66-2636-0587 |

13.12) Name Chandler MHM Limited
Address 7th - 9th, 12th and 16th Floors, Bubhagit Building,
20 North Sathon Road, Bangkok 10500, Thailand
Telephone +66-2266-6485
Facsimile +66-2266-6483

13.13) Name Atthaworadej & Associates Co., Ltd.
Address 12th Floor, Srijulsap Tower,
44 Rama I Road, Pathumwan,
Bangkok 10330, Thailand
Telephone +66-2613-9449
Facsimile +66-2613-9449

13.14) Name Siam Justice Law Office
Address 996-998 Song Wat Road, Chakkrawat,
Samphanthawong, Bangkok 10110, Thailand
Telephone +66-87-724-6688
Facsimile -

13.15) Name Chuwattana Law Office
Address 418/13 Moo 5, Tambon Hua Ro,
Amphoe Mueang, Phitsanulok 65000, Thailand
Telephone +66-81-534-0306
Facsimile -

14) Advisor to the Board of Directors

14.1) Name Mr. Tongchat Hongladarom
Address 8/48 Prasanmit Condominium, Sukhumvit 23,
Klongtoey-Nua, Wattana, Bangkok 10110, Thailand
Telephone +66-2258-4363
Facsimile +66-2258-4363

15) Advisor to the Risk Management Committee

15.1) Name Mr. Nuttachat Charuchinda
Address 52/48 Moo 2, Bangkhen, Nonthaburi 11000, Thailand
Telephone +66-2140-3811
Facsimile -

6.5 Other Significant Information

- None -

Section 2

Corporate Governance



Securities and Shareholders

7.1 Capital Structure

As of December 31, 2017, PTTEP's capital structure comprised USD 2,907.16 million of interest-bearing debt and USD 11,516.65 million of shareholders' equity, resulting in an interest-bearing debt to shareholders' equity ratio of 0.25. Details of the capital structure are as follows:

7.1.1 Securities

Capital Stock

As of December 31, 2017, 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, BBB+, and A- from reputable international credit-rating agencies, namely, Moody's Investors Service ("Moody's"), Standard & Poor's Ratings Services ("Standard & Poor's"), and Japan Credit Rating Agency ("JCR"), 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 domestic credit-rating agency.

In 2017, PTTEP carried out a liability management exercise on USD 1,000 million subordinated perpetual capital debentures issued in 2014. In July 2017, the Company however repurchased USD 855 million of these debentures, leaving USD 145 million outstanding. Concurrently, PTTEP Treasury Center Company Limited (PTTEP TC), a wholly-owned subsidiary of the Company, issued subordinated perpetual capital debentures, with the Company as the guarantor, in an amount equal to the debentures repurchased. These debentures are redeemable by the Company upon the winding-up of PTTEP TC or the Company as well as per the redemption rights stipulated in the offering memorandum. These subordinated perpetual capital debentures were issued in the two following tranches.

- Tranche 1: Issued on July 17, 2017 in the amount of USD 500 million with an initial distribution rate of 4.600% per annum until, but excluding, July 17, 2022. The subsequent distribution rates are to be reset as stipulated in the offering memorandum. These subordinated perpetual capital securities are callable, in full, on July 17, 2022 and on the subsequent distribution rate reset dates.
- Tranche 2: Issued on July 26, 2017 in the amount of USD 355 million with an initial distribution rate of 4.875% per annum until, but excluding, June 18, 2019. The subsequent distribution rates are to be reset as stipulated in the offering memorandum. These subordinated perpetual capital securities are callable, in full, on June 18, 2019 and on the subsequent distribution rate reset dates.

As of December 31, 2017, PTTEP had the following debentures outstanding.

(1) Details of THB debentures (total outstanding THB 27,100 million)

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding (Unit : THB Million)	Rate per annum	Credit Rating ¹
						TRIS
THB debentures, unsecured, unsubordinated	March 27, 2003	March 27, 2018	15 years	2,500 ²	Fixed 4.625%, coupon payment: semi-annually	AAA
	May 29, 2009	May 29, 2019	10 years	5,000 ³	Fixed 4.80%, coupon payment: semi-annually	AAA
	June 6, 2014	June 6, 2019	5 years	8,200 ⁴	Fixed 3.91%, coupon payment: semi-annually	AAA
	June 6, 2014	June 6, 2029	15 years	11,400 ⁵	Fixed 4.82%, coupon payment: semi-annually	AAA

¹The debentures were last rated by TRIS on March 15, 2017.

² In 2005, PTTEP entered into a cross currency swap agreement (CCS) with a bank to swap THB 2,500 million for USD 60.82 million. Under this agreement, the interest charged was at 3.85% per annum. In 2007, the Company swapped the USD 60.82 million with the same bank for THB 2,500 million. Under this agreement, the interest was reduced to 3.30% per annum until the expiry date. In 2011, the Company entered another CCS transaction to swap THB 2,500 million for USD 82.92 million at an exchange rate of 30.15 THB/USD as well as to swap THB interest rate of 3.30% per annum to a USD interest rate of 3.30% per annum.

³ 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.

⁴ 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.

⁵ 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 USD 1,513 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 6.35%, coupon payment: semi-annually	Baa1	BBB+
	September 16, 2013	September 16, 2018	5 years	323 ⁴	Fixed 3.707%, coupon payment: semi-annually	Baa1	BBB+

¹ The latest credit ratings were issued by Moody's on April 4, 2017 and Standard & Poor's on July 16, 2017.

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

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

⁴ Issued by PTTEP, and in 2015 repurchased USD 177 million. As a result, the principle amount has been decreased from USD 500 million to USD 323 million.

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

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding (Unit : THB Million)	Rate per annum	Credit Rating ¹	
						TRIS	
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 <ul style="list-style-type: none"> ■ 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 	AA	

¹ The latest credit rating was issued by TRIS on March 15, 2017.

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 USD 1,000 million)

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding ² (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 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 April 4, 2017 and Standard & Poor's on July 16, 2017.

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 principle amount of USD 145 million from USD 1,000 million.

Debt Security	Issued Date	Maturity Date	Tenor	Outstanding ² (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 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 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+

¹ The latest credit ratings were issued by Moody's and Standard & Poor's on July 26, 2017.

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

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

7.1.2 Number of Shares and Shareholders' Voting Rights Affected by NVDR Issuance

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 regarded as listed securities on the SET. The objective of NVDRs is to promote trading activity 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 NVDR is designed mainly to ease foreign investment barriers; the SET does not prohibit Thai investors from investing in the instrument.

As of February 9, 2018, as published on the official website of the SET, PTTEP had a total of 316,908,545 NVDRs outstanding, representing 7.98% of the Company's total issued and paid-up capital of 3,969,985,400 shares.

7.2 Shareholders

7.2.1 Top 10 Shareholders

As of February 9, 2018, the top 10 shareholders of PTTEP were as follows:

Rank	List of Top 10 Shareholders	Number of Shares	% of Total Number of Shares
1.	PTT PUBLIC COMPANY LIMITED	2,591,860,489	65.29
2.	THAI NVDR COMPANY LIMITED	316,908,545	7.98
3.	STATE STREET EUROPE LIMITED	86,779,908	2.19
4.	CHASE NOMINEES LIMITED	86,187,182	2.17
5.	THE BANK OF NEW YORK (NOMINEES) LIMITED	44,153,129	1.11
6.	SOCIAL SECURITY OFFICE	38,138,377	0.96
7.	HSBC (SINGAPORE) NOMINEES PTE LTD	23,188,905	0.58
8.	THE BANK OF NEW YORK MELLON	22,703,922	0.57
9.	SOUTH EAST ASIA UK (TYPE C) NOMINEES LIMITED	21,632,381	0.54
10.	EAST FOURTEEN LIMITED-DIMENSIONAL EMER MKTS VALUE FD	20,043,700	0.50
	Total number of shares held by top 10 shareholders	3,251,596,538	81.89
	Total fully-paid capital as of February 9, 2018	3,969,985,400	100

7.2.2 NVDR Holders Owning More Than 0.50% of PTTEP's Paid-Up Shares*

Rank	NVDR holder (as of February 9, 2018)	Number of NVDR issues	% of total outstanding shares in underlying stock
1.	STATE STREET BANK AND TRUST COMPANY	51,790,751	1.30
2.	STATE STREET EUROPE LIMITED	38,416,968	0.97
3.	THE BANK OF NEW YORK (NOMINEES) LIMITED	25,693,400	0.65
	Total shares	115,901,119	2.92

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

7.2.3 Major Shareholder with Controlling Influence Over PTTEP's Policy or Operation

PTT, a major shareholder of PTTEP, takes part in determining PTTEP's policy and operations under the Board's approval. As of December 31, 2017, three out of the Company's 15 directors were either a director or an executive 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 payout of not less than 30% of the Company's net income after tax. The Board of Directors, as appropriate, may also decide 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 continuity of their operations and must be in compliance with related laws and regulations.

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

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

Year	2013	2014	2015	2016	2017
Earnings per Share (THB)	14.07	5.19	- 8.24	2.76	4.54
Dividend per Share	6.00	4.50	3.00	3.25	4.25
Dividend Payout Ratio	40%	82%	N/A**	98%	90%

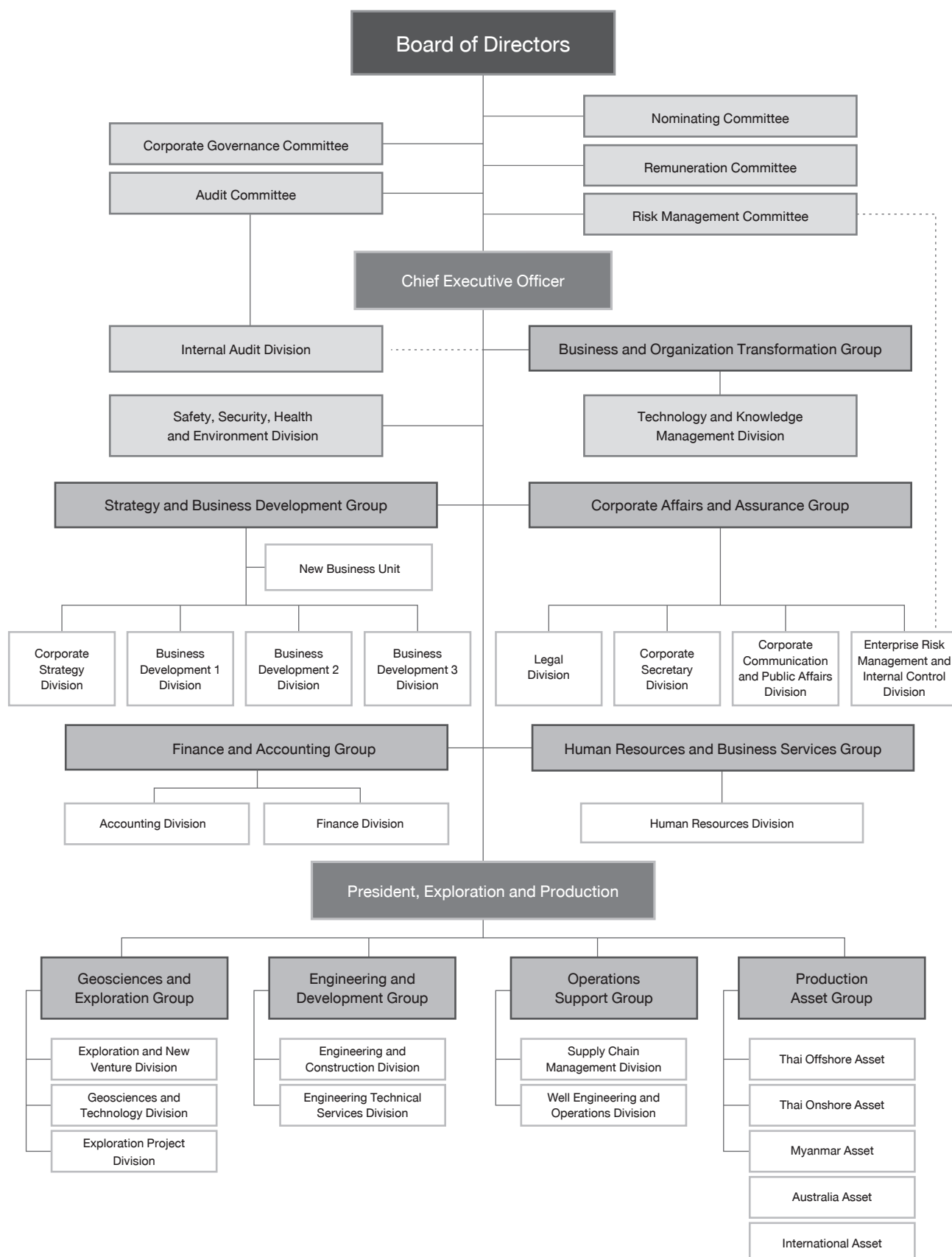
* Since January 18, 2010, Thai NVDR Co., Ltd. has changed its rule to require a disclosure of names of NVDR holders having over 0.50% of paid-up capital of the underlying securities.

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

Management Structure

PTTEP Organization Structure

As of January 1, 2018



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 2017, 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, 2017, the Board consisted of 15 directors.

- 14 non-executive directors (93.33% of total members)
- 1 executive director: the Chief Executive Officer
- 9 independent directors (60% of total members, a ratio which is more 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, 2017, 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 Teparitargorn	Member

Ms. Panada Kanokwat was appointed as a member of the Committee in replacement of Mr. Songsak Saicheua on April 27, 2017, while Mr. Pitipan Tepartimargorn was appointed as a member of the Committee in replacement of Mr. Piti Tantakasem on July 27, 2017.

According to its charter, the Committee must hold a meeting at least four times a year. In 2017, the Committee held 4 meetings, while 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 Corporate Governance Committee Report for 2017.

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, 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 good corporate governance.
- (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

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. 2502 (1959), Article 4.

(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

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, 2017, 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. Ampon Kittiampon	Chairman of the Audit Committee	<ul style="list-style-type: none"> - April 2010 - April 2011: Chairman of the Audit Committee, PTT Plc. - May - December 2007: Chairman of the Audit Committee, Rayong Refinery Plc. - December 2005 - April 2007: Member of the Audit Committee, Rayong Refinery Plc.
Mr. Achporn Charuchinda	Member of the Audit Committee	<ul style="list-style-type: none"> - 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"> - 2014 – Present: Member of the Audit Committee, Global Power Synergy Plc. - 2015 – May 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. - 2011 – 2013: Chairman of the Audit Committee, TISCO Bank Plc. - 2011 – 2013: Chairman of the Audit Committee, TISCO Financial Group Plc.

Mr. Sethaput Suthiwart-Narueput was a member of the Audit Committee from January 1, 2017 to April 26, 2017.

According to the Audit Committee Charter, the Committee must hold a meeting on a quarterly basis. In 2017, the Committee held 13 meetings, 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 2017.

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 regularly review and update its own charter to ensure its appropriateness
- (8) To disclose performance of the Committee in the Company's annual report
- (9) 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, 2017, the Committee comprised four members who were all independent directors as follows:

Mr. Ampon Kittiampon	Chairman and Independent Director
Mr. Piti Tantakasem	Member and Independent Director
Colonel Nimit Suwannarat	Member and Independent Director
Mr. Sethaput Suthiwart-Narueput	Member and Independent Director

Mr. Ampon Kittiampon assumed the chairmanship in replacement of Mr. Piti Tantakasem on April 27, 2017.

According to its charter, the Committee must hold a meeting at least two times a year. In 2017, the Committee held 8 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 2017.

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, 2017, 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. Kulit Sombatsiri	Member

Mr. Kulit Sombatsiri assumed the membership in replacement of Mr. Manas Jamveha on April 27, 2017.

According to its charter, the Committee must hold a meeting at least two times a year. In 2017, the Committee held 2 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 2017.

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 the policy framework and process of risk management, including recommendations on corporate risk management to the Board and management
- (2) To promote and implement the risk strategy and policy by enhancing the level of risk awareness within the Company through the development of appropriate procedures and commitment of resources
- (3) To maintain an enterprise-wide view of risks which are related to corporate direction and E&P value chain, such as exploration risk, development risk, SSHE risk, investment and geopolitical risk, financial risk, organizational capability risk, and law and regulatory risk, as well as to recommend mitigation strategy to manage the risks to keep them within the acceptable level according to clause (1) and to continuously monitor, assess and improve the mitigation strategy in responding to changing of the business environment
- (4) To support risk management function in assessing key risk factors and provide advices 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 functions to perform
- (5) To support the monitoring of risks across PTTEP and regularly report to the Board
- (6) To disclose the Committee's performance in the Company's annual report
- (7) To regularly review and update its own charter to ensure its appropriateness
- (8) To perform other duties relating to the Company'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, 2017, the Committee comprised six members, three of which were independent directors as follows:

Mr. Sethaput Suthiwart-Narueput	Chairman and Independent Director
Colonel Nimit Suwannarat	Member and Independent Director
Mr. Piti Tantakasem	Member and Independent Director
Mr. Pitipan Teparatimargorn	Member
Mr. Wirat Uanarumit	Member
Mr. Twarath Sutabutr	Member

According to its charter, the Committee must hold a meeting at least four times a year. In 2017, the Committee held 13 meetings, while the majority of incumbent directors attended all the meetings. The Committee's secretary, who was the Senior Vice President of the Enterprise Risk Management and Internal Control Division, also attended every meeting. The Committee disclosed its annual performance in the Risk Management Committee Report for 2017.

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, 2017, the Committee comprised nine members as follows:

Mr. Prajya Phinyawat	Chairman
Admiral Tanarat Ubol	Vice Chairman
Mr. Ampon Kittiampon	Member
Mr. Achporn Charuchinda	Member
Colonel Nimit Suwannarat	Member
Mr. Sethaput Suthiwart-Narueput	Member
Mr. Piti Tantakasem	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 2017, 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 2017.

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 2017, 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 2017 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 2016, few questions however were added to be in line with Company's operation and good practice as follows:

- (1) Individual self-appraisal: Question about anti-corruption was added.
- (2) Nominating Committee appraisal: Question about succession plan was added.
- (3) Risk Management Committee appraisal: Questions about risk from investment, oil price and analysis of factors which have effect to Company's business were added.
- (4) Chairman's appraisal: Questions are amended and added to be in line with CG Code 2017.

The Board Performance was evaluated from the four elements according to the Board Performance Target 2017 as follows:

(1)	Corporate KPI	50%
(2)	Meeting attendance and meeting effectiveness	10%
(3)	Appraisal of the entire Board	15%
(4)	CG Perception	25%
(4.1)	From stakeholders	10%
(4.2)	From the Thai Institute of Directors Association (IOD)	15%

Details of the 2017 Board's performance appraisal can be summarized as follows:

(1) The self-appraisal score averaged at 2.79, decreased from 2.84 in 2016 (total score = 3). The individual cross-appraisal by other directors score averaged at 2.90, increased from 2.81 in 2016 (total score = 3).

(2) The 2017 appraisal score of the Board derived from score from the Board Performance Target 2017, which was 4.28, increased from 3.91 in 2016 (total score=5.(1=urgent improvement needed, 2=improvement needed, 3=fair or achieved as planned, 4=good, 5=very good). In 2017, the self-appraisal of the entire Board was also combined into the Board Performance Target 2017 with a weight of 15%. The score from the self-appraisal of the entire Board averaged at 2.87, decreased from 2.91 in 2016 (total score=3).

However, the 2016 appraisal of the Board consisted of two parts, in which each weighs 50% equally between score from the appraisal of the entire Board and score from the Board Performance Target. As such, the result of the 2017 appraisal score of the Board was limited to compare with those of 2016 due to different basis of the scoring calculations.

In addition, the 2017 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.

(2) The 2017 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 2016 (total score = 3).

(3.2) The appraisal score of the Remuneration Committee was 2.94, decreased from 2.96 in 2016 (total score=3).

(3.3) The appraisal score of the Nominating Committee was 2.86, decreased from 3.00 in 2016 (total score=3).

(3.4) The appraisal score of the Corporate Governance Committee was 2.93, increased from 2.73 in 2016 (total score=3).

(3.5) The appraisal score of the Risk Management Committee was 2.97, increased from 2.94 in 2016 (total score=3).

(3) The 2017 appraisal of the Chairman by the Board was 2.94, decreased from 2.96 in 2016 (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 2018 meeting schedule since August 2017. 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 2017, there were 16 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 Chief Executive Officer (CEO), 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 2017, there were 66 and 103 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 2017, there were also agendas for consideration relating to the business impacts from the continuous decline in oil price. These included strategic plan on expiring concession biddings, reorganization for long-term sustainability, project investment plans, SPEND SMART program updates, CG&BE revision, and the Company's charters amendment such as those of the Audit Committee.

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 Corporate Secretary who is also appointed as the Board's Secretary, on the other hand, 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 2017, the non-executive meetings were held 2 times which were without presence of the management. The purpose of the meetings was to discuss and clarify some ongoing issues which were of interest, while the results were summarized for and acknowledged to the CEO for further evaluation.

8.1.7 Meeting Attendance of PTTEP Directors in 2017

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 2017
	Total number of meetings: 16 times	Total number of meetings: 4 times	Total number of meetings: 2 times	Total number of meetings: 4 times	Total number of meetings: 13 times	Total number of meetings: 2 times	Total number of meetings: 8 times	Total number of meetings: 13 times	Total number of meetings: 1 time
1. Mr. Prajya Phinyawat	16/16	4/4	2/2	-	-	-	-	-	1/1
2. Mr. Ampon Kittiampon ^{1,2}	16/16	4/4	2/2	-	12/12	-	6/6	-	1/1
3. Mr. Tevin Vongvanich	14/16	-	2/2	-	-	-	-	-	1/1
4. Mr. Achporn Charuchinda	16/16	3/4	2/2	-	13/13	2/2	-	-	1/1
5. Admiral Tanarat Ubol	16/16	4/4	2/2	4/4	-	2/2	-	-	1/1
6. Colonel Nimit Suwannarat	12/16	4/4	1/2	-	-	-	8/8	11/13	1/1
7. Mr. Sethaput Suthiwart-Narueput ¹	15/16	3/4	2/2	-	4/5	-	8/8	13/13	1/1
8. Mr. Piti Tantakasem ^{1,3}	13/16	4/4	2/2	1/1	-	-	7/8	12/13	1/1
9. Mr. Wirat Uanarumit	15/16	-	2/2	-	-	-	-	11/13	1/1
10. Mr. Twarath Sutabutr ¹	13/16	-	2/2	-	-	-	-	10/12	1/1
11. Mr. Pitipan Tepartimargorn ⁴	15/16	-	2/2	3/3	-	-	-	13/13	1/1

¹ From April 27, 2017

- Mr. Ampon Kittiampon assumed chairmanship of the Audit Committee and the Nominating Committee.

- Mr. Sethaput Suthiwart-Narueput assumed chairmanship of the Risk Management Committee and directorship of the Nominating Committee.

- Mr. Piti Tantakasem assumed directorship of the Risk Management Committee and the Nominating Committee. Mr. Piti also ended chairmanship of the Nominating Committee and directorship of the Corporate Governance Committee.

- Mr. Twarath Sutabutr assumed directorship of the Risk Management Committee.

- Ms. Panada Kanokwat assumed directorship of the Audit Committee and the Corporate Governance Committee.

- Mr. Kulit Sombatsiri assumed directorship of the Remuneration Committee.

- Mr. Songsak Saicheua ended directorship of the Corporate Governance Committee.

² Mr. Ampon Kittiampon assumed vice chairmanship of the Board of Directors on November 30, 2017.³ Mr. Piti Tantakasem resigned from directorship and membership of the Nominating Committee and Risk Management Committee on January 1, 2018.⁴ Mr. Pitipan Tepartimargorn assumed directorship of the Corporate Governance Committee on July 27, 2017.

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 2017
	Total number of meetings: 16 times	Total number of meetings: 4 times	Total number of meetings: 2 times	Total number of meetings: 4 times	Total number of meetings: 13 times	Total number of meetings: 2 times	Total number of meetings: 8 times	Total number of meetings: 13 times	Total number of meetings: 1 time
12. Ms. Panada Kanokvat ¹	16/16	4/4	2/2	3/3	13/13	-	-	-	1/1
13. Mr. Kulit Sombatsiri ^{1,5}	11/12	-	1/2	-	-	1/1	-	-	-
14. Mr. Bundhit Eua-Arpom ⁶	4/5	1/2	-	-	-	-	-	-	-
15. Mr. Somporn Vongvuthipornchai	16/16	-	-	-	-	-	-	-	1/1
Former Directors Retiring by Rotation or Resigning During 2017									
1. Mr. Manas Jamveha ⁷	4/4	-	1/1	-	-	1/1	-	-	1/1
2. Mr. Songsak Saicheua ^{1,8}	4/5	-	1/1	0/1	-	-	-	-	1/1

⁵ Mr. Kulit Sombatsiri was elected as director on March 29, 2017.

⁶ Mr. Bundhit Eua-Arpom was elected as director on August 1, 2017.

⁷ Mr. Manas Jamveha retired by rotation on March 29, 2017.

⁸ Mr. Songsak Saicheua resigned from directorship on May 1, 2017.

8.1.8 Number of PTTEP Shares Held by the Directors, Their Spouse and Minor Child as of December 31, 2017

Director's Name		Number of Ordinary Shares		
		As of December 31, 2016	As of December 31, 2017	Increase / (Decrease) During the Year
1. Mr. Prajya	Phinyawat	15,000	15,000	-
2. Mr. Tevin	Vongvanich	146,543	146,543	-
3. Mr. Ampon	Kittiampon	-	-	-
4. Mr. Achporn	Charuchinda	-	-	-
5. Admiral Tanarat	Ubol	-	-	-
6. Colonel Nimit	Suwannarat	-	-	-
7. Mr. Sethaput	Suthiwart-Narueput	-	-	-
8. Mr. Piti	Tantakasem	-	-	-
9. Mr. Wirat	Uanarumit	-	-	-
10. Mr. Twarath	Sutabutr	-	-	-
11. Mr. Pitipan	Tepartimargorn	-	-	-
12. Ms. Panada	Kanokwat	30,000	30,000	-
13. Mr. Kulit	Sombatsiri	N/A	-	N/A
14. Mr. Bundhit	Eua-arporn	N/A	-	N/A
Spouse		N/A	4,587	N/A
15. Mr. Somporn	Vongvuthipornchai	236,869	263,677	26,808
Spouse		3,500	3,500	-
Former Directors Retiring by Rotation or Resigning During 2017				
1. Mr. Manas	Jamveha	-	-	-
2. Mr. Songsak	Saichuea	-	-	-

8.2 The Management

As of January 1, 2018, PTTEP's management, according to the definition of management as defined by the Capital Market Supervisory Board (CMSB), consists of 23 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 and Minor Child

Name	Number of Ordinary Shares		
	As of January 1, 2017	As of January 1, 2018	Increase/(Decrease) During the Year
1. Mr. Somporn Vongvuthipornchai	236,869	263,677	26,808
Spouse	3,500	3,500	-
2. Mr. Phongsthorn Thavisin ¹	49,715	70,909	21,194
3. Mr. Thiti Mekavichai	72,661	94,392	21,731
4. Mr. Prapat Soponpongpiat	50,685	69,320	18,635
5. Ms. Pannalin Mahawongtikul	19,979	50,701	30,722
6. Mrs. Pranot Tirasai	153,128	172,341	19,213
7. Mr. Montri Rawanchaikul ²	37,614	43,214	5,600
8. Mr. Vuthiphon Thuampoomngam ³	N/A	58,889	N/A
9. Mr. Chatchawal Eimsiri	48,876	58,205	9,329
10. Mrs. Suchitra Suwansinpan	87,794	105,290	17,496
Spouse	300	300	-
11. Mr. Chayong Borisuitsawat ⁴	N/A	55,096	N/A
12. Mr. Waranon Laprabang ⁵	N/A	144,168	N/A

* 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. Details are disclosed in the "Corporate Governance" section under "Policy on Treatment to Stakeholders - Employee" part.

¹ Appointed as the President, Exploration and Production (equivalent to Executive Vice President) and Acting Executive Vice President, Organization and Business Transformation Group on November 1, 2017

² Appointed as Executive Vice President, Strategy and Business Development Group on October 1, 2017 and Acting Senior Vice President, New Business Unit on November 1, 2017

³ Appointed as Executive Vice President, Engineering and Development Group on January 1, 2018

⁴ Appointed as Acting Executive Vice President, Operations Support Group on November 1, 2017

⁵ Appointed as Acting Executive Vice President, Production Asset Group on November 1, 2017

Name		Number of Ordinary Shares		
		As of January 1, 2017	As of January 1, 2018	Increase/(Decrease) During the Year
13.	Mr. Yongyos Krongphanich	99,328	105,367	6,039
14.	Ms. Jaroonsri Wankertphon	65,604	77,410	11,806
15.	Mrs. Netrsuda Pokkasorn ⁶	N/A	79,857	N/A
16.	Mr. Anutra Bunnag ⁷	-	-	-
17.	Ms. Kanchanan Panananda ⁸	51,486	59,081	7,595
18.	Mrs. Sirirat Sararattanakul	211,874	223,490	11,616
19.	Mr. Sakchai Sarawek	23,522	31,475	7,953
Spouse		4,000	4,000	-
20.	Mrs. Maneeya Srisukhumbowornchai	-	-	-
21.	Ms. Pratamaporn Deesrinthum ⁹	N/A	52,846	N/A
22.	Ms. Porntip Jansuksri	28,588	37,938	9,350
23.	Mrs. Thanyaporn Vangvasu	145,511	155,147	9,636
Management Who Retired or Rotated During 2017				
1.	Mr. Kanit Sangwongwanich ¹⁰	118,943	138,152	19,209
2.	Mrs. Chanamas Sasnanand ¹¹	35,691	44,779	9,088

⁶ Appointed as Vice President, Insurance Department, Finance and Accounting Group on August 1, 2017

⁷ Appointed as Vice President, attached to the Finance Division and assigned as Managing Director, PTTEP Treasury Center Company Limited, Finance and Accounting Group on May 1, 2017

⁸ Appointed as Vice President, Capital and Investor Relations Department, Finance and Accounting Group on January 1, 2018

⁹ Appointed as Acting Vice President, Managerial Accounting Department, Finance and Accounting Group on January 1, 2018

¹⁰ Retired on January 1, 2018

¹¹ Appointed as Acting Senior Vice President, Internal Audit Division on January 1, 2018

8.3 Corporate Secretary

The Corporate Secretary plays a major role in coordinating internally among the Company's Chairman, Chief Executive Officer (CEO), President of the Exploration and Production (PEP), and management, and externally among the companies, shareholders, and regulators. The Board of Directors has appointed Mrs. Pranot Tirasai, who is Executive Vice President of the Corporate Affairs and Assurance Group and the Acting Senior Vice President of the Corporate Secretary Division, as the Corporate Secretary and the Board's secretary, 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, 2013. Mrs. Tirasai is a law graduate and knowledgeable in managing corporate secretarial. She also has experience and other qualifications which contribute to efficiency and effectiveness in the discharge of corporate secretarial functions, in addition to attending seminars and trainings. Details of the Corporate Secretary are disclosed in the "Information of the Board of Directors, Management, Controlling Persons, and Corporate Secretary".

The Corporate Secretary performs roles with fiduciary duties by having responsibilities and duties of care and loyalty, as stipulated in the Securities and Exchange Act. These include preparation and safeguarding of the Company's documents, namely, (1) directors registry, (2) notice and minutes of the Shareholders' meetings, and (3) notice and minutes of the Board's meetings, and annual reports, as well as safeguarding of the Conflicts of Interest Report submitted by the directors and 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, and resolutions from the Board's and shareholders' meetings
 - Organizing meetings of the Board, sub-committees, and shareholders
 - Arranging orientation for and providing advices to new directors
 - Recommending necessary and appropriate training programs to directors
 - Monitoring the Company's business operations of each function to ensure alignment with the directions as set by the Board and shareholders, as well as external regulatory bodies overseeing listed companies
 - Governing of subsidiaries, including preparing and safeguarding of their important documents
 - Promoting and educating the directors, management, and employees of 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 the Company's shareholders are being treated fairly, ethically and lawfully as well as promoting good relationship with minor shareholders
- Acting as a case coordinator who is responsible for managing reports submitted through the Company's Whistleblowing Case Management System
- Performing other duties as appointed 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 2017 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 2017

Director's Name	Remuneration								2017 Bonus Paid in 2018	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			
1. Mr. Praiya Phinyawat	800,000	600,000	0	0	0	0	0	0	1,686,841.36	3,086,841.36
2. Mr. Ampon Kittiampon	640,000	480,000	600,000	0	0	300,000	0	0	1,349,473.09	3,369,473.09
3. Mr. Tevin Vongvanich	560,000	480,000	0	0	0	0	0	0	1,349,473.09	2,389,473.09
4. Mr. Achporn Charuchinda	640,000	480,000	520,000	0	100,000	0	0	0	1,349,473.09	3,089,473.09
5. Admiral Tanarat Ubol	640,000	480,000	0	200,000	80,000	0	0	0	1,349,473.09	2,749,473.09
6. Colonel Nimit Suwannarat	480,000	480,000	0	0	0	320,000	440,000	0	1,349,473.09	3,069,473.09
7. Mr. Sethaput Suthiwart-Narueput	600,000	480,000	160,000	0	0	320,000	650,000	0	1,349,473.09	3,559,473.09
8. Mr. Piti Tantakasem	520,000	480,000	0	40,000	0	300,000	480,000	0	1,349,473.09	3,169,473.09
9. Mr. Wirat Uanarumit	600,000	480,000	0	0	0	0	440,000	0	1,349,473.09	2,869,473.09
10. Mr. Twarath Sutabutr	520,000	480,000	0	0	0	0	400,000	0	1,349,473.09	2,749,473.09
11. Mr. Pitipan Teparitnargorn	600,000	480,000	0	120,000	0	0	520,000	0	1,349,473.09	3,069,473.09
12. Ms. Panada Kanokwat	640,000	480,000	520,000	120,000	0	0	0	0	1,349,473.09	3,109,473.09
13. Mr. Kulit Sombatsiri	440,000	400,000	0	0	40,000	0	0	0	1,027,817.86	1,907,817.86
14. Mr. Bundhit Eua-arporn	160,000	200,000	0	0	0	0	0	0	565,669.54	925,669.54
15. Mr. Somporn Vongvuthipomchai	640,000	480,000	0	0	0	0	0	0	1,349,473.09	2,469,473.09
Former Directors Retiring by Rotation or Resigning During 2017										
1. Mr. Manas Jamveha	160,000	120,000	0	0	40,000	0	0	0	325,352.42	645,352.42
2. Mr. Songsak Saicheua	160,000	160,000	0	0	0	0	0	0	443,662.38	763,662.38
Total	8,800,000	7,240,000	1,800,000	480,000	260,000	1,240,000	2,930,000	0	20,243,020.64	42,993,020.64

Remarks: (1) The 2017 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 returned his PTTEP directorship remuneration in 2017 to PTT Public Company Limited (PTT) according to PTT's President and Chief Executive Officer's 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 in carrying out the Company's E&P and related businesses to optimize the Company's benefits, taking into account of the business and investment conditions. The Company assigns the executives to hold a directorship position in our subsidiaries and/or associated companies to ensure that they are managed in compliance with the business direction and strategy.

The Company's executives who are assigned to be directors of the subsidiaries or associated companies either in the E&P businesses or related businesses, such as PTTEP Services Co., Ltd., and B8/32 Partners Co., Ltd. do not receive any additional remunerations. The executives who are assigned to be directors of subsidiaries or associated companies engaging in other businesses, for example, PTT Digital Solutions Co., Ltd., and Energy Complex Co., Ltd., are however 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 CEO's remuneration consists of both short- and long-term arrangements such as salary and bonus payment as well as eligibility in the Employee Joint Investment Program (EJIP).

The ratio of annual compensation of the CEO compared to the average annual compensation of the Company's executives is approximately 1.56:1, while the ratio of annual compensation of the CEO compared to the average annual compensation of the Company's employees is approximately 9.74:1.

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 6.26:1.

Remuneration of the Executives

	2016		2017	
	Number	Total Amount (THB)	Number	Total Amount (THB)
Salary	10 ¹	78,142,595	12 ¹	92,112,950
Bonus		35,151,487 ²		56,137,890 ³
Other compensation ⁴		10,228,158		12,310,683
Total		123,522,240		160,561,523

In 2017, compensation (salary, bonus, and contribution to the provident fund) of PTTEP's and the subsidiaries' employees, including wages of the seconded employees, totaled THB 7,729,646,209.

8.5 Personnel

As of December 31, 2017, PTTEP and our subsidiaries had a total workforce of 3,774 employees.

Number of Employees*

Employee Type	Total (Persons)
Thai Permanent Employees	2,071
Thai Contracted Employees	1,268
Non-Thai Contracted Employees	58
Local Employees in Overseas Subsidiaries	367
Seconded Employees from PTT Group Companies and Joint Venture Partners	10
Total	3,774

Remarks: * Based on the Company's database as of December 31, 2017

¹ Executives, 12 in total, 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 2016 was paid in January and February 2017.

³ Bonus for 2017 was paid in January and February 2018.

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	64	19	2	0	0
Business and Organization Transformation Group	36	6	0	0	0
Corporate Affairs and Assurance Group	91	24	0	0	0
Engineering and Development Group	284	139	14	22	1
Finance and Accounting Group	136	89	0	0	0
Geosciences and Exploration Group	172	40	12	5	0
Human Resources and Business Services Group	102	94	1	0	0
Operations Support Group	268	234	14	0	0
Production Asset Group	844	612	14	340	9
President, Exploration and Production	8	3	0	0	0
Strategy and Business Development Group	66	8	1	0	0
Total	2,071	1,268	58	367	10

Remarks: ¹ Based on the Company's database as of December 31, 2017

² Based on the Company's organization structure as of December 31, 2017

Employee Turnover

	IN ¹	OUT ¹
Thai Permanent Employees	37	70
Thai Contracted Employees ²	60	78
Non-Thai Contracted Employees	9	39
National Employees	86	49
Seconded Employees	3	7

Remarks: ¹ Based on the Company's database as of December 31, 2017

² The turnover was exclusive of outsourced staff, such as maids, drivers, and etc.; 30 of whom resigned, and 36 of whom were hired in 2017.

In 2017, the Company's total employee turnover rate was 6.44%, while the voluntary resignation rates in 2013 through 2017 were as shown below.

Voluntary Turnover Rate

2013	2014	2015	2016*	2017*
7.9%	6.6%	6.3%	5.9 %	3.9 %

*resignation and early retirement in 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 2017, 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 the 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, 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.

(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 2017, the Company invested in human capital development programs at an amount of THB 56,494,471 with an average of 49 training hours per employee per year and 104 coaching and mentoring hours per employee per year. Meanwhile, with 144 mentors and 305 mentees in technical job families, the mentors to mentees ratio was at approximately 1:2 and is expected to increase in the following years. In addition, 1,430 employees, or 89% of the Company's employees selected for the Individual Competency Development Plan (ICDP) in 2017, took the actions to fulfill their competency requirements. As a result, our employees' competency increased approximately by 8% which was higher than the set target of 5%.

(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
- (5) Business Administration

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
- (3) Petroleum Geophysics (International Program), Chiang Mai University

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.

Corporate Governance

9.1 Good Corporate Governance Policy

PTTEP Board of Directors (Board) recognizes the significance of operating of the businesses under the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE). The Board is confident that the strict adherence will successfully lead the Company to achieve the goals of “Growth, Prosperity, Stability, Sustainability and Dignity” as well as to enhance the confidence of our shareholders and other stakeholders. The Board has assigned the Corporate Governance Committee to govern, supervise, and provide the necessities to ensure that the Company's operations are in line with the CG&BE and that the good corporate governance is maintained at the level of international standards. In 2017, the Company earned various acceptances through numerous awards and recognitions for our good corporate governance, domestically and internationally. Details are disclosed in the “Awards and Recognitions for Good Corporate Governance” part.

In 2017, the Board has reviewed the implementation of the Corporate Governance Code 2017 (CG Code) which was established by the Securities and Exchange Commission, by means that are suitable to the company's business. The Board participated in the CG Code sharing session to understand its usefulness and business applications. The Board assigned the Corporate Governance Committee to appraise the CG Code compliance to ensure the suitable implementation to maximize its value for the Company's future and sustainable growth.

PTTEP has continued to develop and apply the Company's CG Code principles to be in line with those of the international best practice as follows.

9.1.1 Shareholders' Rights and Equal Treatments

PTTEP understands the importance of shareholders' rights and equal treatments; the Company's Good Corporate Governance therefore has included a number of guidelines to assure the Company's shareholders of their basic rights which, among others, allow them to trade and transfer our shares, declare the share ownership, and attend the 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' meeting. These issues are, for example, election of new members of the Board in replacement of those retired by rotation, determination of the Board's remuneration of all forms, appointment and approval of the external auditor and fees, approval of connected transactions, acquisition or disposition of assets which, according to relevant laws, are sizeable, and other issues which are of significance to the Company. The shareholders are also entitled to profit sharing in the form of dividend as well as to receive adequate and timely information from the Company. The Company has only one class of shares, namely, ordinary shares, while one share is equal to one vote. Our efforts to ensure and enhance the shareholders' rights are as follows:

(1) **Annual General Meeting of Shareholders:** In 2017, PTTEP respected and promoted the shareholder's rights in Annual General Meeting of Shareholders (AGM or the Meeting) by arranging the following activities.

Before the Meeting

(1.1) Shareholders were allowed to propose agenda items and nominate qualified candidates for the election of PTTEP directors prior to the AGM from September 15 to December 15, 2016. The criteria was announced publicly through the SET's portal and the Company's website. The shareholders' proposals were then considered by using the Company's relevant rules and regulations to ensure that the proposed agenda items are relevant and truly beneficial to the business. The Nominating Committee was responsible for short-listing of the nominated candidates to the Board for consideration. Consequently, the Board would inform the shareholders of the resolution together with the rationale for each of the proposals at the AGM. In 2017, none of such agenda or a candidate was 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, 2017. In addition, the Company disclosed the record date on which the shareholders had the right to attend the Meeting as well as to receive dividend to be on February 9, 2017, subsequently resulting the share registration closing date to be on February 10, 2017.

(1.3) The AGM invitation letter and supplementary documents, both in Thai and English, were published on the Company's website (www.pttep.com) more than 30 days prior to the Meeting, on February 24, 2017. The invitation letter included necessary details of each agenda, which clearly stated type of the agenda, be it for an acknowledgement or approval. The Board's opinions on each agenda are clearly stated as well as other rules and regulations related to the Meeting. A proxy form, which was stipulated by the Ministry of Commerce, was also included in 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 important attachments were instructions of the Meeting, voting procedure, and map of the venue. The AGM invitation letter and supplementary documents, both in Thai and English, were distributed to the shareholders by post 19 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 agendas. In election of 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). In the agenda to approve remuneration of the Board, all of the directors would be however considered as having a special interest and therefore were abstained from the voting regardless of the percentage of their shareholding. The Company also provided the shareholders with advices in regard to how to use the proxy form which would properly represent their voting right to ensure that they could cast the vote on their own.

(1.5) The Company also permitted the shareholders to submit questions relating to the Meeting or other information relevant to the Company prior to the Meeting.

At the Meeting

(1.1) The Meeting was held on March 29, 2017 at 14.00 hrs. at the Bangkok Convention Center, 5th Floor, Central Plaza Ladprao, Bangkok. The Meeting date, time, and venue were set up for the convenience of the shareholders. The barcode and electronics system were used for the registration, vote counting, compilation, and display of each resolution 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 revenue stamps to the shareholders who intended to vote through a proxy.

(1.2) All 15 of PTTEP directors attended the Meeting. The Company's Chairman presided over the Meeting, while the sub-committee members, 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. Auditor, external legal advisors (inspectors), right protection volunteers, including shareholder volunteers to witness vote counting, also participated in the Meeting. The Chairman ensured that the Meeting was carried out according to the Company's Articles of Association (AoA) and the agendas 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 agendas 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 by themselves and proxies, including the procedure, vote casting, vote counting as indicated in the Articles of Association before the commencement. The shareholders and proxies were required to use voting ballot for voting on each agenda scheduled for the Meeting whether to agree, disagree, or abstain. For each agenda, a barcode system was used to tally the votes, while each agenda was treated and voted separately, to ensure 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, while volunteers who were selected from the shareholders and independent inspectors would be appointed to witness the vote-tallying and sign off on all the ballot cards collected, counted, and signed. These cards were for internal reviews after the Meeting adjourned.

The Company permitted the shareholders who arrived at the Meeting after it was commenced to cast their votes in the agenda that was in the consideration process or had not been considered or voted at the time of their arrival. The Company would also count the shareholders as participants in the Meeting starting from the agenda that 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 according to the AoA. Responsibilities of the inspectors included examination of documents provided by the shareholders or their proxies eligibility of quorum as well as verification of potential conflicts of interest as to whether he/she shall be abstained from voting on a given agenda, voting procedure, and voting count and as to whether they were in line with the AoA or as informed by the Chairman of the Meeting. The inspectors were also responsible for ensuring ballot collection from the attended shareholders and auditing of the vote-tallying. In addition, volunteers, who represented the shareholders at the Meeting, were appointed to act as witness 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, and 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 made by the Company's directors and top executives. In addition to the inclusion of the directors who attended and who were absent from the Meeting, the Company also recorded the resolution of each agenda, categorized as agreed, disagreed, abstained, and voided (if any) as well as the name and position of the directors and executives. Meanwhile, within 14 days after the Meeting, the final version of the Minutes of the Meeting would be delivered to the Ministry of Commerce, SET, Office of the Securities and Exchange Commission (SEC). The Minutes of the Meeting would also be delivered to the Company's shareholders to provide evidence of the Meeting as well as to allow the shareholders to make objections within the timeline enforced by relevant laws. In 2017, the Company however did not receive any objections or inquiries from the shareholders in regard to the Meeting. The approved minutes, video and audio clips of the Meeting were also published, both in Thai and English, in 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 other information which the Company considers as substantial for the shareholders to be well informed. The disclosures are made through various channels, such as the SET, media or printed media, and the Company's website.

The Company clearly discloses the shareholding interests in our subsidiaries and associated companies as well as the controlling shareholder, namely PTT, to ensure the shareholders that our organization structure is transparent, verifiable, and does not constitute any forms of cross- or pyramidal-shareholding structure.

(3) **Development of Understanding of Business Operation and Long-Term Engagement with Shareholders:** PTTEP continuously organizes various activities for the shareholders and society. The Company equally provides chances for all of the shareholders to participate. In 2017, major activities were as follows:

(3.1) PTTEP organized activities for 100 shareholders to visit Vidyasirimedhi Institute of Science and Technology (VISTEC) and Kamnoetvidya Science Academy (KVIS) at Wangchan in Rayong province to enhance participation and long term relationship between the Company and the shareholders.

(3.2) PTTEP organized trips for 239 shareholders to visit our Sirikit Oil Field in Kampheng Phet province to enhance understanding and ensure confidence in the Company's operation. In this event, our executives had a chance to take enquiries about the Company directly from the shareholders, while the age limit policy for the participants was not in effect to promote an equal treatment to all.

(3.3) PTTEP published a quarterly newsletter to provide additional means of communication between the Company and the shareholders. The newsletter included information on the operational performance, progress of the key projects, Corporate Social Responsibility (CSR) activities, corporate governance activities and anti-corruption measures. The

Company also published other useful information, for example, “How to prepare yourself before the AGM” and “GRC, immunity for PTTEP sustainability” to provide information in regard to our Governance, Risk Management, Internal Control & Compliance (GRC). The information 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 minor shareholders and independent directors through e-mails. The Company’s shareholders, for example, are able to attain 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 or Investor Relations Unit 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 relationship 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. 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 Compliance Department is assigned as the center for monitoring the insider trading prevention program and preparing a list of personnel who bear material and/or internal information (Insider List) which includes directors, related executives and employees.

(5.2) The directors, management, and employees are always informed of PTTEP’s regulations and policies in regard to insider trading prevention through various communications as well as trainings to ensure that they understood and strictly followed to prevent one from misusing such information directly or indirectly for his or her personal interests. Disciplinary actions are clearly specified, while the supervisors, who are appointed as the CG leaders, are responsible for advising and encouraging their subordinates to follow suit. In 2017, there was no report of any misuses of internal information.

(5.3) PTTEP requires a group of personnel to abstain from trading of the Company’s securities during the blackout periods, such as when material information is being disclosed, which may affect the securities price. These are, for example, release of the Company’s financial statements or operating results as well as investment in new projects which are announced in advance by the Compliance Department. These personnel include 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 material internal information. This prohibition also applies to their spouses and minor children. The individuals are also refrained from directly and indirectly selling and/or buying of PTTEP’s securities during the periods. Violation of this prohibition is considered as a disciplinary offense.

PTTEP also 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 directly and indirectly trading securities of PTTEP at all times and to inform the Compliance Department two days in advance if necessary.

(5.4) The directors, management holding position of SVPs and above, and VPs of FNA must disclose a complete information in regard to their securities possession as well as related activities to the Compliance Department, and not only to the SEC, but also to the Board on a monthly basis for CG&BE compliance monitoring purpose. 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 shall there be concerns, either by himself or herself or a related person. The Corporate Secretary must then send a copy of the form to the Chairman of the Board and the Chairman of the Audit Committee for their acknowledgement within seven working days after receiving, as stipulated by the Board, the Securities and Exchange Act (Volume 4), B.E. 2551, and the Capital Market Supervisory Board.

(7) PTTEP assembles 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 mentioned to report to the Company of every possible conflict of interest, both of themselves as well as of their related persons. Shall there be a conflict of interest, the individual must immediately report to the Company and be excluded from participation or abstained from voting in the issues involved.

9.1.2 Roles of Stakeholders

The Board has approved PTTEP's mission which puts an emphasis on significance of the stakeholders' rights. The Company's mission is to operate globally to provide a reliable energy supply and sustainable value to all stakeholders, and we also have a vision to become a leading Asian E&P company driven by competitive performance, advanced technology and green practices. 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 and societies, environment, suppliers, creditors, competitors, customs and traditions, and human rights. The importance of the Company's 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 are disclosed in the Company's website.

9.1.2.1 Anti-Corruption

Importance

PTTEP's Board of Directors (Board) recognizes the importance of corporate governance and how we needs to be transparent, fair and free from all forms of direct and indirect corruptions, and without any tolerances, primarily through the mechanism resulted from the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE) which has been developed to regulate every vital area of the businesses to maintain the internal consistency. Everyone in the organization and related parties, including directors, executives, 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 the best practices in regard to the matter.

The Board understands that effective anti-corruption measures require good corporate governance with clear management and governance structures as well as adequate and appropriate risk management, internal controls, and close supervision. Independent audit and clear guidelines in all relevant issues as stipulated in the CG&BE, in turn, require the Board and management to function as an exemplary role model and Corporate Governance Leader (CG Leaders), while the Corporate Governance Committee additionally is responsible for monitoring of the compliance. The Company's CG&BE is written according to our internal control principles and published in traditional formats as well as in digital and downloadable formats in our website (www.pttep.com) for the stakeholders and those interested in Thai, English, and Burmese. In addition, the Company established the "Standard of Practices for Anti-Corruption" which is one of the Company's internal control measures to provide some of the models for our management and employees to employ to prevent and minimize corruption risk.

In addition, in order to ensure transparency within the 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 are such as good corporate governance structure as stipulated in the Corporate Governance component, practical guidelines and treatments of conflicts of interest, procurement and contract related issues, anti-money laundering provisions, political neutrality positions, the use and maintenance of data and assets, as well as practical steps and guidelines for anti-corruption as a part of Business Ethics. The CG&BE also has mandatory conditions with regard to the Company's directors, management, employees, subsidiaries, as well as the PTTEP Group's vendors, who are required to sign an agreement to conduct their business in accordance with our CG&BE.

The Company defines corruption based on related principles and laws, at both domestic and international levels, where there are mandatory conditions with which PTTEP Group has to comply. The Company primarily considers that no action must inappropriately entail any forms of an individual's use of authority or another person's for undeserved exploitation to gain benefits. Besides, such act is deemed a violation of the laws and/or the PTTEP Group's regulations. 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 political supports, not-for-profit donations, sponsorships, or facilitation of payments may be determined risky as these can potentially be used as a channel for corruption. The definition of "corruption" therefore also extends to include such activities as being mala in se. Extra precaution must be taken to ensure all activities are conducted without any corruptions.

Measures and Principles for Implementation

Implementation of anti-corruption measures reflects a 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, where each topic is under the responsibility of a designated unit. PTTEP utilizes internal control forms and risk management procedures according to the following Three Lines of Defense:

(1) First Line of Defense: The departments, with knowledge and understanding of the laws directly relating to their operation, are to ensure compliance with applicable laws and regulations. Internal controls and appropriate risk management are to be conducted by the person responsible for the First Line of Defense. The 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 able to handle a variety of circumstance.

(2) Second Line of Defense: The units which perform duties and are responsible for the general laws, regulations and policies of the organization consist of, mainly, 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". Governance, Risk, Internal Control, Compliance Management System (GRC MS) has been established for integrating management that would be able to achieve the indicated objectives, in compliance with the legal requirements and under an adequate risk management. The GRC MS is divided into nine elements: (1) Leadership and Commitment, (2) Policies, Objective, 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 audit the overall system of both the First Line and Second Line of Defense.

The units which are responsible for the GRC conduct internal control assessment on potential fraudulent risks which comprise risk of asset misappropriation, corruption, and fraudulent financial reporting, following adequacy evaluation of the internal control system and according to the Office of the Securities and Exchange Commission (SEC). The Company's Vice Presidents from each of the functions assess our fraudulent risk 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 the 3 considerations and adjusted their measures so that they are timely and appropriate.

The Company also has other tools to prevent corruptions. These include review and incorporation of anti-corruption risks to 2017 Risk Profile : Legal Division, as well as to specify key risk indicators and mitigation plans to closely monitor the risks and promoting awareness and anti-corruption practice to employee and conduct monitoring on the compliance to such practice.

Continuing to Provide Communication, Knowledge and Training

Our Corporate Governance Committee has a definite plan to instill the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE), together with anti-corruption policies, in everyone as well as all of the related parties of the organization through continuous trainings and activities. The activities are designed to accommodate interest and background knowledge to all targets and expanded to cover those 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 2017, the following operations related to anti-corruption measures were implemented:

Measures for internal parties

- (1) Induction of the principles of Governance, Risk Management, Internal Control & Compliance (GRC) to the Company's new Board members, executives, and employees, so that they all clearly understand and adhere to them.
- (2) Promotion of GRC among the Company's Board members and management to provide related information and case studies that are beneficial to the Board of Directors and management before the start of Board meetings and management 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.
- (3) Arrangement of GRC full-day courses for employees who had passed the induction course, covering the Company's tools for risk management, internal control, compliance, and CG&BE, with a focus on anti-corruption and related issues to ensure understanding and effectively application to daily operation.
- (4) Continuation from 2016 of the Company's online training over anti-corruption for the management and employees to increase their understanding of the causes, impacts, regulations, risk management, internal control, and standard of practices for anti-corruption, whereby 95% of the targeted management and employees participated and passed the training.
- (5) Continuation from 2015, the CG&BE Workshop was arranged for the Company's management and local employees at the Yangon office in Myanmar to promote a better understanding and effective implementation of the CG&BE. The workshop was led by the top management of the Myanmar Asset to underline the importance of the CG&BE. Exchanges of ideas and discussions were encouraged, also through enjoyable activities, helped to make the workshop successful and effective.
- (6) Organization of the annual "PTT Group CG Day 2017" under the title of "PTT Group CG Day 2017: CG in DNA", 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
- (7) Establishment of a whistleblowing communication system to promote the Company's whistleblowing channels and create greater understanding of protection and process as well as disclosure of the 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 of the values within the Company
- (8) Continuation of the Company's communication channels, such as standee/notice boards, and newsletters to provide a continuous flow of knowledge among the employees at the headquarters and at all of our operating sites.

Measures for external parties

PTTEP has a definite 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. In 2017, the Company encouraged the external parties to be ethical and corruption-free through the following activities.

- (1) Arrangement for a session on GRC for the vendors in the Vendor Symposium, so that knowledge could be provided continually to vendors.

(2) Communication clearly to the external parties of the Company's "No Gift Policy" which refrains the Board of Directors, management, and employees from accepting gifts or other benefits from all business-related contacts and transactions

(3) Promotion of anti-corruption values by participating in various public activities (details are shown under "Collective Efforts with the Public to Counter Corruption" part)

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

Whistleblowing Reporting and Protection Procedures

PTTEP's Board of Directors establishes the Reporting and Whistleblowing Regulation for the PTTEP Group to ensure effectiveness, transparency, fairness, and equivalency of the complaint handling process to be at the same level of that of the international standard. The regulation is meant to provide a protection to whistleblowers and those cooperating with the Company in good faith. The procedure is a mechanism which allows an opportunity for both internal and external parties of the organization to report a suspicious misconduct or wrongdoing, which might be in violation of laws, CG&BE, anti-corruption policy, and other related regulations, committed by the Board, management, employees, or representatives of the PTTEP Group.

Investigations of the complaints are conducted strictly 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 Secretary 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.
- Review procedure and conclusion of the complaints depend on the case. Non-complex cases will normally be completed within 30 working days, while more 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) Fax to supervisor or the Corporate Governance Section of the Corporate Secretary Division (+66-2537-4949)

(3) E-mail to supervisor or the Corporate Governance Section of the Corporate Secretary Division (cg hotline@pttep.com)

(4) Report through the whistleblowing system which is available in the Company's intranet (CG Portal) for the employees and PTTEP's website (www.pttep.com) for the external parties. 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 is served as the necessary tool for preventing and monitoring the risks of corruption.

In 2017, PTTEP received a total of eight complaints through the Whistleblowing Regulations (CG Hotline) and HR Regulations. Complaints from 2016 and 2017 are summarized and compared in the table below.

Topic	2016	2017	Change
Number of whistleblowing cases	9	8	11% (↓)
Whistleblower			
- External reporter	4	4	-
- Internal reporter	4	2	50% (↓)
- Anonymous reporter	1	2	100% (↑)
Number of accepted cases after considering evidence and witnesses	6	7	17% (↑)
Number of wrongdoing cases	4	3	25% (↓)

Investigation results from the seven cases in 2017 above are as follows:

- There were three cases of wrongdoing. There were not any violations of the anti-corruption policy, and the damages were not significant.

(1) One case was related to a non-compliance of the SSHE Policy, and the wrongdoer was punished by a verbal warning.

(2) One case was related to a non-compliance of the HR Regulations, and the wrongdoer was punished by a verbal warning.

(3) One case was related to a fraud involving a sub-contractor company which is now on the Company's blacklist.

- There were four complaints which were determined to have no grounds for any wrongdoings and were not deemed as cases of persecution or defamation.

- The results of the complaint investigations were subsequently reported to the complainants, the Audit Committee or the Corporate Governance Committee (as the case may be), as well as to the Board to be used for further improvements of the Company's internal control measures.

Monitoring the Implementation of Anti-Corruption Measures

The Board assigns the Corporate Governance Committee to monitor implementation of the Company's anti-corruption policy which is a 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 a 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 of the results must be reported to the Board of Directors and Company's shareholders through the Annual Report.

The Corporate Governance Committee also monitors performance of the measures on a yearly basis according to 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, by setting out an annual audit plan and undertaking further examination, when complaints or issues appear. Currently, the Internal Audit Division has a comprehensive set of practical guidelines on the investigation of corruption that covers risk assessment, prevention and detection of corruption, as well as practical guidelines used in the investigation process for complaints of corruption.

In 2017, the Internal Audit Division performed a compliance audit over the Standard of Practice for Anti-Corruption by focusing on high risk units. The audit results show no corruption or bribery, while the Company's management and employees proved to understand the anti-corruption measures. PTTEP continues to communicate and emphasize the importance of its anti-corruption policy in order to create the transparency culture across the Company.

PTTEP has procedures to regularly review sales and marketing activities to monitor and prevent the risk of corruption as well as to provide solutions as needed. The Company sells most of our products to PTT, and the pricing structure is reviewed and specified clearly in the purchase agreement between the two. Sales prices are based on the global market prices on which the mutual agreement between the Company and the joint venture partners are based. The pricing structure requires approval from the Audit Committee and the Board prior to arrangement of the purchase agreement. The Board members who have a vested interest in such agreements are not allowed to participate in the review session and must be abstained from voting on the given matters.

Review of Sufficiency and Adequacy of Anti-Corruption Measures

PTTEP commits to continuously improve our procurement process. We also assigned an independent third party auditor to audit PTTEP's procurement process and the internal controls which identified as a prevention of the corruption risks and to provide developmental observations. The independent third party auditor reported that no significant findings were found. Some developmental observations were noted and have been embedded in PTTEP's procurement process.

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, as a company whose major shareholder is the government, has a responsibility to lead by example and to encourage the society to adopt better anti-corruption standards. In 2017, the Company proactively took several measures and participated in several activities to counter corruption. These were, for example, Thailand's National Anti-Corruption Day which was organized at Centara Grand at Central World by the Anti-Corruption Organization of Thailand (ACT) on September 6, 2017, where our CEO, management, and employees pledged to combat against 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 Forum, Muang Thong Thani on December 9, 2017.

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 certified as a member of Thailand's Private Sector Collective Action Coalition Against Corruption on July 4, 2014. This certification highlights our dedication and commitment to fight all forms of corruption, as well as leading us to believe that the Company should also expand our anti-corruption efforts to be adopted by and among our 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 the sustainability and create the optimal value for the shareholders. Details are disclosed in the "Shareholders' Rights and Equal Treatments" part.

(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.

The Company also establishes the Employee Joint Investment Program (EJIP) which is intended to encourage the employees to invest, on a voluntary basis, on an accumulative buying of the Company's shares on a periodic basis to incentivize performance, create alignment among the employees, management, and shareholders, as well as to establish a long-term loyalty and sense of ownership. This program was commenced on February 1, 2013 and will remain effective until January 31, 2018, carrying over a total period of 5 years. Purchasing of ordinary shares is generally carried out through SET's trading system. Eligible employees shall make a request to the Company to deduct a sum from their basic salary, ranged from 2 to 10 percent, while the Company will contribute another portion equal to 100 percent of the employees' contribution in each month to purchase the shares. Receiving and realizing the share value, on the other hand, is subject to the Company's performance in the long-term.

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 2017, our employees attended training and development programs such as ISO 14001 Environment Awareness Course at an average of 49 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 sixth time in 2017 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 65% of the employees had engaged with the Company, which was 12% 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. In 2018, the Company will continue 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 of the PTTEP Group (CG&BE). The Company strictly complies with the laws applicable to our operations in all locations 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 as well as 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 commits to building a sustainable relationship with all of the Company's stakeholders and continues to improve the quality of life of communities both in and outside the operations area. The Company effectively uses the Issue and Stakeholder Management System (ISMS) as a tool to analyze social risks which may impact all domestic and international operations.

(7) Environment

PTTEP strives to achieve the excellence and for a leadership position 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 to achieve our vision and commitment in SSHE and implemented throughout all of the operations. 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, and in Australia for PTTEP Australasia Project's support base at Darwin and office of PTTEP Australasia (Ashmore Cartier) Pty Ltd. In 2018, PTTEP is planning to acquire the ISO 14001:2015 Certification for the Zawtika Project in the Republic of the Union of Myanmar.

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, increasing the biodiversity of our operating sites, reforestation, reducing costs, 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) Suppliers

According to the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE), every supplier is an important part of our businesses. The Company therefore employs a policy which aims to treat our business partners equally. Our procurement operations are performed on the basis of equality and fair competition; while we fully comply with the laws and terms of concerned legal transactions, taking into account the Safety, Security, Health, and Environment (SSHE). The Company's suppliers must also follow the operational standards which adhere to the Company's policy. Their employees meanwhile are also required to have good business ethics and respect to human rights.

PTTEP Vendor Guide

PTTEP develops the Vendor Guide to provide the suppliers with the Company's business information and practices. These are, such as the CG&BE, procurement process, contract management, and PTTEP Vendor Sustainable Code of Conduct and related laws, as well as several supplier communication channels for enquiries and complaints.

Details of the PTTEP Vendor Guide are available in the Company's website at www.pttep.com > E-Service > Procurement and Contract > PTTEP Vendor Guide.

Vendor Registration

PTTEP maintains the concept of fairness and free competition without trade barriers towards all suppliers. There are 3 channels for the interested suppliers to register with the Company.

(1) PTTEP website: Suppliers can offer their products and services through the Company's website at www.pttep.com > E-Service > Procurement and Contract > Vendor Registration.

(2) The Category & Vendor Management Section: Suppliers can contact the Category & Vendor Management officers during the business hours to offer their products and services.

(3) PTTEP Users: Suppliers can directly propose their products and services to the users who may, in turn, provide the suppliers' names to the Category & Vendor Management Section for the vendor pre-qualification process.

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 suppliers to ensure that they possess the qualifications to deliver the products or provide the services needed.

SSHE Contractor Management and Plan

PTTEP continues to enhance the measures relevant to the management of suppliers in the SSHE which is one of the Company's core values. In addition to the operational guidelines, the SSHE Contractor Management Procedure and Plan is implemented to ensure the understanding as well as to improve the SSHE performance of the suppliers. The Company also encourages the suppliers to strictly comply with the SSHE Contractor Management Procedure and Plan through our annual SSHE Contractor Forum to ensure that they correctly understand the SSHE policy, standards, manuals and work procedures, and plan of the operations in all of the locations in which we operate.

The Notification of the National Anti-Corruption Commission (NACC) or Por.Por.Chor

According to the notification of the NACC, there is a page at www.pttep.com > E-Service > Procurement Announcement to disclose the information in regard to reference prices of procurement transitions for the Company's suppliers and stakeholders to be acknowledged of.

The Company also recommends all of the suppliers to comply with the NACC's announcement concerning the principles, methods and submission of accounting records by the persons being a party to the contract made with a State Enterprise or State Agency B.E. 2554.

Procurement Sourcing Strategy

PTTEP prepares a business analysis especially to review the overall procurement performance by using the procurement spending data from the past three years. This data is to be analyzed for risks relating to the process and the degree of market saturations. Further assessment is to classify products and services into categories and analyzed the Company's spending geographically to identify critical contractors/suppliers in each of the locations.

Upon identifying the critical contractors/suppliers, the Company uses the analysis to prepare procurement and contract strategy plans for each product and service group. The supply market analysis will then be generated to support our future procurement activities. The Company needs to submit the procurement and contract strategy plan, including the bidder list, to the Procurement Committee (PC) and joint venture partners (if any) for approval prior to proceeding with the bidding. (For transparency, the bidder list and the procurement/contract strategy plan must be internally and initially approved by three parties, namely, the operation, asset, and procurement functions before being submitted to the PC and the joint venture partners.)

Suppliers Selection

For the bidding process, two sealed envelopes and two-stage bidding are required. One envelope is for technical proposal, while the other is for commercial proposal. The technical envelope is opened first for evaluation of the technical aspects, quality, and the SSHE. Then for the technically acceptable bidders from the first stage, the process will continue with the opening of the commercial envelope.

Subsequently, the results of the bidding will be submitted to the Procurement Committee (PC), joint venture partners (if any), and the Board (for high value procurement) for approval prior to the contract drafting.

The Company only selects the suppliers who are technically and SSHE qualified as well as able to offer the lowest price or the best interest to the PTTEP Group.

Contract Management and Assessment

As an important and integral part of PTTEP's Contract Management and Supplier Relationship Management (SRM) for operating in the petroleum exploration and production business, the contract holders need to ensure that they and all relevant parties fully understand and comply with PTTEP's work plan, contract objectives, SSHE standards, and risks mitigation plan, as well as critical key performance indicators (KPIs). The contract holders also need to assess and follow up periodically on the performance to ensure that the suppliers operate according to the contractual terms. At the end of the contract, the contract holders also must complete the Contract Closed-out Report to record their performance, identify the areas of improvement and development in regard to the supplier's capability for a better and longer relationship.

Suppliers Collaboration Initiatives

In 2017, PTTEP aimed to develop an effective supply chain management and supported supplier collaboration initiatives to cultivate good relationships with the suppliers. The objective of the "Vendor Symposium Program" was, not only to allow the vendors to understand our procurement sourcing processes, CG&BE, and SSHE Management System (SSHE MS), but also to establish an awareness and knowledge of sustainability among the vendors. More than 70 vendors joined the program.

The Company, together with the suppliers and contractors, also organized Corporate Social Responsibility (CSR) activities to conserve the marine life and ecosystem. The activities included releasing of turtles back to nature, cleaning of their nursery and habitats, and planting of coral reefs at the Sea Turtles Conservation Center at the Royal Thai Navy in Sattahip, Chonburi province. Such CSR programs help to develop productive and meaningful collaborations and sustainable relationships between the Company and the others, making it possible to achieve a sustainable growth driven by safety and green practices into the future.

Local Content

To enhance the capability of the local suppliers in Thailand to compete with international companies, PTTEP supports domestic procurements and services from the operation areas. The purpose is also to increase employment and income generation to support the locals as well as to reduce the transfer of Thai currency to other countries. As a result of our

commitment to building long-term relationships with the communities where we operate, the Company has gained from each of the communities a license to operate. Meanwhile, the Company also encourages our suppliers to operate with care and responsibility wherever they are and to increase their local procurement to reduce the costs as well as to support their community.

Supplier Sustainability Management

PTTEP is committed to operating the businesses which lead to a sustainable growth and adhering to a good corporate governance for community, social, and environmental development. To efficiently achieve the goals, the Company emphasizes on the supply chain management and development through monitoring the suppliers.

PTTEP Vendor Sustainable Code of Conduct is defined with contents and scope of the code according to related rules, regulations, and laws. The vendors are obligated, in all of their activities, to operate in full compliance with the laws and regulations of the countries in which they operate while upholding the Company's policies concerning compliance with all applicable laws, business ethics, human rights, operational health and safety of workers, and environmental management. The Company also encourages the vendors to, in turn, apply the Vendor Sustainable Code of Conduct with their vendors to preserve the objectives.

Suppliers' Environmental, Social, and Governance (ESG) Assessment

PTTEP enhances the Company's supply chain management to the next level towards sustainable development. In 2017, PTTEP, together with the PTT Group of companies, conducted an Environmental, Social, and Governance (ESG) workshop. The workshop encouraged our suppliers to conduct ESG self-assessment as well as to understand PTT Group's Supplier Sustainable Code of Conduct which specifically focuses on ESG aspects. The assessment was divided into four categories, namely, (1) Onshore Civil Work, (2) Mechanical Construction, (3) AHT/AHTS/PSV, and (4) Electrical Material. The ESG assessment is an on-going process and will be continued as one of the Company's effort to work towards an even higher standard in this aspect in the future.

Whistleblowing

To instill confidence and protection to the suppliers 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 laws, CG&BE, or other regulations of the PTTEP Group, the Company establishes the CG Hotline to handle the matters. The suppliers can email to the cghotline@pttep.com, report through "PTTEP Whistleblowing System" at www.pttep.com, or fax to +66-2537-4949.

(9) Creditors

PTTEP recognizes the importance of the Company's internal and external stakeholders such as creditors, according to our policy of equitable treatment for all stakeholders as well as 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, are reviewed and audited by an independent auditor in compliance with the Generally Accepted Accounting Principles (GAAP) and subsequently endorsed by the Company's Audit Committee as well as the Board of Directors prior to public disclosure.

PTTEP's debenture issuances 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 debentures and loan agreements as well as 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 three consecutive years.

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 laws everywhere in which we operate. The Board sets the matters relating to the 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 Department is the center of compliance performance and supervision of the PTTEP Group. The 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 announced the Compliance Policy to express our commitment to full legal compliance as well as to define roles of all managers and employees in promoting of the 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 a good corporate governance. PTTEP place high importance to the information disclosed to the Stock Exchange of Thailand (SET) as well as to the shareholders. The information must be accurate, sufficient, timely, and equally available to all parties. The information is prepared according to the Company's Business Ethics. 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 Corporate 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 validate that they are presented accurately and 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 PTTEP Annual Report. In addition to the SET's requirements, the Company also releases our unreviewed quarterly financial statements as well as 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 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 shareholders and 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, analysts' coverage, and news releases. The Company also reports our safety, security, health and environment 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 of the fundamentals of the exploration and production business. The newsletter is bi-lingual, Thai and English, and available in both hardcopy and electronic formats, where the latter can be downloaded from the Company's website which has proven to be an effective communication channel between the Company and our shareholders.

In 2017, PTTEP disclosed a total of 38 articles through the SET portal and organized the following activities for the shareholders and analysts.

Activities	Amount (Times)
Domestic and overseas roadshows/conferences	19
Analyst meetings	4
Opportunity day (by SET)	4
Shareholders' and investors' site visits	5
Knowledge sharing events for investor	4
Company visits and conference calls	30

Apart from the activities, the Company also participated in a number of events which were organized by the SET for retail investors, such as "SET in the City", and interacted with the investors through daily telephone correspondence. Every year the IR team also sets up a booth at the Company's AGM to be able to closely interact with the 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 the 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 of 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: +66-2537-5919, +66-2537-5304, +66-2537-5779, +66-2537-4446
and +66-2537-4000 ext. 800-7374
- (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'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 Department 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 of 2014. 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 Department is assigned by the Board to be responsible for this matter.

9.2 Sub-Committees

PTTEP Board is responsible for appointing the directors who have expertise and knowledge in certain areas as specified by the Company. Each of the Company's sub-committee meanwhile is responsible for a specific set of tasks as specified 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 obtain any chairmanships or directorships in the sub-committees. In addition, the Chairman of each sub-committee, only with exception of the Risk Management Committee, must be an independent director.

From 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 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. Name of the directors, duties and responsibilities, 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" part.

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 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. 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 2017 – 2018 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) Legal: to support legal risk management and compliance which are corporate-level risks with direct impact to the Company's license to operate

(3) Accounting: to align with IOD's Corporate Governance Report of Thai Listed Companies (CGR) which requires at least one member of the Audit Committee to possess a degree in accounting

The process begins with the Committee 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, the 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. The followings are details of the seminars and trainings attended by four of the Company's directors during 2017.

Directors	Courses
(1) Mr. Prajya Phinyawat	- Board that Make a Difference (BMD) 4/2017 by IOD
(2) Admiral Tanarat Ubol	- Strategic Board Master Class (SBM) 1/2017 by IOD - Board Matters and Trends (BMT 4/2017) by IOD - The 22 nd World Petroleum Congress (WPC), Istanbul, Turkey
(3) Mr. Wirat Uanarumit	- CG in Germany - Volkswagen, Deutsche Bank and more by IOD - Ethical Leadership Program (ELP) 7/2017 by IOD - The 22 nd World Petroleum Congress (WPC), Istanbul, Turkey Anti-Corruption: Leadership Role of the Board by IOD
(4) Ms. Panada Kanokwat	- Board Role in Strategic Leadership by Mr. Christopher Hafner (Special lecture by IOD)

Currently, 13 of 15 of the Company's directors have participated in IOD's Director Certification Program (DCP), while one has attended the IOD's Director Accreditation Program (DAP). As a result, there are 14 out of 15 directors (93.33%) 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.

To continuously provide knowledge and share opinions with the directors, the Company invited speakers from the management to provide lecture and exchange opinions with the Board. In 2017, four sessions were arranged, namely, (1) "External Environment & Strategy Review" conducted by external speaker and PTTEP management, (2) "Review Strategy" by the Company's management, (3) "Exploration Growth" by the Company's management, and (4) a special lecture on "CG Code: A Key to achieve Collaborative Leadership and Long-Term Performance" by Mr. Rapee Sucharitakul, Secretary-General of the Securities and Exchange Commission, Thailand. The Company also updates the directors with laws and best practices of good corporate governance for an even better understanding on a regular basis.

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 General Procurement B.E. 2558, Regulation on Procurement for E&P Business B.E. 2558, 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" section. As of December 31, 2017, 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 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 2017 was 2.94 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 involve or be involved in any activities potentially leading to any conflicts of interest.

(2) Directors, management, and employees shall review and disclose their transactions potentially leading to a conflict of interest to the Company.

(3) Directors, management, and employees shall not participate in considering or voting in any matters in which they have stakes and, if such exists, shall completely disclose the information.

(4) Directors, management, and employees shall strictly adhere to the laws and regulations as required by the SET particularly when they are related to connected transactions.

The Company establishes preventive measures of 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 shall there be a suspicion or uncertainty that what they or their related persons are involved in or that their shareholding in the business which has a transaction with the Company may lead to a conflict of interest.

(4) Director, management, and employees must review their conflicts of interest on an annual basis. To review the conflict of interest related to particularly the procurement process, the management and employee who are directly involved in the procurement process must disclose their transactions potentially leading to a conflict of interest every 6 months. This is so the supervisor can consider a re-assignment of duty to prevent the conflict of interest.

9.12 Business Ethics

PTTEP is committed to operating ethically as the Company's Business Ethics are regarded as the behavioral framework and guideline for the 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 in the efficiency and transparency of the Company's business operations, creating a long-term sustainable value for the stakeholders.

Business Ethics of the PTTEP Group is a part of the CG&BE. The Board first established the Business Ethics in 1989, and it has since been revised every year. The current version of the CG&BE was approved by the Board on December 21, 2017, and it is regarded as the highest regulation for operating of the businesses within the PTTEP Group. The CG&BE is available for download from the Company's website.

The Business Ethics consist of principles, samples of questions and answers, information for additional study, and list of the departments which are responsible for each of the principles. There are 10 ethical issues which reflect our organizational values to which the Company's directors, 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
 - Keeping Records, Using, Disclosing and Safeguarding of Information
 - Use and Storage of Electronic Data and Information Technology Resources
 - Use 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 distributes the CG&BE booklets to the directors, management, and employees for their reference and adherence. They are also required to sign their name as an accord to be committed to applying the CG&BE principles and carrying them out to the highest working standards. In addition, the booklets are provided 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 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 the business accordingly. Communications also extend to external parties, for example, vendors, joint ventures, and agents of the PTTEP Group to encourage ethical culture among the Group and the society as a whole. The details are explained under "Continuing to Provide Communication, Knowledge and Training" part in "Anti-Corruption" part.

The Board's role is also to monitor and evaluate 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 reviewed the 2017 operation plan, while taking into account the 2016 evaluation results, to ensure continuity and efficiency for the development of the following year's operation plan.

9.13 Internal Controls

PTTEP places high importance on the internal control system based on the updated 2013 COSO (The Committee of Sponsoring Organizations of the Treadway Commission) framework to reasonably assure that the Company's three business objectives can be accomplished. These objectives are, namely, (1) efficient and effective operations with prudent use of resources and assets, (2) accurate, reliable, and timely disclosure of financial and non-financial information for internal and external uses, and (3) compliance with 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 creates ethical working attitude among the management and employees, along with an atmosphere and awareness of the Company's internal control according to the principles of good corporate governance which aims towards specific corporate objectives: Growth, Prosperity, Stability, Sustainability and Dignity. The Board is responsible for governing and enhancing this internal control system. The Company meanwhile is responsible for the design of the organizational structure, reporting lines, and delegation of work authority.

The Company also focuses on human resources management by developing strategies and processes to attract, develop, and retain competent individuals to be 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 high importance on risk management by appointing the Risk Management Committee to establish the policy and risk appetite and limit, as well as overseeing the effectiveness of the company-wide risk management. The Company has also applied for the ISO 31000 Risk Management concept, targeting identification and assessment of all risks related to our businesses, including fraud risk and the risks which may arise as a result of significant changes within the Company, to appropriately manage the risks in a timely manner and throughout.

(3) Control Activities

PTTEP has adequate control activities which are able to mitigate the risks to acceptable levels for the respective business environments or business units. Control activities are, such as development of general controls over technology or their deployment through regulations, policies, and working procedures, periodically reviewed and improved. The Company also encourages the employees to be constantly aware of the importance of conformance to the control activities as well as to be in 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, particularly information processing processes which are accurate, complete, up-to-date, accessible, protected, verifiable, and consistent for both internal and external uses. The Company also restricts the access to confidential information and permits the access only to authorized persons. The main objective of these processes is to support our business operations in making of effective decisions. In addition, the Company has effective internal and external communication systems in place to support functioning of the internal control system as well as a special communication channel to allow our stakeholders to confidentially report their concerns or complaints.

(5) Monitoring Activities

PTTEP 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 adequate and appropriate for the current business environment and dynamic risk factors. 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. 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 2017 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 Appetite Statement as well as the Metrics & Risk Governance Framework to be the guidelines. Risk management meanwhile is considered a responsibility of all personnel, while the Risk Management Policy requires the directors, management, employees, suppliers and contractors to manage risk thoroughly and systematically to ensure our target achievement.

The Company applies risk management guidelines of the ISO 31000, an international standard for risk management, throughout the Company. Risk management practices are taken into account within the organization at all levels, including the corporate, function groups, divisions, departments, working units, project management, and assets management, as well as processes such as investment and divestment decision making.

The Risk Management Department is responsible to ensure adequacy of the risk management system and its effectiveness across the organization. In addition, the department is responsible for systematic and effective mitigation of the Company's exposure to risks as well as for monitoring and reporting of the results to the management, the Risk Management Committee, and the Board. The Risk Management Department is also responsible for cultivation of a positive risk management culture throughout the organization.

9.15 Remuneration of Auditor

9.15.1 Remuneration of Auditor

(1) Audit Fee

In 2017, PTTEP and the subsidiaries, both domestic and overseas, paid audit fees to the Office of the Auditor General of Thailand (OAG) and other auditing firms for a total of USD 1.2 million.

(2) Non-Audit Fee*

In 2017, PTTEP paid a non-audit services fee to the OAG for a total of USD 0.5 million. This fee was charged for the preparation of Comfort Letters supporting the issuance of subordinated capital debentures.

*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 (2015-2017)

The OAG expressed its opinions, but without any issues, in the Auditors' Report of PTTEP's consolidated financial statements in the past three years.

9.16 Other Good Corporate Governance Practices

PTTEP places high importance on governing of the business operations with the Company's CG&BE as well as most of the international best practices, taking into account appropriateness of the practices, current business environment, as well as benefits to the Company's and, especially, the shareholders and stakeholders. Some of the practices which are the integrated results of the aforementioned 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 opened 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 for another term.

(4) The total number of independent directors must not be less than half of the total number of directors.

(5) The right to attend a shareholders' meeting must be carefully examined to ensure that granting of a proxy is conducted properly and that the granting does not interfere with the rights of the shareholders attending the meeting.

(6) The directors' Skill Mix is reviewed on an annual basis 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) PTTEP appoints a female director who graduated in accounting and is qualified as an independent director to be an Audit Committee member. This is beneficial to the Audit Committee, providing a reasonable assurance of 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 be in compliance with the Corporate Governance of the PTTEP Group.

(8) Performance appraisals of the Board and the sub-committees are conducted with integrity, using the Performance Evaluation Form and the Board Performance Target. The appraisals include an individual self-appraisal and individual cross-appraisal by other directors, appraisal of the Chairman, and appraisal of the Board and each of the sub-committees. Results of the appraisals are translated into plans for further performance improvements of the directors.

(9) The Independent Directors Committee had four meetings in 2017, while there were two Board meetings, which were without the management's present, 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 the CEO's annual compensation to the average of the employees' annual compensation.

(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. The activities demonstrated clear planning and performance indicators for evaluating knowledge and a system for keeping track of the results. With the Corporate Governance Committee in charge of planning of the activities, designing of the performance indicators, and regular monitoring to ensure that substantial results were achieved. These activities were also extended to the 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.

(12) The Board of Directors, executives, and directors from the Company's subsidiaries attended a special lecture by Mr. Rapee Sucharitakul, the SEC Secretary-General of the Corporate Governance Code for listed companies 2017, under the theme "CG Code: A Key to achieve Collaborative Leadership and Long-Term Performance". The lecture emphasized on integration of CG principles to business to promote sustainable organization development.

(13) In 2017, PTTEP conducted the CG&BE Perception Survey for the first time and subsequently included it in the Key Performance Indicator of the Board of Directors for 2017. The survey, which was conducted by an external consultant and gathered from more than 3,500 internal and external stakeholders, was classified into 5 groups, namely, (1) Government Officials, (2) Partners, (3) Vendors, (4) Community, and (5) Management and Employees (excluding the Board of Directors).

The results of the survey led to a comprehensive improvement plan to fully meet the stakeholders' expectation in various aspects such as disclosure and communication with external stakeholders on anti-corruption policy and whistleblowing system.

PTTEP also implemented the following other practices.

(1) PTTEP has always felt it vital that the Company's Chairman remain independent, thus has set independence as the first priority for Chairman nomination except there are other qualified reasons to select from other list of directors. The Company places importance and consider the fundamental attributes of business-related knowledge and expertise, working experience, leadership skills, as well as performance appraisal results to ensure that the Chairman governs the Company with full independency. 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 director.

(2) PTTEP's Articles of Association (AoA) stipulates that the number of PTTEP directors shall not be less than five, but not greater than 15. As of December 31, 2017, the Company had 15 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. Currently, the Company has five sub-committees which are responsible for specific tasks as described in their respective regulations. Each of the committees' performance is assessed on a yearly basis.

(3) According to the Budget Procedure Act B.E. 2502, PTTEP, a state-owned entity, is required to assign the independent and reliable Office of the Auditor General of Thailand (OAG) to be the Company's external auditor.

(4) Although PTTEP has a free float ratio of less than 40 percent of the total paid-up shares, the Company places high priority on the rights of the minor shareholders by organizing activities to periodically communicate beneficial information with the information beneficial to these shareholders as well as to gain acceptance from other external agencies.

(5) 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 times consecutively, 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. The Company also schedules the meetings in advance throughout the year and always ensure 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 2017, when the ratio always exceeded two-thirds. Prior to every voting, the Chairman allows the directors to ask questions and discuss various issues in details to ensure that the Board's resolutions have unanimous consent.

(6) PTTEP does not have an Employee Stock Option Program (ESOP) for the management. The Company, however, has established an Employee Joint Investment Program (EJIP) to allow the Company's management and employees to voluntarily purchase PTTEP stock every month throughout a five-year period, during which the Company will contribute an additional amount equal to the amount deducted from the payroll of the eligible candidates on a monthly basis. All shares purchased each month are suspended from trading for three years from the acquiring date. The objective of the EJIP is to encourage the management and employees to become more dedicating and be loyal to the organization as well as to create an increased sense of group ownership in the long run.

(7) PTTEP has not implemented a cumulative voting system as our AoA clearly prescribes that a director must be elected through the use of majority vote. The Company, however, 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.

(8) PTTEP places high importance on distribution of the Annual General Meeting (AGM) invitation letter prior to the meeting to provide the Company's shareholders with adequate time to appropriately review the agendas. 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 19 days 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) 2017 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 recognized as an exemplary corporate in organizing of the Annual General Meeting of Shareholders (AGM) for the year 2017 by successfully scoring 100 percent in the AGM checklist assessment conducted by the Thai Investors Association.

(3) PTTEP received three awards from The Asset Magazine, Hong Kong, namely, (1) Platinum Award of The Asset Corporate Awards for the ninth 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 third consecutive year, and (3) The Asset Best Investor Relations Team Award for the third consecutive year.

(4) PTTEP received three awards from the Corporate Governance Asia Magazine which is a financial journal focusing on corporate governance in Hong Kong and Asia, namely, (1) Asia's Best CFO (Investor Relations) for the fourth consecutive year, (2) Best Investor Relations Company (Thailand) for the fifth consecutive year, and (3) Asia's Best Environmental Responsibility for the fourth consecutive year.

(5) PTTEP was selected as a member of the 2017 Dow Jones Sustainability Indices (DJSI) in the DJSI World Oil and Gas Upstream & Integrated Industry for the fourth consecutive year. DJSI is a family of internationally recognized indices which evaluate the sustainability performance of the largest 2,500 companies in the S&P Global Broad Market Index.

(6) PTTEP was selected as a constituent of the FTSE4Good Index Series: the FTSE4Good Emerging Index by FTSE Russell Limited which is a global leader in indexing and analytic solutions for the second consecutive year. The FTSE4Good Emerging Index was used to measure the performance of the companies which demonstrate strong Environmental, Social, and Governance (ESG) practices in emerging markets.

(7) PTTEP received two awards at the SET Awards 2017 held by the Stock Exchange of Thailand and Money and Banking Magazine, namely, (1) Outstanding Investor Relations Award which is presented to listed companies with outstanding performance in the area of Investor Relations, and (2) Outstanding Innovative Company Award which is presented to listed companies, securities companies, and asset management companies with outstanding innovations. This award supports innovative developments which allow companies to continually respond to the long-term competitiveness of the industry and the nation. PTTEP received this award from the Company's management system called ECSPM: Enterprise Change, SSHE and Project Management Platform which covers the protection, planning and control of both the system and equipment more than 100 projects simultaneously.

(8) PTTEP received Thailand Sustainability Investment Award 2017 from the Stock Exchange of Thailand (SET). The award recognized PTTEP as a listed company with an outstanding performance in Environmental, Social and Governance (ESG) aspects, good business performance, as well as a member of DJSI World in Oil and Gas Upstream and Integrated Industry of the Dow Jones Sustainability Index.

(9) PTTEP received, for the fifth consecutive year, the Sustainability Report Award 2017–Best Category organized by the Securities and Exchange Commission, Thailand, in conjunction with Thai Listed Companies Association and Thaipat Institute. The award recognized the Company's excellence in performing and reporting of the social responsibility for sustainability of the business and society, based on completeness, credibility, and communication.

(10) PTTEP received a Distinguished Award in the category of Financial Management Excellence at Thailand Corporate Excellence Awards 2016 presentation ceremony which was organized by Thailand Management Association in corporation with Sasin Graduate Institute of Business Administration of Chulalongkorn University. The Company received this prestigious award for excellent financial management as demonstrated by our strong financial performance.

(11) PTTEP was recognized as a “2017 Top 100 Global Energy” by Thomson Reuters which is one of the most trusted news organizations. The study, the first holistic assessment of its kind, objectively identifies today's leading energy companies. The 2017 Thomson Reuters Top 100 Energy Leaders methodology is based on eight principle pillars of performance, namely, financial, management and investor confidence, risk and resilience, legal compliance, innovation, people and social responsibility, environmental impact, and reputation.

(12) PTTEP received a Water A List award from the Carbon Disclosure Project (CDP) which is a non-profit global environmental disclosure platform in recognition of the Company's outstanding sustainable water management practice. The Company also attained the leadership level by CDP for our achievement in climate management for the fourth consecutive year, making PTTEP the only company in the South East Asia to receive leadership level recognition in both categories in 2017.

(13) PTTEP received an award for Best use of multimedia for IR from the IR Magazine Awards & Conference South East Asia 2017. This award was presented to the companies which demonstrate an outstanding performance in Investor Relations activities in Southeast Asia through innovative applications.

(14) PTTEP was awarded a runner-up of the Duty of Care Awards 2017 in the category of Communications from the International SOS Foundation. The Company is the first Thai organization to be recognized by the foundation for continuous consideration towards employees' safety, security, health, and the environment. The Company produced an SOS VDO to communicate to all employees, and also mitigate the potential risks which can impact personal health and security of our employees, expatriates, and business travelers.

(15) PTTEP received a Platinum Award for SIOLA program at The 9th Annual Global CSR Summit & Awards and the Global Good Governance Awards 2017. This is the highest award in the Category of Best Community Program. SIOLA (Stimulation, Intervention, Optimization of Services for Children) is the program which offers play-based education to maximize benefits for early childhood development, healthcare, counseling for young parents and new families as well as microfinance in Indonesia.

(16) PTTEP received a Bronze Stevie Award in Innovation in Community Relations category from the Asia-Pacific Stevie Awards Program for the Company's two corporate social responsibility projects, namely, the SIOLA project in Indonesia and the Crab Hatchery Learning Center project in Songkhla province, Thailand.

9.18 Reports of the Sub-Committees

9.18.1 The Corporate Governance Committee Report

PTTEP places high importance on adherence of the Good Corporate Governance and Business Ethics of the PTTEP Group (CG&BE), which has continuously been improved, for the Company's business operation. The Board assigns the Corporate Governance Committee, comprising of at least three directors, most of whom are independent directors, to govern and ensure that the CG&BE is in compliance with throughout the organization.

In 2017, the Committee convened 4 times, while the majority of incumbent members attended every meeting. The duties and responsibilities of the Committee can be summarized as follows:

(1) Assessed and reviewed the CG&BE to be in compliance with the laws, practices of international standards and other leading companies, and recommendations from well-recognized institutions, as well as subsequently submitted the results for the Board's approval

(2) Promoted business operations of the PTTEP Group and performance of the Board, management, and employees to be in line with the CG&BE by monitoring and providing recommendations over the CG&BE-related activities to enhance knowledge and understanding of the CG&BE, as well as over the complaints received through the CG Hotline on a quarterly basis

(3) Governed to ensure that PTTEP has an efficient and adequate system in place to appropriately support the Company's anti-corruption policy, practices, and internal control systems for everyone in the organization to cultivate as well as for the vendors to uphold the best practices on this matter and abide by the CG&BE of the PTTEP Group.

(4) 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 and attain the trust of stakeholders in all of the locations in which the Company operates

(5) Considered and reviewed implementation of the Corporate Governance Code (CG Code) by means that are suitable to the PTTEP Group's businesses and creating long-term business values as well as established corporate governance reporting according to the SEC's CG Code and international standards, incorporated the CG Report in the annual report for the stakeholders

The Corporate Governance Committee reported the results of all meetings to the Board for acknowledgement on a regular basis. In 2017, the Committee abided by its assigned tasks according to the Charter for the Corporate Governance Committee and its amendments with prudence, competence, and independence. The Committee properly provided straightforward opinions for optimal benefits of PTTEP, the Company's shareholders as well as stakeholders.

(Signed) Admiral Tanarat Ubol

(Tanarat Ubol)

Chairman of the Corporate Governance Committee

9.18.2 The Audit Committee Report

PTTEP is determined to continue our E&P business with a long-term strategy for both sustainable growth and balance between the outstanding business performance and the Good Corporate Governance and Business Ethics, 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 the risk management and internal control system 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 achieving a sustainable future.

The Audit Committee consists of at least three, but no more than five, independent directors, while at least one member must be a designated financial expert who is able to review the accuracy and reliability of the financial reports. In 2017, the Committee convened 13 times, while the majority of incumbent directors attended all the meetings, to discuss matters related to the management, the Company's internal auditors and external auditors. In 2017, the Committee's principal activities are the followings.

(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 Office of the Auditor General, 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 as well as to identify action plans to mitigate the negative impacts. In addition, the Committee emphasized on the key audit matters in the Auditor's Report, referring to the estimations and assumptions which were made with executive discretion. Such estimations and assumptions must be derived or referenced from reliable sources or recognized experts, so as to assure the estimation figures are correct and accurate.

(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 and continuously improved as needed along changes of the business and the business environment. The Committee also continued to encourage a continuous implementation of the preventive controls which help to prevent or reduce the business risks which may have an unfavorable impact on the Company. The Committee, together with the Risk Management Committee and the Corporate Governance Committee, shared the information and collaborated with each other to ensure that the Company's risks, internal controls, and Corporate Governance and Business Ethics were consistently operated.

(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 the rationality and benefits for the Company and the shareholders, particularly the minority shareholders. The Committee also reviewed the disclosure of the transactions and deemed 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, and other related laws. The Committee also encouraged the Company to monitor and study new laws, both Thai laws, and other countries' laws, in which the PTT Group operates or invests. 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 to ensure that they are up-to-date and conform to changes of the Company's business and the business environment. In addition to their responsibility to review the audit results and regularly monitor the management's action plans for audit findings to ensure that they are handled adequately for both in-house audits and joint venture audits, the Committee also urged and supported operation of the Continuous Control Monitoring System-Procure to Pay process which is an approach that introduces an information system to monitor and detect for irregularities on a continuous basis. In 2017, the system was also employed in Myanmar, a country in which PTTEP operates extensively.

(6) Nomination of/Meeting with the External Auditor

The Committee considered nomination of the Office of the Auditor General who serves as the Company's external auditor and, for 2017, determined that the external auditor performed its duties with independence, continued to exhibit the required experience in auditing of the Company's financial reports, and ensured the accuracy and reliability of the Company's financial reports. In addition, the Committee proposed the audit fee for 2017 and met separately with the external auditor and the Internal Audit Division, in an absence of the management, 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 assure optimal controls over fraud prevention. For example, the Committee promoted procurement through a competitive bidding process to ensure transparency and verifiability. The Company has also become certified as a member of Thailand's Private Sector Collective Action Coalition Against Corruption (CAC), demonstrating our determination to stand strongly and prominently against corruptive practices. The Committee also was responsible to verify results of the Company's self-assessments relating to the anti-corruption process as required by CAC and as required according to the Corporate Governance Code for Listed Companies 2017.

The Audit Committee reported the results of all meetings to the Board on a regular basis. The Audit 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 follow-through assured that the Company is able to deliver the best possible performance when compared to our industrial peers. The Committee's opinion for 2017 is that the Company's financial report was accurate and in compliance with the generally accepted accounting standards, inclusive of 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) Ampon Kittiampon

(Mr. Ampon Kittiampon)

Chairman of the Audit Committee

9.18.3 The Nominating Committee Report

PTTEP's Good Corporate Governance requires the Nominating Committee to consist of at least three directors where most of the members are independent directors. The Committee's main duties and responsibilities are to evaluate the Board's structure and composition, including the appropriate proportion of directors with the essential Skill Mix for the Company's business nature and current circumstances, to establish the director nominating process and rules for the shareholders to nominate names of the qualified candidates, as well as to consider the President and Chief Executive Officer's succession plan for the company's continuous and efficient performance.

In 2017, the Nominating Committee convened 8 times, and the majority of incumbent directors attended all the meetings. The duties and responsibilities of the Committee can be summarized as follows:

- (1) Reviewed the Board's Skill Mix and agreed to add Organization Change & Development as another specific skill to cope with the fluctuation in the E&P business, to support management of the risks affecting the Company's long-term growth, to maintain the competitiveness, as well as to pursue new investment opportunities to support the Company's short-term and long-term sustainability
- (2) Specified the Target Skill Mix of the nominees in replacement of the directors who are due to retire by rotation and presented it to the shareholders during the nominees proposal process
- (3) Nominated names of the candidates with the appropriate Skill Mix in replacement of the directors who are due to retire to the Board or the Annual General Shareholders' Meeting for consideration, considering the Board's composition, his or her knowledge and expertise, work experience and usefulness to the Company, conflicts of interest, as well as holding of directorship or executive-level position in other listed companies
- (4) Nominated candidates for sub-committee members to the Board for election when there is a vacancy
- (5) Considered the annual Board Performance Target, developed the Performance Evaluation Form of the Board, sub-committees, and Chairman, as well as to report the assessment results to the Board for acknowledgement
- (6) Developed and monitored the executive-level management development system to prepare the Company's for future short-term and long-term growth

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) *Ampon Kittiampon*

(Mr. Ampon Kittiampon)

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 Chief Executive Officer, as well as the salary structure of the Company's senior executives by adhering to fair and reasonable principles, procedures, and structure.

In 2017, the Remuneration Committee convened 2 times where all of the incumbent members attended both meetings. The duties and responsibilities of the Committee can be summarized as follows:

(1) Reviewed the remuneration of the Board and sub-committees on fair and reasonable principles based on their duties and responsibilities, benchmarking with other listed companies of similar industries and business size, PTTEP's annual performance as well as the industry and economic environments

(2) Considered the Chief Executive Officer's performance and remuneration based on the assigned duties and responsibilities, and PTTEP's annual performance, benchmarking with other companies under PTT Group

The Remuneration Committee reported the results of all meetings to the Board for acknowledgement on a regular basis. 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.

(Signed) *Achporn Charuchinda*

(Mr. Achporn Charuchinda)

Chairman of the Remuneration Committee

9.18.5 The Risk Management Committee Report

Petroleum exploration and production business faced with another year of volatile environment in several aspects, namely, low oil price, decline in fossil fuel demand, and disruptive technology. PTTEP has also encountered both internal and external challenges, such as substitution of LNG for domestic gas, uncertain regulations pertaining to concession end projects, changes in laws and regulations relating to PTTEP's business and operation, as well as short reserves life and lack of new projects. PTTEP's Board of Directors appointed the Risk Management Committee consisting of at least three directors, while at least one member must be an independent director. As of December 31, 2017, the Committee comprised six members, three of which were independent directors. The Committee played a vital role to ensure that the risks which may affect or alter the achievement of PTTEP's objectives were managed to be in line with PTTEP's Board of Directors' directions and policies as well as to consider potential consequences entailing from the aforementioned risks especially in the areas of strategic planning, investment, and core competency.

In 2017, the Committee convened 13 times. The duties and responsibilities of the Committee can be summarized as follows:

(1) Managed strategic risks in response to the dynamically changing environment which may affect PTTEP's business and operation by initiating the "External Environment and Strategic Review Session" for internal and external viewpoints to analyze and assess the risks associated with the Company's "RESET, REFOCUS, RENEW" strategies. The Committee also focused their consideration on the implementation of business plans in accordance with the Company's strategy as well as our execution risks. Moreover, new investment in related E&P business and upstream of energy business are considered and emphasized to support Company sustainable growth.

(2) Enhanced the organization's readiness level to cope with emerging risks in addition to existing corporate risks so that the Company encounters less financial and reputation impacts. Risk Management Committee suggested to review and improve the Corporate Risk Flagging process for a better response time, and further developed the legal & compliance risk management framework to better monitor and mitigate the risks relating to litigation and compliance for a more comprehensive risk management system

(3) Considered and screened investment projects including M&A projects, new exploration projects, and joint investment with PTT on LNG value integration, prepared for Thailand's new bidding rounds in regard for concession end projects in terms of key risks, alignment to the Company's strategic directions, and project value realization, as well as recommended several other forms of risk evaluation and mitigation, such as worst-case scenario analysis, mitigation strategies preparation, engagement and collaboration with the government, and optimized investment decision framework

(4) Improved effectiveness of the Risk Management Committee's meetings through standardizing of presentation templates to effectively focus on key issues as well as arranged informal sessions between the committee members and PTTEP's executives

The Risk Management Committee consistently oversaw PTTEP's enterprise risk management to ensure that the businesses were operated within the Company's risk appetite, particularly of those relating to the oil price market, finance, and exploration and production

The minutes of the Risk Management Committee's meetings were reported to the Board on a monthly basis. In 2017 the Committee performed its duties relating to PTTEP's risk management systematically, prudently, and competently to the best of their ability for the highest benefit of PTTEP and the stakeholders.

(Signed) Sethaput Suthiwart-Narueput

(Mr. Sethaput Suthiwart-Narueput)

Chairman of the Risk Management Committee

9.18.6 The Independent Directors Committee Report

PTTEP Board of Directors has appointed the Independent Directors Committee to promote the Good Corporate Governance to ensure that the business is conducted for the best interest of the Company, with equality to all of the stakeholders, by providing constructive opinions transparently and independently.

The Independent Directors Committee consists of 9 independent directors, from 15 directors of the Board. This is a selection ratio which is more stringent than the Securities and Exchange Commission (SEC)'s requirement of one-third.

In 2017, the Committee convened 4 times, and the results of the meetings can be summarized as follows:

(1) Considered PTTEP's independent director qualifications to be in line with the Securities and Exchange Commission (SEC)'s requirements

(2) Considered SEC's Corporate Governance Code for Listed Companies 2017 which emphasizes on embedding the principles of social and environmental responsibilities in the business operations. This includes defining of the objectives, determining of the means to attain the objectives, monitoring, evaluating, and reporting of the performance which will be used as the Board's guideline to ensure the Company's long-term value creation to the society and environment

(3) Provided recommendations for enhancement of the Company's long-term growth management within the scope of strategic planning, reorganization, human resource management, and succession plan for executive-level management

(4) Recommended the courses which the Company might consider to achieve higher sales in oil and gas, as well as analyzed and monitored the LNG logistic process to formulate the most efficient and effective production and delivery plan to serve PTT and for the best benefit of PTTEP.

(5) Scheduled the Independent Directors Committee's meetings for 2018 and reviewed the 2017 Independent Directors Committee Report which is to be disclosed in the annual report

(6) Provided comments and useful enquiries with independency when considering agendas 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 conflict of interest to the context of a given agenda are abstained from the meeting and voting for the best interest of the Company, shareholders, and stakeholders

The Independent Directors Committee reported the results of all meetings to the Board for acknowledgement on a regular basis. 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

Corporate Social Responsibility

10.1 Operational Policies towards Responsibility for the Society and the Stakeholders

PTTEP's vision is to become a leading Asian E&P company, driven by competitive performance, advanced technology, and green practices. 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, 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, investors and security personnel.

In 2017, PTTEP conducted an in-depth stakeholder engagement survey 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 on stakeholder engagement practices, please see PTTEP 2017 Sustainability Report.

10.2 Operation and Reporting

PTTEP has adopted the Global Reporting Initiative (GRI): G4 Sustainability Reporting Guidelines (Core), using sector specific guidelines of the GRI such as the Sustainability Reporting Guidelines & Oil and Gas Sector Supplement (OGSS) 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 Standards Board (SASB), and SDG Compass to support the UN Sustainable Development Goals. In 2017, the Company was able to implement the actions required to address these issues as planned.

In addition, the Company has another report dedicated to sustainability. The report is of a standard comparable to the GRI's sustainability reporting as well as those required of the oil and gas industry. The Company's sustainability reporting demonstrates our continuous effort in fulfilling the ten principles of the United Nations Global Compact (UNGC): Advanced Level as well as those of other reporting standards relevant to the oil and gas industry such as IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability. The sustainability performances are publicly disclosed for all stakeholders to acknowledge that our sustainability issues are being properly addressed.

For more details, please see PTTEP 2017 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 a leading Asian E&P company driven by competitive performance, advanced technology, and green practices, 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. All CSR projects have been categorized into four themes, namely, Basic Needs, Education, Environment, and Culture. Currently, the Company has been focusing on six key environmental CSR projects, namely, Crab Hatchery Learning Center, Forest Restoration Project for Eco-learning at Sri Nakhon Khuean Khan Park and PTTEP Reforestation Project, Waste to Energy Project, PTTEP Love Sea, Love Beach, PTTEP Teenergy Project, and Underwater Learning Site of H.T.M.S. Project.

For more details, please see PTTEP 2017 Sustainability Report.

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 place a great emphasis on effectiveness of the internal control system. The management appoints the Internal Control Section to annually assess the adequacy and effectiveness of the system, while the Board appoints the Audit Committee to review the assessment results to ensure that the internal control system provides the Company with effective and efficient operations, accurate and reliable reporting, and the compliance required under relevant laws and regulations.

In 2017, 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 stated that the Company's internal control system is adequate and effective. When control deficiencies are detected, they will be immediately corrected to support the business operations to ensure they are in compliance with laws and regulations at all times. In addition, 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 provided 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 of the framework 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 businesses under principles of the Good Corporate Governance and Business Ethics (CG&BE) which is regularly updated to be in compliance with international standards and best practices and considered as the highest internal regulation of the PTTEP Group. The management and employees at all levels are required to sign the commitment form to formally acknowledge the CG&BE and to act accordingly. They are also required to self-assess their conflict of interest annually. In 2017, the Company continued to communicate on CG&BE to ensure that it is well understood by the management and employees through various training courses and activities, such as a special lecture for the Board and high-level executives on the new CG Code by the Secretary-General, Securities and Exchange Commission of Thailand, Anti-Corruption Online Training (revised version), and CG&BE Workshop for those working in the Republic of the Union of Myanmar. In addition, joint venture partners, suppliers/vendors, and company representatives are acknowledged of the principles and our anti-corruption policy through PTTEP's vendor symposium. The Company also stands firmly in a position to fight together with the public sector and civil society against corruption, as demonstrated in various occasions such as the International and National Anti-Corruption Day.
- PTTEP continues to monitor and assess that the code of conduct are being followed to ensure that the management and employees can effectively integrate ethical conduct into their work life. In 2017, the Company earned an "Excellent" (highest) level of recognition from the Corporate Governance Report of Thai Listed Companies conducted by the Thai Institute of Directors Association (IOD). In addition, the Company conducted the CG&BE Perception Survey to determine

the perception and confidence of our key stakeholders towards PTTEP's commitment to CG&BE values. The result from the survey, in turn, has been analyzed to develop the CG&BE improvement plan to further strengthen our CG&BE culture.

- 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 objectives as set in the strategies. The Board also delegates their power to the management through internal regulations to ensure flexibility and efficiency of the operations.

- PTTEP's organizational structure is designed with flexibility and efficiency in line with the internal control principles, such as segregation of duties, and check and balance. In 2017, to appropriately respond to the dynamic environment, the Company initiated several organizational restructuring exercises, for example, establishing of the Corporate Affairs and Assurance Group (CAA), the Business and Organization Transformation Group (BOT), and the New Business Unit. In addition, the President, Exploration and Production Position was appointed to be responsible for managing E&P operations. The Company's Reserves Committee was also established to check and balance of the reserves estimation, reporting and disclosure.

- PTTEP has appropriate reporting-line structure and hierarchy of authorities for the Company's business requirements and responsibilities of the management and employees, as they are clearly defined and documented in the Company's Functional Description and the Delegation of Authority and Signatures (DAS). In 2017, PTTEP revised DAS according to the new organization structure.

- PTTEP has an extensive set of resource management regulations and policies which focus on attracting, developing, and retaining individuals. The Company also develops the Individual Competency Development Plan (ICDP) for the management and employees based on the five capability themes which are in line with our business objectives. These five themes are, namely, (1) operating assets, (2) exploration success, (3) development projects, (4) joint venture management, and (5) mergers and acquisitions. The Company also sets level of knowledge and competency for personnel and continuously reviews and updates them for manpower development planning to facilitate our business growth and future expansion. In addition, a specific development plan for high potentials, management succession plan, job rotation, and promotion plan have been developed, while an employee engagement survey is carried out annually to achieve a higher level of employee satisfaction. As for the corporate remuneration policy, the Company employs the pay-for-performance compensation system to retain highly competent individuals.

- In 2017, PTTEP revised Internal Control Standard. The updated documents were subsequently acknowledged by the management and employees through training courses, and activities and publication such as GRC Newsletter to ensure accurate understanding of the principles, roles, and responsibilities of each individual in relation to internal control principles.

2. Risk Assessment

PTTEP employs an international risk management approach which can be summarized below.

- PTTEP establishes Risk Appetite Statement, Risk Governance Framework, and Risk Metrics & Limit to clearly define roles, responsibilities, and authorities relevant to 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.

- PTTEP develops Enterprise Risk Management Policy, Risk Management Standard and Guideline which are regularly reviewed and updated to ensure that all key risk activities are covered. In 2017, the Company revised the Risk Management Standard by including Hedging Committee's roles and responsibilities, reviewing the Risk Management Framework and revising the Risk Management Reporting Structure according to the new organization structure.
- PTTEP acknowledges the Risk Appetite Statement, Risk Management Policy, including standards, guidelines, processes, and tools to the management and employees through various channels, such as GRC Newsletter, knowledge sharing session and workshop for project based staff at, e.g., S1, Sinphuhorm, Bongkot and Arthit Project. In addition, the Company continues to develop and publish booklets to be used as a communication tool to provide the information relevant to our risk management, business continuity management and internal control to ensure the Company's business objectives achievement.
- 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 risks at all levels, ranging from the corporate, function groups, divisions, and departments down to the asset/project levels. This includes specific emerging risks, such as Operational Risk Profile, and Legal and Compliance Risk Profile.
- PTTEP clearly defines business objectives which allow the Company to conduct risk assessment for both internal and external risk factors to evaluate the impact and likelihood of those risks. Risk mitigation plans meanwhile are developed, executed, and monitored to reduce the risk levels through various measures. Key Risk Indicators (KRIs) are also developed to provide an early warning of risks to prevent as well as to develop mitigation plans for risks that can potentially prevent the Company from achieving the business objectives. In 2017, the Company continuously improves the Business Continuity Management System, allowing our headquarters in Bangkok and the Petroleum Development Support Base (PSB) in Songkhla to maintain their ISO 22301:2012 certification.
- PTTEP appoints the Operational Risk Committee (ORC) to continuously manage operational risks which has potential impacts to projects in the technical, contractual and operational support aspects. In 2017, ORC convened four times. The Company also establishes the Business Continuity Management Committee (BCMC) to provide strategic directions and assist the management to obtain the resources required to support the Business Continuity Management program. In 2017, BCMC convened three times.
- At the corporate level, PTTEP assesses business activities with high exposure to fraud risk, such as asset misappropriation, corruption, and misstatement of financial reporting. The Company considers historical information, incentives and/or pressure, opportunities, and rationalization of fraud to evaluate the likelihood and develop the Corporate Risk Profile. At the process level, process owners are responsible for management of both fraud and operational risks potentially arising from the processes under their responsibilities as well as development of the internal controls responding to those risks.
- PTTEP has the Internal Audit Division to carry out audits with regard to high risk areas which can lead to fraud. The Internal Audit Division is also responsible for undertaking a preliminary investigation of suspected frauds upon receipt of a report or as requested by the Audit Committee and/or the CEO.

- PTTEP regularly monitors and reviews strategic plan to ensure that the business goal remains reasonable and consistent with the changing situations. In 2017, the Company closely monitored changes of the key factors, such as world and domestic economy, oil price, exchange rate, geopolitics, laws and regulations to respond to those changes in a timely manner. In addition, the Company has continued the SPEND SMART campaign in response to the ongoing low oil price, while continuing to study the possibility of new business opportunities by taking into account clean energy and ending of the oil era.

3. Control Activities

PTTEP has adequate and efficient control activities to appropriately manage and mitigate risks to an acceptable level. Our key control activities can be summarized below.

- PTTEP has extensive sets of written regulations and policies which the management and employees have to strictly comply, while the management and supervisors are responsible for governing and monitoring such compliance. In 2017, to ensure higher level of work efficiency within the organization, the Company developed and updated corporate policies, standards and guidelines such as Internal Control Standard, Risk Management Standard in regard to Safety, Security, Health and Environment (SSHE) and Business Continuity Management.

- PTTEP recognizes significance of control activities at the process level, including segregation of duties and review and authorization of transactions, to ensure that the Company's business operations are efficient and able to prevent fraudulent acts. In 2017, the Company carried out a number of business process improvements to achieve higher level of work efficiency and effectiveness as well as to develop and revise process controls in regard to control self-assessment, such as Maintenance Planning Process, Technology Screening Process and Investment Process.

- PTTEP develops general controls over technology and physical security, including data backup and recovery to ensure the business continuity from disruptions. IT security policy, when revised, will be acknowledged organization-wide according to the good corporate governance. In 2017, the Company conducted an annual disaster recovery exercise with relevant parties, such as the Risk Management Department, the Internal Audit Division, and the Safety Management Department to ensure that critical applications shall continue their operations during disruption. Digital Security Awareness E-Learning was also carried out to build staff's awareness and understanding of the corporate IT security policy, regulations, and Thailand's Computer-related Crime Act B.E. 2550 (2007) by which they must abide.

- PTTEP establishes IT infrastructure control and clear policy for implementation of digital technology to ensure the Company's ICT system effectiveness according to COBIT 5 which is a business framework for the governance and management of enterprise IT, and ISO 27001 which is an information security standard.

- PTTEP highly emphasizes on technology risks and security policy to prevent the Company from security breach. The Company implements general controls through various channels, such as establishing of ICT Security Plan and Procedure, and Business Continuity Plan. The Company also puts the controls in place at personal level through, for example, Access Control and Devices Usage Rule, registration of personal devices (BYOD – Bring Your Own Device) used to access corporate IT system (Air Watch), Data Center Security Procedure, and data backup and recovery plan.

- PTTEP appoints the IT Steering Committee to provide IT strategic directions, goals, strategies, policies and standards, including investment direction of IT Master Plan and Roadmap to mitigate IT Risks to an acceptable level.

- PTTEP governs the Company's subsidiaries, associated companies, and joint ventures by assigning the Company's management and employees to manage these entities. The Company develops the Subsidiary Directors Guideline for the appointees to ensure standardized subsidiary directors' role and responsibility. The Internal Audit Division also has the responsibilities to audit Assets/Projects in which the Company has invested.

4. Information and Communication

PTTEP has effective and efficient information and communication systems for internal and external stakeholders which can be summarized below.

- PTTEP analyzes data and information from internal and external sources after they are reviewed by responsible units to make appropriate decisions. In addition, the Company imposes the confidentiality of use and protection of information to prevent the disclosure of sensitive or confidential information of the Company.

- PTTEP has developed Corporate Reference Document Center or "FindMe" as the information technology infrastructure to store and manage important business documents through a single access channel. In 2017, PTTEP enhanced FindMe's storing of legal and business documents.

- For internal communication, PTTEP has effective and efficient internal channels developed to ensure that the management and employees can quickly and accurately gain access to the information required for the task at hand, while the objectives and responsibilities of internal controls are continuously reiterated through internal meetings and emails. The Company has also set up the "Call Tree" network for communication especially in case of urgencies. In 2017, the management has been tasked with communicating GRC to their staff at least two times a year to ensure that they can appropriately integrate this concept into their work responsibilities. GRC is an integration of the Company's assurance processes, comprising corporate governance, risk management, compliance, and internal control, aiming to improve the business efficiency and effectiveness.

- For external communication, PTTEP establishes business units which are responsible for communicating with each specific group of stakeholders. These units are, such as the investor relations, corporate communication, and corporate secretary units. This is to ensure that information disclosed to external stakeholders is accurate, complete, sufficient, and timely. In 2017, the Company provided business-related information, such as expiration of the Bongkot concession, and decommissioning of the E&P Business and the numbers in regard to petroleum Reserves/Resources in Thailand. The Company also provided "Investor Tool Kits" for collecting of information for investors on the Company's website, as well as publications for analysts, fund managers, and shareholders to better understand the E&P business. The Anti-corruption Policy and Safety, Security, Health and Environment (SSHE) Policy are also provided for the suppliers/vendors through various communication channels, such as Vendor Symposium and PTT Group CG Day.

- PTTEP establishes whistleblowing channels for employees and external stakeholders to accurately, completely, and timely report wrongdoings committed by the Company's directors, the management, employees, or third parties acting on our behalf. According to our Reporting and Whistleblowing Regulation, complaints can be reported through, for example, letter, facsimile, email, and the Company's official website.

5. Monitoring Activities

PTTEP has adequate and efficient monitoring systems which can be summarized below.

- PTTEP regularly monitors and assesses internal controls to ensure that they are able to respond to dynamic business environments in terms of corporate and technical risks. In 2017, the Company monitored GRC-related activities through annual GRC Plan for a better understanding and practice organization-wide.
- PTTEP employs two levels of Control Self-Assessment (CSA), namely, at the corporate level, and at the process level. For the corporate level, the CSA is performed based on the Internal Control Self-Assessment Form provided by the Office of the Securities and Exchange Commission of Thailand (SEC) as well as the internal control questionnaires which are assessed by management at all levels. For the process level, process owners of business processes with significant impact on the Company are required to assess the controls. Findings from the two levels of CSA are subsequently used to develop improvement plans and follow-ups. In 2017, the controls assessment process has been strengthened, in addition to being regularly updated and followed up.
- The Compliance Department (CCC) is responsible for monitoring, reviewing, and reporting two types of non-compliance within an organization, namely, (1) non-compliance with external laws and regulations to be reported to the Chief Executive Officer and the Audit Committee on a monthly and semi-annually basis, respectively, and (2) non-compliance with internal regulations and policies to be reported to the Management Committee on a quarterly basis. CCC shall report all non-compliances with a significant impact on the PTTEP Group to responsible parties immediately.
- 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 development of improvement plans to resolve the issues identified and subsequently communicate with responsible parties, while regularly reporting the findings and improvement progress to the Audit Committee.

11.2 Head of the Internal Audit Division and Head of the Compliance Department

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.

(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 2017, Mrs. Chaveeporn Chamsang held the position of the Senior Vice President of the Internal Audit Division and the Head of the Internal Audit Division. Since her retirement on January 1, 2018, Mrs. Chanamas Sasnanand has assumed this position 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 Department.

11.2.2 Roles and Responsibilities of Head of the Compliance Department

PTTEP has established the Compliance Department 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 Department, having already functioned in this position since October 1, 2013. More details of the Head of the Compliance Department are disclosed in Attachment 3: Details of Head of the Internal Audit Division and Head of the Compliance Department.

Connected Transactions

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, 2017 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"> Mr. Tevin Vongvanich Mr. Wirat Uananumit Mr. Somporn Vongvuthipornchai 	Petroleum product sales: crude oil; natural gas; liquefied petroleum gas; and condensate <ul style="list-style-type: none"> Total income Accounts receivable 	3,727.50 541.66	<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.
		Other income includes: <ul style="list-style-type: none"> Income from design, equipment procurement, construction, and natural gas pipeline testing from South Bangkok's central processing platform to PTT's third gas transmission pipeline Income from infrastructure services to support the petroleum development such as warehouse, helicopter, and accommodation for PTT personnel at Arthit and Bangkok projects Income from the jetty and warehouse rental at Songkhla base Income from maintenance of natural gas meters Income from charge to PTT for working area at Arthit Project's production platform according to the Gas Sales Agreement 		<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.

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
		<ul style="list-style-type: none"> Income from service charges for management's driver in accordance with the agreement between PTT and PTTEP Services (the subsidiary of PTTEP) Income from meeting room rental at EnCo B building, 16th-18th Floor Income from working area and living area provided on production platform of South Bongkot Field in accordance with the Gas Sale Agreement Income from the Company's personnel seconded to PTT Income from the sale of office furniture Income from office building rental and facility management provided by EnCo (the subsidiary of PTTEP) Total income Accounts receivable 	11.21 3.34	
		Gas transmission pipelines construction <ul style="list-style-type: none"> Accounts receivable 	24.91	<ul style="list-style-type: none"> Such amount arises mostly from additional scope of work on gas-pipeline construction. The condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations. Company already received a payment on January 24, 2018.

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. ■ The Company's executives who serve as EnCo's directors are: <ol style="list-style-type: none"> (1) Mr. Thiti Mekavichai (2) Ms. Pannalin Mahawongtikul (3) Mrs. Kesara Limmeechokchai (4) Mr. Anusorn Wuthijaroen 	Purchase of petroleum product, manpower charge for PTT personnel seconded to the Company and subsidiaries, and other expenses <ul style="list-style-type: none"> ■ Purchasing petroleum products, equipment and services ■ Personnel expenses ■ Other expenses; fuel for helicopter, advisor, training, and laboratory rental ■ Total income 38.49 ■ Accounts payables 3.53 		<ul style="list-style-type: none"> ■ The condition and price setting for the purchase of petroleum product, 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 which is the Company's obligation, in accordance with 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.
		The Company has signed a three-year lease contract with EnCo to rent the office building, storage and common areas at the Energy Complex Center. The Company is eligible to extend its lease contract for another three years. <ul style="list-style-type: none"> ■ Total lease and service expenses 17.25 ■ Accounts payable 0.0037 		<ul style="list-style-type: none"> ■ The leasing rate refers to the rate appraised by independent evaluators, based on the market rate of the office building lease.

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
		<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 a loan contract between EnCo and Krung Thai Bank Public Company Limited, dated April 2, 2009 (contract amendment is included). The interest rate as of December 31, 2017 is FDR+2% per year Loans outstanding Interest receivable 	17.75 0.58	<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 EnCo's shareholders proportionately.
		<p>Income from the Company's personnel seconded to EnCo</p> <ul style="list-style-type: none"> Total income Accounts receivable 	0.25 0.03	<ul style="list-style-type: none"> Manpower rates are based on the actual rates the Company pays to employees seconded to EnCo.
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. The Company's executive who serves as PTT Digital's director is Mr. Thiti Mekavichai. 	<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 Accounts payable 	18.98 1.71	<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.
		<p>Income from the following services:</p> <ul style="list-style-type: none"> Income from the Company's personnel seconded to PTT Digital Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) Total income Accounts receivable 	3.48 0.50	<ul style="list-style-type: none"> Manpower rates are based on the actual rates the Company pays to employees seconded to PTT Digital.

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
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 Tepartimargorn. 	Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) <ul style="list-style-type: none"> ■ Total income ■ Accounts receivable 	0.14 0.0011	<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.
		Expense for Advanced Fire Fighting training <ul style="list-style-type: none"> ■ Total expenses 	0.03	<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.
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. Tevin Yongvanich. 	Income from the following services: <ul style="list-style-type: none"> ■ Income from consulting service ■ Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) ■ Total income ■ Accounts receivable 	1.42 0.01	<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.
		The Company and subsidiaries signed the contracts with PTTEP for the following services: <ul style="list-style-type: none"> ■ Rail tank wagons maintenance and repair for PTTEP Siam Limited (PTTEPS) ■ General maintenance, equipment inspection and other services for PTTEPS ■ General maintenance and services for the PTT Research and Technology Institute, Energy Application Lab (EAL) and Amazon Inspiring Campus in Wangnoi District, Ayutthaya Province in accordance with the agreement between PTTEP and EnCo (the subsidiary of PTTEP) ■ Total expenses ■ Accounts payable 	2.03 0.01	<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.
PTT Maintenance and Engineering Company Limited (PTTME)	<ul style="list-style-type: none"> ■ PTT, the Company's major shareholder, holds 40% of PTTME's registered and paid-up capital. 			

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
Business Services Alliance Company Limited (BSA)	■ PTT, the Company's major shareholder, holds more than 10% of BSA's registered and paid-up capital.	Expenses from the following services: ■ Expense for field trip arrangement ■ Manpower charge for BSA personnel seconded to PTT GL ■ Manpower charge for BSA personnel providing services at Energy Complex, PTT headquarters, PTT Research and Technology Institute in Wangnoi District, Ayuthaya Province and PTT Research and Technology Institute in Wang Chan District, Rayong Province in accordance with the agreement between BSA and EnCo (the subsidiary of PTTEP) ■ Total expenses 0.06 ■ Accounts payable 0.03		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) ■ Total income 0.04 ■ Accounts receivable 0.0001		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
Dhipaya Insurance Public Company Limited (TIP)	■ PTT, the Company's major shareholder, holds 13.33% of TIP's registered and paid-up capital.	Expense for the Company and subsidiaries's assets insurance, and our employees' health and life insurance ■ Total expenses 7.90 ■ Accounts payable 0.02		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		Income from the following services: ■ Income recognized from the excess of insurance premium paid in 2016. ■ Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) ■ Total income 0.013 ■ Accounts receivable 0.000023		■ 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
Thai Oil Public Company Limited (Thai Oil)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 49.10% of Thai Oil's registered and paid-up capital. 	Income from the following services: <ul style="list-style-type: none"> Income from meeting room rental at EnCo B building, 16th-18th Floor Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) Total income Accounts receivable 	0.97 0.0016	<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.
PTT Global Chemical Public Company Limited (PTTGC)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 48.89% of PTTGC's registered and paid-up capital. 	Fee for mercury analysis at Mercury Removal Unit for PTTEP SP GPP <ul style="list-style-type: none"> Total expenses 	0.0058	<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 office building rental and services provided by EnCo (the subsidiary of PTTEP) <ul style="list-style-type: none"> Total income Accounts receivable 	2.23 0.0020	<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.
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. 	Income from the following services: <ul style="list-style-type: none"> Income from service charges for management's driver Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) Total income Accounts receivable 	0.18 0.0062	<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.
PTT Polymer Marketing Company Limited (PTTPM)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds more than 10% of PTTPM's registered and paid-up capital. 	Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) <ul style="list-style-type: none"> Total income Accounts receivable 	0.44 0.000015	<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.
PTT Polymer Logistics Company Limited (PTTPL)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds more than 10% of PTTPL's registered and paid-up capital. 	Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) <ul style="list-style-type: none"> Total income Accounts receivable 	0.08 0.0010	<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.

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
PTT Retail Business Company Limited (PTTRM)	■ PTT, the Company's major shareholder, holds more than 10% of PTTRM's registered and paid-up capital.	Expense for drinking water in accordance with the agreement between PTTRM and EnCo (the subsidiary of PTTEP)		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		■ Total expenses ■ Accounts payable	0.0048 0.0005	
PTT Tank Terminal Company Limited (PTT Tank)	■ PTT, the Company's major shareholder, holds more than 10% of PTT Tank's registered and paid-up capital.	Income from office building rental and services provided by EnCo (the subsidiary of PTTEP)		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		■ Total income ■ Accounts receivable	0.03 0.0010	
Trans Thai-Malaysia (Thailand) Limited (TTM)	■ PTT, the Company's major shareholder, holds more than 10% of TTM's registered and paid-up capital.	Income from office building rental and services provided by EnCo (the subsidiary of PTTEP)		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		■ Total income ■ Accounts receivable	0.02 0.0001	
PTT MCC Biochem Company Limited (PTTMCC)	■ PTT, the Company's major shareholder, holds more than 10% of PTTMCC's registered and paid-up capital.	Income from the following services: ■ Income from warehousing rental in Songkhla Province ■ Income from office building rental and services provided by EnCo (the subsidiary of PTTEP)		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		■ Total income ■ Accounts receivable	0.02 0.0074	
PTT International Trading Pte. Ltd. (PTTT)	■ PTT, the Company's major shareholder, holds 100% of PTTT's registered and paid-up capital.	Income from office building rental and services provided by EnCo (the subsidiary of PTTEP)		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		■ Total income	0.11	
PTT International Trading London Ltd. (PTTT LDN)	■ PTT, the Company's major shareholder, holds 100% of PTTT LDN's registered and paid-up capital.	Income and expense from oil price hedging contracts		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		■ Total expenses ■ Total income ■ Accounts payable	1.25 1.37 0.55	
PTT International Trading London Ltd. (PTTT LDN)	■ PTT, the Company's major shareholder, holds 100% of PTTT LDN's registered and paid-up capital.	Petroleum product sales: crude oil		■ Condition and price setting follows normal business operations at an arm's length basis for non-related persons or operations.
		■ Total income ■ Accounts receivable	14.14 14.14	

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
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. 	PTTGL Investment Limited (PTTGLI), the 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 is in line with market rates. Loans outstanding Interest expenses 	46.38 0.49	<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 with the financial support of all PTTEP's shareholders proportionately.
Global Power Synergy Company Limited (GPSC)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 30.10% of GPSC's registered and paid-up capital. Co-director is Ms. Panada Kanokwat 	Income from office building rental and services provided by EnCo (the subsidiary of PTTEP) <ul style="list-style-type: none"> Total income Accounts receivable 	0.30 0.0031	<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.
PTT Global LNG Company Limited (PTT GL)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 50% of PTT GL's registered and paid-up capital. PTTEP, PTT GL's major shareholder, holds 50% of PTT GL's registered and paid-up capital. The Company's executives who serve as PTT GL's directors are: <ol style="list-style-type: none"> Mr. Somporn Vongvuthipomchai Mr. Montri Rawanchaikul 	<ul style="list-style-type: none"> Income from service charges for management's driver Income from meeting room rental Income from the Company's personnel seconded to PTT GL Income from financial services provided by PTTEP Treasury Center Company Limited Income from accounting, tax and financial operations services provided by PTTEP Income from subleasing office area of approximately 320 sq.m. Income from providing utilities and other services Total income Accounts receivable 	0.23 0.06	<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.

Connected Company	Relationship	Transaction	Value (Unit: Million USD)	Pricing Policy and/or Reason
PTTGL Investment Limited (PTTGLI)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 50% of PTT GL's registered and paid-up capital. PTTEP, PTT GL's major shareholder, holds 50% of PTT GL's registered and paid-up capital. PTT GL, the major shareholder of PTTGLI, holds 100% of PTTGLI's registered and paid-up capital. 	<p>The Company's subsidiary 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 is in line with market rates. 	<p>92.75 0.99</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 with the financial support of all PTT GL's shareholders proportionately.
		<p>Loans outstanding</p> <p>Interest income</p>		
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>The Company and subsidiaries signed the contracts with PTTLNG for the following services:</p> <ul style="list-style-type: none"> Financial services provided by PTTEP Treasury Center Company Limited Accounting, Tax and Financial Operations services provided by PTTEP 	<p>0.04 0.01</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.
		<p>Total income</p> <p>Accounts receivable</p>		
PTT Green Energy Pte. Ltd. (PTTGE)	<ul style="list-style-type: none"> PTT, the Company's major shareholder, holds 100% of PTT Green Energy's registered and paid-up capital. 	<p>Income from office building rental and services provided by EnCo (the subsidiary of PTTEP)</p>	<p>0.07</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.
		<p>Total income</p>	<p>0.0003</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.
Mrs. Suchitra Suwansinpan	<ul style="list-style-type: none"> Management of PTTEP 	<p>Income from asset disposal (car)</p> <p>Total income</p>	<p>0.03</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.

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, 2017 as summarized above and considered them to be indispensable, fair and justifiable in terms of conditions and price, 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 of 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, or 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 purchase 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



Significant Financial Information

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES STATEMENTS OF FINANCIAL POSITION

	As at December 31, 2015		As at December 31, 2016		As at December 31, 2017	
	Thousand (USD)	%	Thousand (USD)	%	Thousand (USD)	%
Assets						
Current Assets						
Cash and cash equivalents	2,995,403	15.2	2,039,500	10.8	1,512,181	7.9
Short-term investments	264,160	1.3	1,982,077	10.5	2,955,491	15.4
Investments in trading securities	118	0.0	169	0.0	208	0.0
Account receivable - parent company	475,827	2.4	382,762	2.0	566,569	2.9
Trade accounts receivable	84,251	0.4	75,994	0.4	109,434	0.6
Other accounts receivable	101,057	0.5	62,305	0.3	78,595	0.4
Inventories	47,214	0.2	37,548	0.2	19,186	0.1
Materials and supplies	404,269	2.1	345,871	1.8	298,064	1.5
Current tax assets	-	-	106,020	0.6	89,007	0.5
Other current assets	328,407	1.7	158,088	0.8	136,101	0.7
Total Current Assets	4,700,706	23.9	5,190,334	27.5	5,764,836	30.0
Non-current Assets						
Investments in available-for-sales securities	875	0.0	685	0.0	713	0.0
Investments in associates	42,861	0.2	46,724	0.2	212,644	1.1
Investments in joint ventures	21,297	0.1	20,021	0.1	18,721	0.1
Other long-term investments	-	-	-	-	11	0.0
Long-term loans to related parties	16,072	0.1	16,187	0.1	110,498	0.6
Property, plant and equipment	9,652,406	49.1	8,269,887	43.8	8,034,375	41.8
Goodwill	1,014,382	5.2	1,014,382	5.4	1,014,382	5.3
Intangible assets	3,691,165	18.8	91,814	0.5	83,988	0.4
Exploration and evaluation assets	-	-	3,815,472	20.2	3,306,976	17.2
Deferred tax assets	180,092	0.9	197,011	1.0	416,117	2.2
Rights to receive reimbursement from decommissioning funds	-	-	115,874	0.6	131,356	0.7
Other non-current assets	322,470	1.6	112,986	0.6	125,204	0.6
Total Non-current Assets	14,941,620	76.1	13,701,043	72.5	13,454,985	70.0
Total Assets	19,642,326	100.0	18,891,377	100.0	19,219,821	100.0

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES
STATEMENTS OF FINANCIAL POSITION (cont'd)

	As at December 31, 2015		As at December 31, 2016		As at December 31, 2017	
	Thousand (USD)	%	Thousand (USD)	%	Thousand (USD)	%
Liabilities and Equity						
Current Liabilities						
Trade accounts payable	118,302	0.6	83,887	0.4	115,353	0.6
Working capital to co-venturers	16,889	0.1	15,333	0.1	15,641	0.1
Current portion of debentures	-	-	-	-	399,710	2.1
Accrued expenses	614,915	3.1	490,788	2.6	490,906	2.6
Accrued interests payable	32,813	0.2	23,283	0.1	24,151	0.1
Income tax payable	501,511	2.6	341,121	1.8	406,005	2.1
Short-term provision	53,196	0.3	54,842	0.3	63,424	0.3
Financial derivative liabilities	6,770	0.0	35,155	0.2	25,521	0.1
Other current liabilities	63,374	0.3	56,408	0.3	60,545	0.3
Total Current Liabilities	1,407,770	7.2	1,100,817	5.8	1,601,256	8.3
Non-current Liabilities						
Debentures	2,434,698	12.4	2,264,810	12.0	1,938,721	10.1
Long-term loans from financial institution	570,543	2.9	566,813	3.0	568,731	3.0
Deferred tax liabilities	1,269,541	6.5	1,078,607	5.7	963,020	5.0
Provision for employee benefit	99,189	0.5	104,528	0.6	123,772	0.7
Provision for decommissioning costs	2,085,820	10.6	2,015,978	10.7	2,275,433	11.8
Provision for remuneration for the renewal of petroleum production	295,487	1.5	253,954	1.3	195,015	1.0
Other non-current liabilities	151,287	0.8	119,406	0.6	37,220	0.2
Total Non-current Liabilities	6,906,565	35.2	6,404,096	33.9	6,101,912	31.8
Total Liabilities	8,314,335	42.3	7,504,913	39.7	7,703,168	40.1
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	17.5	3,439,037	18.2	3,439,037	17.9
Subordinated capital debentures	1,152,103	5.9	1,152,103	6.1	1,154,812	6.0
Retained earnings						
Appropriated						
Legal reserve	15,048	0.1	15,048	0.1	15,048	0.1
Reserve for expansion	431,231	2.2	431,231	2.3	431,231	2.2
Unappropriated	6,288,214	32.0	6,295,794	33.3	6,354,906	33.1
Other components of equity	(148,326)	(0.8)	(97,433)	(0.5)	(29,065)	(0.2)
Total Equity	11,327,991	57.7	11,386,464	60.3	11,516,653	59.9
Total Liabilities and Equity	19,642,326	100.0	18,891,377	100.0	19,219,821	100.0
Book value per share (USD)	2.85		2.87		2.90	
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,

	2015		2016		2017	
	Thousand (USD)	%	Thousand (USD)	%	Thousand (USD)	%
Revenues						
Sales	5,286,672	94.2	4,189,564	96.6	4,281,205	94.7
Revenue from pipeline transportation	118,488	2.1	66,487	1.5	77,805	1.7
Gain On Foreign Exchange	-	-	11,587	0.3	51,402	1.1
Interest income	31,916	0.6	30,065	0.7	59,579	1.3
Gain on financial derivatives	132,161	2.4	-	-	-	-
Other income	45,200	0.8	41,482	1.0	53,273	1.2
Total Revenues	5,614,437	100.0	4,339,185	100.0	4,523,264	100.0
Expenses						
	-	-	-	-	-	-
Operating expenses	685,106	12.2	582,131	13.4	625,061	13.8
Exploration expenses	182,615	3.3	73,352	1.7	52,194	1.2
Administrative expenses	274,601	4.9	218,943	5.0	246,421	5.5
Petroleum royalties and remuneration	426,045	7.6	353,108	8.1	367,858	8.1
Depreciation, depletion and amortization	2,707,533	48.2	2,079,382	47.9	1,650,220	36.5
Loss on foreign exchange	69,405	1.2	-	-	-	-
Loss on financial derivatives	-	-	118,189	2.7	28,407	0.6
Management's remuneration	3,778	0.1	3,984	0.1	4,950	0.1
Impairment loss on assets	1,349,618	24.0	47,151	1.1	558,214	12.3
Finance costs	251,697	4.5	234,466	5.4	226,227	5.0
Total Expenses	5,950,398	106.0	3,710,706	85.5	3,759,552	83.1
Share of gain of associates and joint ventures	9,028	0.2	8,547	0.2	9,745	0.2
Profit (loss) before income taxes	(326,933)	(5.8)	637,027	14.7	773,457	17.1
Income tax	(495,518)	(8.8)	(285,307)	(6.6)	(179,571)	(4.0)
Profit (loss) for the year from continuing operations	(822,451)	(14.6)	351,720	8.1	593,886	13.1
Profit (loss) for the year from discontinued operations - net of tax	(31,139)	(0.6)	20,334	0.5	(348)	(0.0)
Profit (loss) for the year	(853,590)	(15.2)	372,054	8.6	593,538	13.1
Basic earnings (loss) per share (USD)	(0.22)		0.08		0.13	
Continuing operations	(0.21)		0.07		0.13	
Discontinued operations	(0.01)		0.01		(0.0001)	

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES

STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31,

	2015	2016	2017
	Thousand (USD)	Thousand (USD)	Thousand (USD)
Cash flows from operating activities			
Continuing operations			
Profit before income taxes	(326,933)	637,027	773,457
Adjustment to reconcile profit before income taxes to net cash provided by (used in) operating activities			
Share of gain from associates and joint ventures	(9,028)	(8,547)	(9,746)
Depreciation, depletion and amortization	2,707,533	2,079,382	1,650,220
Impairment loss on assets	1,349,619	47,151	558,214
Reversal of allowance for decrease in value of inventory to net realizable value	-	(16,945)	(9,323)
Amortization of exploration expenses	31,227	29,013	25,936
Other amortization of expenses	147,964	(2,084)	7,730
Loss on disposal of assets	9,888	13,290	33,559
Income recognized from deferred income	(13,828)	(6,389)	(5,922)
Loss on financial derivatives	(21,550)	82,965	9,447
Premium from repurchase of debentures	-	7,327	-
Provision for employee benefit	17,896	11,346	12,232
Gain on foreign exchange	(649)	(16,088)	(5,361)
Interest income less than interest expenses	211,301	199,625	162,879
	4,103,440	3,057,073	3,203,322
Change in operating assets and liabilities	(1,208,129)	(769,584)	(534,420)
Discontinued operations	(6,659)	826	-
Net cash flows provided by operating activities	2,888,652	2,288,315	2,668,902
Cash flows from investing activities			
Continuing operations			
Cash payment for short-term investments	(264,160)	(1,992,078)	(4,415,788)
Cash received from investing in short-term investments	-	274,160	3,442,374
Cash payment for long-term loans to related parties	-	-	(92,750)
Cash payment for investment in associate	-	-	(156,609)
Cash payment for other long-term investments	-	-	(11)
Cash payment for investments in joint ventures	(2,650)	-	-
Cash received from investments in joint ventures	2,161	1,311	393
Net cash received from divestment of business	-	8,704	-
Dividends received from related parties	4,403	5,212	5,275
Interest received from short-term investments	9,293	4,671	27,730
Interest received from loans	581	552	575
Increase in property, plant and equipment	(1,733,586)	(996,712)	(1,331,920)
Increase in intangible assets	(142,135)	(7,041)	(6,164)
Increase in exploration and evaluation assets	-	(19,019)	(22,845)
Discontinued operations	(9,941)	(6)	-
Net cash flows used in investing activities	(2,136,034)	(2,720,246)	(2,549,740)

PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED AND SUBSIDIARIES

STATEMENTS OF CASH FLOWS (cont'd)

FOR THE YEARS ENDED DECEMBER 31,

	2015	2016	2017
	Thousand (USD)	Thousand (USD)	Thousand (USD)
Cash flows from financing activities			
Continuing operations			
Payment of debentures	(700,000)	(183,877)	-
Payment of long-term loans	(411,469)	-	-
Interest paid for loans	(186,915)	(134,242)	(133,512)
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)
Interest paid for subordinated capital debentures	(65,893)	(65,670)	(52,826)
Net cash received for financial derivative contract	-	155,597	-
Dividends paid	(297,702)	(310,427)	(458,570)
Discontinued operations	-	-	-
Net cash flows used in financing activities	(1,661,979)	(544,369)	(664,590)
Net decrease in cash and cash equivalents	(909,361)	(976,300)	(545,428)
Cash and cash equivalents at the beginning of the year	3,930,360	2,995,403	2,039,500
	3,020,999	2,019,103	1,494,072
Adjustment for the effect of exchange rate changes	(25,596)	20,397	18,109
Cash and cash equivalents at the end of the year	2,995,403	2,039,500	1,512,181

Summary significant financial ratio table

			2015	2016	2017
Liquidity ratio					
Current Ratio	Times		3.34	4.72	3.60
Quick Ratio	Times		2.71	4.07	3.21
Cash Flow from Operations to Current Liabilities Ratio	Times		1.35	1.82	1.98
Account Receivable Turnover	Times		8.05	8.35	7.68
Collection Period	Days		45	44	48
Profitability Ratio					
Net Profit Margin	%		(15.20)	8.57	13.12
Return on Equity	%		(7.15)	3.28	5.18
Efficiency Ratio					
Return on Assets	%		(3.98)	1.93	3.11
Return on Fixed Assets	%		12.63	19.21	19.01
Assets Turnover	Times		0.26	0.23	0.24
Financial Policy Ratio					
Debt to Equity Ratio	Times		0.27	0.25	0.25
Net Debt to Equity Ratio	Times		(0.02)	(0.10)	(0.14)
Times Interest Earned	Times		15.23	12.90	13.54
Dividend Ratio	%		N/A	98	90
Data per Share					
Book Value per Share	USD		2.85	2.87	2.90
Net Profit per Share	USD		(0.22)	0.08	0.13
Dividend per Share	THB		3.00	3.25	4.25
Growth Rate					
Total Asset	%		(15.59)	(3.82)	1.74
Total Liabilities	%		(22.46)	(9.74)	2.64
Sales	%		(27.52)	(21.26)	2.42
Net Profit	%		(226.00)	143.59	59.53

Management Discussion and Analysis of Operating Results

14.1 Executive Summary

Year 2017 progressed with global crude oil prices recovery benefiting PTTEP's average selling price while the persistent effort in our cost management and operational improvement led to the further reduction of PTTEP's unit cost from 30.46 USD per barrel of oil equivalent (BOE) in 2016 to 29.05 USD/BOE. As a result, PTTEP's net income for 2017 was improved by 60% to 594 million USD (MMUSD) compared to the previous year.

PTTEP's sales revenue stood at 4,281 MMUSD this year, a 2% increase from 2016, while the average sales volume target was met at 299,206 barrels of oil equivalent per day (BOED) through the uplifted condensate and crude production from key projects in Thailand and Australia despite the pressure from low gas nomination in the Gulf of Thailand.

With the aforementioned operational results, the Company reported recurring net profit of 836 MMUSD and loss on non-recurring items of 242 MMUSD, mainly derived from impairment charge from the revision of the Mariana Oil Sands Development plan, which was done in accordance with accounting standards and has no impact on the Company's cash on hand or cash flows, offsetting with tax benefits related to Thai Baht appreciation against US Dollar during the year.

At the end of 2017, PTTEP upheld our strong financial position with total assets amounted to 19,220 MMUSD, of which 4,468 MMUSD was cash and short-term investments; total liabilities stood at 7,703 MMUSD, comprising interest-bearing debt of 2,907 MMUSD; resulted in total shareholders' equity of 11,517 MMUSD.

Besides, PTTEP is vigorously preparing to participate in Thailand's expiring concessions bidding as well as accelerating the progress on pre-development projects especially the Mozambique Offshore Area 1 Project which is in the process of negotiating the LNG off-take agreements. The Company also continues to seek investment opportunities in both upstream and LNG value chains. In response to the changing energy industry, the Company has restructured our organization to capture the transformation and explore new business opportunities in upstream and other emerging energy businesses for sustainable future growth.

Summary of Key Financial Results

(Unit : MMUSD)	2017	2016	% Inc. (Dec.) YTD	Q3 2017	Q4 2017	Q4 2016	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Total Revenue *	4,523	4,339	4	1,134	1,271	1,089	12	17
Sales Revenue *	4,281	4,190	2	1,064	1,202	1,038	13	16
EBITDA	3,063	3,027	1	777	825	690	6	20
Profit (loss) for the period	594	372	60	(264)	289	(16)	>100	>100
Basic earnings per share from continuing operations (USD)	0.13	0.07	86	(0.07)	0.07	(0.01)	>100	>100
Profit (loss) from normal operation	836	466	79	218	240	123	10	95
Profit (loss) from non-recurring items	(242)	(94)	>(100)	(482)	49	(139)	>100	>100

* Revenues from continuing operations

14.2 Economic Outlook in 2017

(1) Crude Oil Prices

Crude oil prices are among the key determinants of the Company's performance. In 2017, Dubai crude oil price averaged at 53.14 USD/BBL, improving from last year but continuing to exhibit volatility. In the first quarter of this year, Dubai crude oil price averaged at around 53 USD/BBL before moving down to 43 USD/BBL in June 2017 following the rise of the U.S. crude production to 9.8 million barrels per day. The increase was mainly attributed to Shale Oil which represented a million barrel increase from the 2016 production level, and the significant in rig-count increase of 220 rigs over the last year. Nonetheless, in the second half of 2017, global crude oil prices continuously recovered due to the temporary suspension for maintenance of the "Keystone" pipeline in the U.S. with a capacity of 590,000 barrels per day and the "Forties" pipeline in the UK with a capacity of 450,000 barrels per day, a shutdown of the U.S. offshore crude production from the impact of hurricane "Nate", as well as the agreement between OPEC and Non-OPEC countries to extend a 1.8 million barrels per day production cut to December 2018 from the previous March 2018 target along with high compliance rates from the producers. Another bullish factor was the continued decline in the U.S. crude stock from 534 million barrels in March 2017 to 431 million barrels in December 2017. The aforementioned factors pushed Dubai crude oil prices to reach a year high of 64 USD/BBL in December 2017.

(2) Liquefied Natural Gas (LNG)

LNG Market in 2017 remained oversupplied due to incremental volumes from new projects, mainly from LNG projects in Australia, Russia and the U.S. with total capacity of 310 million tons, while LNG's demand stood at 290 million tons. This supply gluts pressured LNG selling price to stay low with Asian Spot Price for 2017 averaged at 7.1 USD/MMBTU. This weakened LNG price during 2017 provided the opportunity to the buyer to increase LNG import to Thailand which negatively impacted the Company's sales volume through the lower gas nomination in the Gulf of Thailand.

(3) Thailand's Energy Demand

Thailand's energy demand from January to November of 2017 was reported at 2.13 million BOED, an increase of 1.6% relative to the same period in the previous year (Source: EPPO, The Ministry of Energy), partly resulting from Thailand's economic expansion. Crude oil and conventional sources of natural gas continued to be the primary sources of the domestic energy supply. However, due to changes in electricity consumption behavior following technological advances, solar power and LNG imports are gradually being adopted as alternative sources of energy supply.

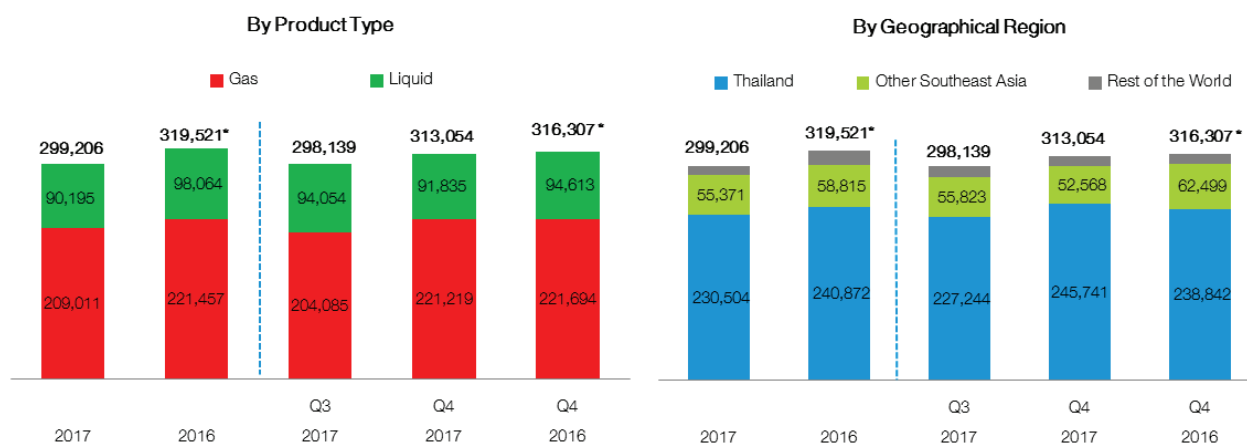
(4) Exchange Rates (Thai Baht against US Dollar)

Because PTTEP's functional currency is the US Dollar whereas the tax filing currency is the Thai Baht, the THB:USD exchange rate is another factor affecting the Company's financial performance. The Thai Baht appreciated against US Dollar in 2017 due to a number of factors including the continued uncertainty of the U.S. fiscal policies, monetary policies of major global economies, and geopolitical risks in the Korean Peninsula. These factors resulted in heightened volatility in financial markets and of fund flows. For this year, the THB:USD exchange rate closed stronger at 32.68 THB/USD, appreciating by 3.15 THB/USD from 35.83 THB/USD at the end of 2016, leading to foreign exchange-related gains and tax savings for PTTEP.

14.3 Financial Performance

Average Sales Volume and Sales Price *

Unit: Barrels of Oil Equivalent per Day



* Included sales volume of Oman 44 Project until end of August 2016

Average selling price and Dubai crude oil price (Unit : USD)	2017	2016	% Inc. (Dec.) YTD	Q3 2017	Q4 2017	Q4 2016	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Average selling price (/BOE)	39.20	35.91	9	38.78	41.74	35.65	8	17
Average Dubai crude oil price (/BBL)	53.14	41.27	29	50.43	59.31	48.32	18	23

For the year ended 2017 compared with the year ended 2016

In 2017, average sales volume of PTTEP and our subsidiaries (the "Group") decreased to 299,206 barrels of oil equivalent per day (BOED) when compared with the year ended 2016 (In 2016: 319,521 BOED). The decrease was primarily from the PTTEP Australasia Project due to lower crude sales loading and Sinphuhorm Project due to lower nomination from buyer. However, the average selling price in 2017 increased to 39.20 USD/BOE (In 2016: 35.91 USD/BOE).

Fourth quarter of 2017 compared with Third quarter of 2017

In Q4/2017, the Group had an average sales volume of 313,054 BOED, an increase from Q3/2017 of 298,139 BOED, primarily from the Bongkot and Contract 4 projects. The average selling price in Q4/2017 also increased to 41.74 USD/BOE. (Q3/2017: 38.78 USD/BOE).

Fourth quarter of 2017 compared with Fourth quarter of 2016

The average sales volume in Q4/2017 decreased when compared with the same period in 2016 of 316,307 BOED, primarily from the Yadana and Sinphuhorm projects. However, during Q4/2017, the average selling price increased to 41.74 USD/BOE. (Q4/2016: 35.65 USD/BOE).

14.3.1 Overall Operating Results

For the year ended 2017 compared with the year ended 2016

For 2017, the Group had a net profit of 594 MMUSD, an increase of 222 MMUSD or 60% from a net profit in 2016 of 372 MMUSD. The increase in profit was primarily due to (1) a decrease in depreciation, depletion and amortization expenses of 429 MMUSD mainly from an increase in the petroleum reserves, (2) income taxes expenses decreased of 105 MMUSD mainly from the currency appreciation of Thai Baht against US Dollar, and (3) the recognition of loss from financial instruments decreased of 90 MMUSD, while (4) an impairment loss on assets increased of 511 MMUSD.

For 2017, the Group reported a loss from non-recurring items in the amount of 242 MMUSD, an increase in net loss of 148 MMUSD when compared with a loss from non-recurring items of 94 MMUSD in 2016. The increase was primarily due to a higher recognition of an impairment loss on assets of 511 MMUSD, while Income taxes expenses from the currency appreciation of Thai Baht against US Dollar decreased of 236 MMUSD.

Fourth quarter of 2017 compared with third quarter of 2017

In Q4/2017, the Group had a net profit of 289 MMUSD, an increase of 553 MMUSD or more than 100% when compared with Q3/2017 which reported a net loss of 264 MMUSD. The increase was primarily due to no recognition of impairment loss on assets in Q4/2017, while in Q3/2017, there was recognition of such impairment loss of 558 MMUSD.

For Q4/2017, the Group reported a profit from non-recurring items of 49 MMUSD, an increase of 531 MMUSD when compared with Q3/2017 which reported a loss of 482 MMUSD. The increase was primarily due to no recognition of impairment loss on assets in Q4/2017, while in Q3/2017, there was recognition of such impairment loss of 558 MMUSD.

Fourth quarter of 2017 compared with fourth quarter of 2016

When compared a net profit for Q4/2017 with the same period last year which reported a net loss of 16 MMUSD, the Group had an increase in operating results of 305 MMUSD or more than 100%. The increase was primarily due to (1) an increase in revenue from sales of 164 MMUSD mainly from an increase in average sales price, (2) a decrease in depreciation, depletion and amortization expenses of 73 MMUSD mainly from an increase in the petroleum reserves, and (3) a decrease in income taxes expenses of 69 MMUSD mainly from the currency appreciation of Thai Baht against US Dollar.

For Q4/2017, the Group reported a profit from non-recurring items of 49 MMUSD, an increase in operating results of 188 MMUSD when compared with Q4/2016 which reported a loss of 139 MMUSD. The increase was primarily due to a decrease in income tax expenses of 155 MMUSD from the currency appreciation of Thai Baht against US Dollar, as well as, in Q4/2017, the Group did not recognize an impairment loss on assets, while in Q4/2016, the Group recognized such impairment loss of 47 MMUSD.

14.3.2 Operating Results by Segments

Net Profit (loss) (Unit : MMUSD)	2017	2016	% Inc. (Dec.) YTD	Q3 2017	Q4 2017	Q4 2016	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Exploration and Production	254	438	(42)	(350)	250	31	>100	>100
Thailand	826	610	35	211	264	105	25	>100
Overseas	(572)	(172)	>(100)	(561)	(14)	(74)	98	81
- Other Southeast Asia	40	(11)	>100	16	(4)	(45)	>(100)	91
- Australia	(46)	(108)	57	(21)	(8)	(17)	62	53
- America	(3)	(43)	93	(559)	(3)	(2)	99	(50)
- Africa	(3)	(43)	93	3	1	(10)	(67)	>100
Pipeline Transportation	238	203	17	69	63	45	(9)	40
Head Office and Others	102	(289)	>100	17	(24)	(109)	>(100)	78
Discontinued Operations	-	20	(100)	-	-	17	-	(100)
Total	594	372	60	(264)	289	(16)	>100	>100

For the year ended 2017 compared with the year ended 2016

For 2017, the Group reported a net profit of 594 MMUSD, an increase of 222 MMUSD or 60% when compared with a net profit in 2016 of 372 MMUSD, primarily due to an increase in operating result of Head Office and Others segment and Exploration and Production segment in Thailand of 391 MMUSD and 216 MMUSD, respectively, while Exploration and Production segment in America had a decrease in operating results of 553 MMUSD.

(1) Head Office and Others Segment

For 2017, the Head Office and Others segment reported a net profit of 102 MMUSD, an increase in operating results by 391 MMUSD or more than 100% when compared with a net loss in 2016 of 289 MMUSD, primarily due to a decrease in income tax expense resulting from the currency appreciation of Thai Baht against US Dollar and in 2017, the Group recognized a gain on oil price hedging, while in 2016, it recognized a loss on oil price hedging.

(2) Exploration and Production Segment

(2.1) Thailand

For 2017, Thailand reported a net profit of 826 MMUSD, an increase of 216 MMUSD or 35% when compared with a net profit in 2016 of 610 MMUSD, primarily due to a decrease in depreciation, depletion and amortization expenses from an increase in the petroleum reserves and a decrease in sales volume, while income tax expenses increased from an increase in a net profit before tax mainly from increases in revenue from sales as a result of an increase in average sales price.

(2.2) America

For 2017, America reported a net loss of 563 MMUSD, an increase of 553 MMUSD or more than 100% when compared with a net loss of 10 MMUSD in 2016. The increase was primarily due to a recognition of impairment loss on assets of the Mariana Oil Sands Project of 558 MMUSD during 2017.

For the year ended 2017 compared with third quarter of 2017

For Q4/2017, the Group reported a net profit of 289 MMUSD, an increase of 553 MMUSD or more than 100% when compared with a net loss in Q3/2017 of 264 MMUSD, primarily due to an increase of Exploration and Production segment in America of 556 MMUSD.

(1) Exploration and Production Segment**(1.1) America**

In Q4/2017, America reported a net loss of 3 MMUSD, a decrease of 556 MMUSD or 99% when compared with a net loss of 559 MMUSD in Q3/2017, primarily due to the recognition of impairment loss on assets of the Mariana Oil Sands Project of 558 MMUSD during Q3/2017.

For the year ended 2017 compared with fourth quarter of 2016

For Q4/2017, the Group reported a net profit of 289 MMUSD, an increase in operating results of 305 MMUSD or more than 100% when compared with a net loss in Q4/2016 of 16 MMUSD, primarily due to an increase in operating results of Exploration and Production segment in Thailand, Other Southeast Asia and Head Office and Others segment of 159 MMUSD, 41 MMUSD, and 85 MMUSD, respectively.

(1) Exploration and Production Segment**(1.1) Thailand**

In Q4/2017, Thailand reported a net profit of 264 MMUSD, an increase in net profit of 159 MMUSD or more than 100% when compared with a net profit in Q4/2016 of 105 MMUSD, primarily due to an increase in revenue from sales as a result of an increase in average sales price and a decrease of depreciation, depletion and amortization expenses from an increase in the petroleum reserves.

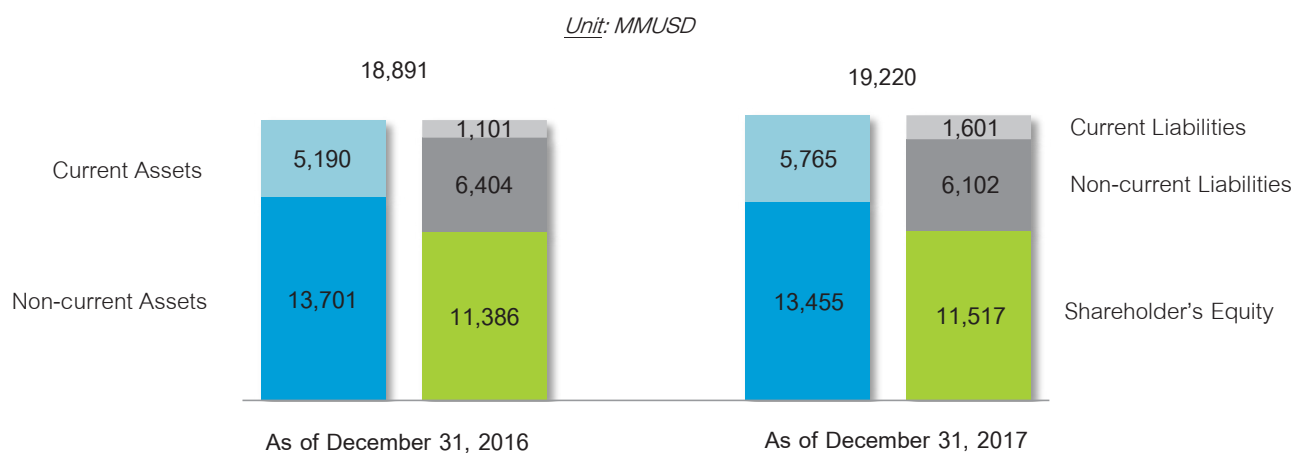
(1.2) Other Southeast Asia

In Q4/2017, the Other Southeast Asia reported a net loss of 4 MMUSD, a decrease in net loss of 41 MMUSD or 91% when compared with a net loss in Q4/2016 of 45 MMUSD, primarily due to no recognition of impairment loss on assets in Q4/2017, while in Q4/2016 such impairment loss on assets was recognized for the Yetagun and Natuna Sea A projects.

(2) Head Office and Others Segment

The Head Office and Others segment reported a net loss of 24 MMUSD, a decrease in net loss of 85 MMUSD or 78% when compared with a net loss in Q4/2016 of 109 MMUSD, primarily due to a decrease in income tax expense resulting from the currency appreciation of Thai Baht against US Dollar.

14.3.3 Financial Position



(1) Assets

As at December 31, 2017, the Group had total assets in the amount of 19,220 MMUSD (equivalent to THB 628,121 million (MMTHB)), an increase of 329 MMUSD from the total assets as of December 31, 2016 of 18,891 MMUSD (equivalent to 676,890 MMTHB), primarily due to:

(1.1) Current assets, which were primarily comprised of cash and cash equivalents, short-term investments and account receivable – parent company, increased by 575 MMUSD mainly due to an increase of 446 MMUSD in cash and cash equivalents and short-term investments and 184 MMUSD in account receivable – parent company, while materials and supplies decreased by 48 MMUSD.

(1.2) Non-current assets, which were primarily comprised of exploration and production assets in joint venture projects that are recognized as part of the property, plant and equipment, exploration and evaluation assets and goodwill. The decrease of 246 MMUSD was mainly due to (1) recognition of impairment loss on assets of the Mariana Oil Sands Project, (2) depreciation, depletion and amortization expenses even though the Group had additional investment in exploration and production assets during the period, while (3) deferred tax assets increased by 219 MMUSD and (4) investment in associates increased by 166 MMUSD.

(2) Liabilities

As at December 31, 2017, the Group had total liabilities of 7,703 MMUSD (equivalent to 251,746 MMTHB), an increase of 198 MMUSD from total liabilities as at December 31, 2016 of 7,505 MMUSD (equivalent to 268,906 MMTHB), primarily due to;

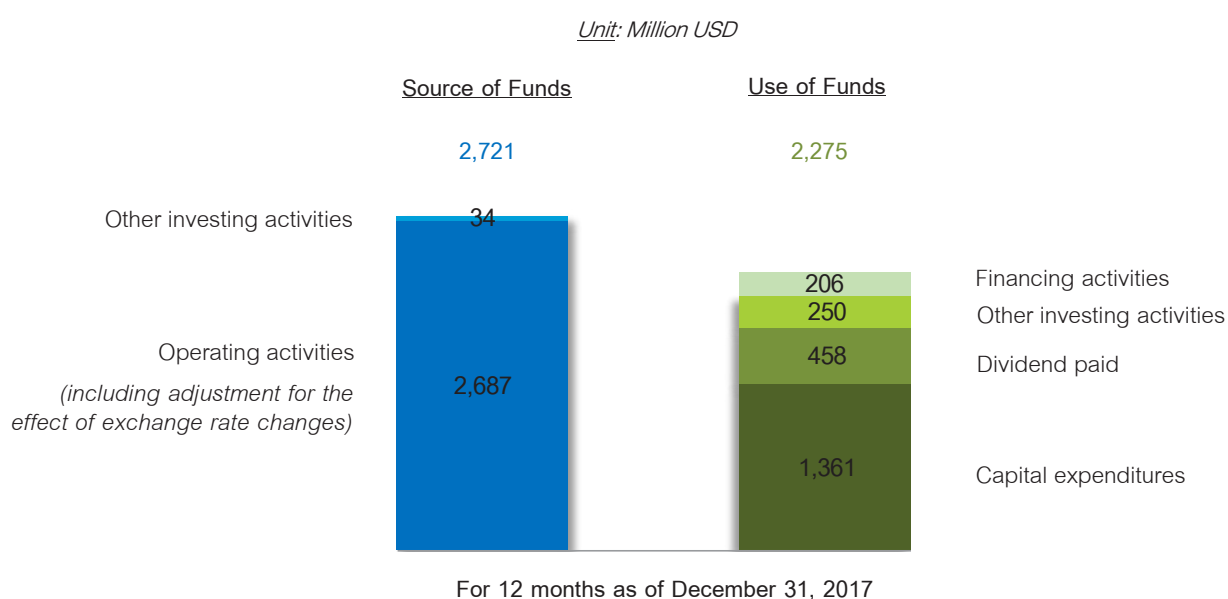
(2.1) Current liabilities, which were primarily comprised of accrued expenses, income tax payable and current portion of debentures, increased by 500 MMUSD mainly due to an increase in current portion of debentures of 400 MMUSD, income tax payable increased by 65 MMUSD and account payable increased by 31 MMUSD.

(2.2) Non-current liabilities, which were primarily comprised of provision for decommissioning costs, debentures, and deferred tax liabilities, decreased by 302 MMUSD mainly from a reclassification of some portion of debentures due within one year to current liabilities.

(3) Capital Structure

As at December 31, 2017, the capital structure comprised of shareholders' equity in the amount of 11,517 MMUSD and total liabilities of 7,703 MMUSD, including the interest-bearing debts of 2,907 MMUSD with a weighted average cost of debt of 4.50% and the average maturity of 7.15 years. All interest-bearing debts are denominated in US Dollar currency. The proportion of the fixed interest rates to the floating interest rates is 80:20.

14.3.4 Cash Flows



As at December 31, 2017, 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 4,468 MMUSD, an increase of 446 MMUSD from cash and cash equivalents as at December 31, 2016 of 4,022 MMUSD.

Sources of funds in the amount of 2,721 MMUSD primarily came from **net cash received from operating activities** as a result of the positive net cash flows from sales revenues, offsetting with cash payments for expenditures and income tax expenses.

Uses of funds in the amount of 2,275 MMUSD primarily came from **net cash used in additional investment activities** for exploration and production assets, primarily for the Contract 4 and Zawtika projects as well as an acquisition of share in the company operated in the LNG business in Malaysia, **net cash used in financing activities** which mainly for the payment of dividend for the second half of 2016 and the first half of 2017.

14.3.5 Key Financial Ratios

	2017	2016	Q3 2017	Q4 2017	Q4 2016
Profitability Ratios (%)					
EBITDA to revenue from sales	70.26	70.83	71.37	67.35	65.48
Return on equity	5.18	3.26	2.54	5.18	3.26
Net profit margin	13.12	8.47	6.66	13.12	8.47
Leverage Ratios (Times)					
Debt to equity	0.25	0.25	0.26	0.25	0.25
Debt to EBITDA	0.95	0.94	0.99	0.95	0.94

Remark:

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	=	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 2017, PTTEP's domestic and international operations, including projects in the exploration and production phase, altogether sum to 36 projects in 10 countries, with total proved reserves of 631 million barrels of oil equivalent (MMBOE), probable reserves of 400 MMBOE and contingent resources of 3,824 MMBOE respectively. The followings are key project highlights.

14.4.1 Projects in Thailand

PTTEP currently has 16 projects in Thailand, the majority of which are in *the production phase*. These projects are located in both the Gulf of Thailand and onshore; including **the Bongkot Project**; the project succeeded in increasing condensate production to alleviate the impact of natural gas low nomination and currently is in the process of concession bidding preparation for the Bongkot Project which its current concession will be expired in 2022-2023. **The S1 Project** has continuously drilled additional production wells with exploration drilling plan in 2018 in order to increase production levels of the project. For the year 2017, total sales volume from projects in Thailand amounted to 230,504 BOED, accounting for 77% of PTTEP's total sales volume. Apart from production projects, **Ubon Field of the Contract 4 Project** is the process of negotiation with current partners on development preparation with expected first oil production by 2022 at planned capacity of 25,000-30,000 barrels per day (BPD).

14.4.2 Projects in Southeast Asia

PTTEP has 13 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). Sales volume for the year ended 2017 from the projects in the Southeast Asian region amounted to 55,371 BOED, representing 19% of PTTEP's total sales volume.

Most of the projects in *the production phase* have maintained production levels as planned. The highlights of key projects within this region for this year as follows. **The Zawtika Project**, located in the Gulf of Moattama, Myanmar, has maintained its production as planned and completed the construction of one production platform in Phase 1C in 2017 while the remaining three production platforms have been scheduled to set up in 2018. The project also continues to carry out drilling activities. In 2017, current average gas sales volume was 301 MMSCFD (approximately 47,747 BOED). **The Vietnam 16-1 Project**, located offshore in the southeast of Vietnam, started the production from four additional developed wells as planned in order to maintain its production level. In 2017, current crude oil sales recorded volume averaged of 21,087 BPD and natural gas sales volume averaged two MMSCFD (approximately 486 BOED).

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 currently in the process of negotiation on commercial framework with the Government of Myanmar. **The Myanmar MD-7 Project**, is in the process of assessing for the fields' resource potential. **The Myanmar M11 Project**, **the Myanmar MOGE 3 Project** and **the Sarawak SK410B Project** in Malaysia, are currently assessing for the fields' resource potential with a plan to drill exploration wells in 2018. **The Vietnam B & 48/95 Project** and **the Vietnam 52/97 Project** are located offshore of Vietnam. In 2017 the projects have signed a letter of agreement between joint venture partners on wellhead gas prices and transportation costs and currently are in the negotiation process on commercial contracts in order to push forward the Final Investment Decision (FID) with targeted first production at 490 MMSCFD by the end of 2021.

14.4.3 Project in Americas

PTTEP has three projects in this region located in Canada and the Federative Republic of Brazil (Brazil).

All projects are in *the exploration phase*. **The Mariana Oil Sands Project**, located in Alberta, Canada, has revised its development plan and is seeking for appropriate approach to develop the project.

PTTEP has two 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**, located offshore in the Espirito Santo basin, east of Brazil, are currently studying the petroleum potential for future development plan.

14.4.4 Projects in Australasia

PTTEP has one project in this region which is located in the Commonwealth of Australia (Australia), comprising 12 permits.

The Montara Field which is in *the production phase*, completed the drilling of producing well in 2017 in order to accelerate production levels. The project has average sales volume for the year 2017 of 10,580 BPD in accordance with the production plan.

The Cash Maple Field is in *the exploration phase*. The project has achieved the Pre-FEED study and is currently in the process of FEED study preparation which is scheduled to complete by 2018.

14.4.5 Projects in Africa

PTTEP has three projects in this region, located in the People's Democratic Republic of Algeria (Algeria) and the Republic of Mozambique (Mozambique).

The Algeria 433a & 416b Project, which is in *the production phase*, and is located onshore in the eastern part of Algeria, has achieved its average production volumes for the year 2017 at 17,360 BPD.

The Algeria Hassi Bir Rekaiz Project, which is in *the exploration phase*, and is located onshore in the eastern part of Algeria, successfully finished a drilling campaign with satisfactory crude oil and natural gas flow rates. Currently, the project's development plans have been submitted to the Algerian government since December 2017 and expected to receive the approval within the first quarter of 2018 to support the Final Investment Decision (FID). The project is expected to start production within 2019 with the first phase capacity of around 10,000-13,000 BPD. Subsequently, further investment will be considered to ramp up to full capacity at around 50,000 BPD. The Mozambique Rovuma Offshore Area 1 Project, which is a large gas project located in offshore Mozambique, in 2017, the project has made a significant progress by achieving several key milestones including the receipt of government approval on Legal & Contractual Framework as well as the receipt of official approval the marine concessions from the Government of Mozambique. The resettlement has been commenced since November 2017, while the project's development plan is currently in the process of final approval from the Government of Mozambique which is expected to achieve by early 2018. The project also expedites the finalization of LNG off-take agreements, and is negotiating for project finance with financial institutions in order to support the Final Investment Decision (FID), with planned first phase of production at 12 million tons per annum (MTPA) starting in 2023.

14.5 Company Strategy

PTTEP continuously carries out our operations through the concept of "RESET REFOCUS RENEW" in order to enhance our competitive advantage and sustainable growth.

RESET: reduce the cost structure to maintain competitiveness in the industry

- Build and instill a cost-conscious DNA in every employee
- Utilize technology to enhance efficient cost management to become competitive with the leading companies in the industry
- Prioritize investments in projects with competitive cost structure under the current oil price environment

REFOCUS: expand investments towards areas of high expertise and high potential

● Increase investments in Thailand and Southeast Asia, the areas which PTTEP has extensive experience in and has low cost structure and low risks

- Synergize with PTT in LNG business to meet the country's growing energy demand in the future
- Consider investment opportunities in new areas with low cost structure, such as the Middle East oil and have high petroleum potential

RENEW: develop technology to enhance sustainable growth

- Expand investment horizons related to the E&P business to diversify sources of revenues and return on investments
- Explore and evaluate new business opportunities with growth prospects based on the existing experiences and capabilities on human resources in the Company

14.5.1 Portfolio Management

PTTEP continues to undertake portfolio management activities to achieve an optimal balance between project value-added and risk management through the consistent study and analysis of pertinent investment factors to keep abreast of the constant changes in the industry landscape as well as promoting sustainable growth in the future as follows:

(1) Sustain production volumes in existing projects with low operating cost and maximize condensate production from the projects in Gulf of Thailand together with increasing production in the S1 Project, Myanmar projects and Montara Project.

(2) Enhance petroleum reserves addition in near and longer terms through the participation in the bidding process of expiring concessions in the Gulf of Thailand, including the Bongkot and Erawan concessions. The Company is well-positioned and ready to be a part of the upcoming biddings within the Ministry of Energy's timeframe. Moreover, the Company strives to push forward the Final Investment Decision (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 Project (Ubon Field). More importantly, the Company pursues to engage in M&A deals with particular focus on producing assets or those which are in the final stage of development, located in PTTEP's region of experience such as South East Asia, or in other areas of high petroleum potential where the operating risk is moderately low with market readiness and attractive return as well as to accelerate exploration activities in exploration projects in the current portfolio, with particular focus on Myanmar and Malaysia, while also seeking new opportunities in the Company's strategic regions.

(3) Expand the cooperation in the LNG value chain with PTT in order to achieve business growth and secure Thailand's energy security by seeking strategic investment opportunities in LNG projects globally. A part of success in 2017 was PTT Global LNG Company Limited (PTTGL), owned by PTT and PTTEP, acquired 10% stake in MLNG Train 9 from Petronas, an LNG liquefaction plant in Malaysia, with nameplate capacity of 3.6 million tons per annum.

Also, the Company carried out portfolio rationalization activities during 2017, including the selection of Total E&P Myanmar (TOTAL), who possesses world class knowledge and experience in oil and gas exploration, as a joint-partner to mitigate risk in the Myanmar MD-7 Project, together with the relinquishment of the Myanmar PSC G & EP 2 Project which is in the process of receiving the official approval from the Government of Myanmar.

14.5.2 Capital Management

PTTEP focuses on ensuring effective financial management by maintaining a robust capital structure. During 2017, the Company implemented liability management activities through its group companies with respect to USD denominated debts to increase the efficiency of Company's financial management, reduce interest burden, as well as to leverage PTTEP Treasury Center Company Limited, the financial center of the PTTEP Group. As reflection of this success, the Company has received "Best Liability Management Awards" from The Asset, Asian's leading financial magazine, for two consecutive years.

As of the end of 2017, the Company maintained a strong liquidity position with cash on hand approximately USD 4.5 billion and debt-to-equity ratio of less than 0.3x, which is in line with the Company strategic 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).

14.5.3 Cost Management

PTTEP continues our focus on cost control and has initiated the SPEND SMART to Business Sustainability campaign with the theme “Think Smart, Work Smart for Better Efficiency”. For the year 2017, the Company was able to reduce expenditures by over USD 200 million from the initial budget, as a result of efficient cost management and productivity gain such as the reduction of drilling days and cost optimization of wellhead platform design, contract renegotiations on current and future equipment rental and services, and logistical optimization through reducing number of supply boats as well as optimizing inventory management. In consequence, the Company's unit cost was reduced from 30.46 USD/BOE in 2016 to 29.05 USD/BOE in 2017.

14.5.4 Organization Restructuring

In order for more efficient management and operations to cope with the changing E&P industry landscape as well as to explore other potential business opportunities, PTTEP has updated our organizational structure in 2017. Mr. Somporn Vongvuthipornchai as Chief Executive Officer (CEO) is in charge of the Company's overall performance, strategic planning and business development on E&P related and new business opportunities, and Mr. Phongsthorn Thavisin as President of Exploration and Production (PEP) is responsible for management of the Upstream Value Chain business including Exploration, Development and Production activities per the Company's strategic plans.

14.6 Sustainable Development

PTTEP's Sustainable Development is aligned with global indices and UN principles. In 2017, PTTEP was selected, for the fourth consecutive year, as a member of the 2017 Dow Jones Sustainability Index (DJSI) in the Oil and Gas Upstream & Integrated Industry sector; and for the second consecutive year, PTTEP was 1 of 32 oil and gas companies selected as a constituent of the FTSE4Good Index Series, in the category of FTSE4Good Emerging Index 2017. In addition, PTTEP received the Sustainability Report Award 2017 – Best Category and also received the Thailand Sustainability Investment Award 2017 from the Stock Exchange of Thailand.

This recognition underlines our ongoing commitment to sustainability as a leading sustainable organization. Key activities in 2017 covering business, social, and environmental matters, are as follows:

14.6.1 Business

PTTEP promotes research and development of technologies and innovations to increase exploration success and production efficiency. Key projects in 2017 are as follows:

- Development of technologies to monitor subsea pipeline conditions, as well as the development of decommissioning procedures for future decommissioning work to minimize environmental impact;
- Development of electromagnetic tools to monitor the flow of liquids in petroleum reservoirs;
- Development of robotic technologies such as Autonomous Underwater Vehicles (AUV) to inspect subsea production equipment; In-pipe Inspection Robots to inspect damage inside pipelines; and Beach Cleaning Robots to reduce environmental pollution.

PTTEP also received several awards as a testament of recognition from the industry. The Company was awarded The Asset Best Initiative in Innovation Award 2017, from The Asset magazine, as well as Outstanding Innovative Company Awards from the Stock Exchange of Thailand.

14.6.2 Social

PTTEP is committed to carrying out our business operations in a socially responsible manner, and is focused on four development areas: fundamental needs, education, environment, and culture. PTTEP continuously promotes projects and receives various awards and recognition, such as the Bronze Stevie Award from the Asia-Pacific Stevie Awards Program, as well as the Platinum Award from the 9th Annual Global CSR Summit and Awards. These awards recognize PTTEP contribution to the Stimulation, Intervention, and Optimization of Services for Children (SIOLA) project in Indonesia and Crab Hatchery Learning Center project in Songkhla.

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 2017, PTTEP had a Lost Time Injury Frequency (LTIF) score of 0.10 and a Total Recordable Incident Rate (TRIR) score of 0.74. The Company's performance on both safety indicators is superior to that of 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 the greenhouse gas (GHG) emissions by a minimum 25% by the year 2030 versus 2012 base year figure.

14.7 Future Business Outlook

(1) Energy Outlook

The current global energy consumption still relies heavily on fossil fuels which include oil, natural gas, and coal. The current consumption figures are at 84% contribution and are expected to continue to account for up to 76% of energy consumption in the next 20 years (Source: IHS), mainly driven by increasing natural gas demand from the industrial sector due to economic expansion. While oil is mainly consumed in the transportation sector, demand is forecasted to decline as a result of the rising numbers in electric vehicles as supported by several factors including improving electric vehicle performance and decreasing costs, changing consumer behavior, and support from the government. However, the future trend of electric vehicle usage will depend on advancements in Energy Storage technology which requires a lengthy development time in order to be comparable to conventional internal combustion engines (ICE) in terms of price and performance.

Due to rising concerns about pollution and global warming from the use of fossil fuels, many countries have become more focused on increasing the share of renewable energy usage which predominantly includes solar and wind. It is expected that renewable energy will account for about 5% of total global energy sources in the next 20 years, increasing by around 800 million tons of oil equivalent (TOE) from the current year (Source: IHS) due to support from governments and advancements in production technology resulting in lower costs and greater efficiency.

As for Thailand, the Power Development Plan (PDP) is revisited by the government to reflect current circumstances and the change in electricity consumption pattern. Nonetheless, Thailand still relies heavily on fossil fuels, mainly natural gas and coal. Since domestic gas production being naturally decline and a delay in development of several coal power plant projects, the Country has to increase LNG imports to support power generation.

PTTEP has adopted the “REFOCUS” strategy to focus on gas-weight portfolio with current product mix of 70:30 natural gas to liquids, in-line with the global trend of increasing natural gas demand. In addition, the Company endeavors to expedite the development of large natural gas projects in the portfolio, including the Mozambique Rovuma Offshore Area 1 Project and Cash Maple Field in Australia, to support LNG production and seek more investment opportunities in natural gas fields. This is also in line with PTTEP’s strategy to jointly invest with PTT in the integrated LNG projects globally with the key objectives to enhance competitiveness and strengthen energy security in Thailand.

In addition, PTTEP realizes the importance and trend of the energy industry and consequently adopted the “RENEW” strategy by establishing a business unit to explore new opportunities relating to E&P activities such as the decommissioning business, expansion of our expertise on “Gas Value Chain” as well as the study on potential business opportunities in renewable energy, particularly in wind and solar. In summary, the Company strives to enhance competitiveness in core businesses while seeking to increase business opportunities to support the rapidly changing global energy landscape.

(2) Oil Price Outlook

PTTEP expects Dubai crude prices in 2018 to average between 55 and 65 USD/BBL with the following key influencing factors.

Demand side: it is expected that global crude demand will expand by 1.8 million barrels per day (Source: PIRA) following the economic expansion driven by OECD and India. In addition, strong crude demand is supported by increasingly cold winters in many countries especially the U.S.

Supply side: key factor is to monitor the production policies of key producers. Crude oil price will surge if Nigeria and Libya, which are currently excluded from production cuts, decide to join the agreement in 2018. Other bullish factors include the U.S. sanction against Iran’s nuclear proliferation and the political unrest among key producers such as Saudi-Iran and Iraq-Kurdish. However, crude oil prices may be pressured downwards by the U.S. President’s policy in support of Keystone XL pipeline’s expansion, which will increase crude oil transportation capabilities from Canada to the U.S. Crude production from the U.S. is also expected to reach over 10 million barrels per day. However, various researchers believe that the estimated global commercial stock will continue to decline and that the oversupply situation will rebalance within 2018.

(3) LNG Market

It is forecasted that global LNG oversupply situation will prolong towards 2018 with total capacity of existing and upcoming LNG projects growing by 3% to 320 million tons, while demand side is expected to stabilize at 310 million tons as well as the global LNG price to remain steady compared to the previous year. Average Asian Spot LNG price is predicted to be in a range between 6.5-7.6 USD/MMBTU. However, the global LNG price could vary depending on other factors

including bearish factor from increasing LNG supply from new project sanction and bullish factors such as disruption in existing LNG projects, better-than-expected demand in Asian Market especially from China and India coupled with Energy policy from the governments. Nonetheless, the market foresees that LNG demand-supply tend to rebalance after 2022.

(4) Thai Economy and Foreign Exchange Outlook

The Bank of Thailand expects the economy to expand at 3.9% in 2018, driven mainly by export growth and the recovery of the tourism sector following the improving global economy, increasing private spending, and continual fiscal stimulus in the form of spending and investments. In general, energy demand often grows in tandem with the economy.

The THB:USD exchange rate continues to embed a high degree of uncertainty as capital markets remain volatile and require close monitoring due to a number of factors such as the implementation of the U.S. Tax Reform, the political uncertainty in Europe despite the European Central Bank's (ECB) tendency towards easy monetary policies, and increasing geopolitical risks. PTTEP's financial performance will be affected by THB:USD exchange rate fluctuations mainly through income taxes. The effect arises because the Company adopts two different functional currencies, the THB for tax purposes and the USD for accounting. The effects mainly, however, do not impact the Company's cash flows. Moreover, the possibility of increased interest rates is expected to not have any significant impact on the Company's financial performance as approximately 80% of the Company's total interest-bearing debt is fixed-rate.

(5) Other Important Factors That Affect the Company's Operations

The Bidding of "Bongkot" concession due to expire between 2022-2023: The bidding process is expected to finalize by the end of 2018. With 20 years of experience as operator of the Bongkot Project, PTTEP is well-prepared to participate in the bidding with a competitive cost base in order to provide continuity in natural gas production and maintain Thailand's energy security.

Projected decommissioning costs for the petroleum business: Regulations from the Ministerial Regulations of Decommission require concessionaires to submit preliminary decommissioning plans and cost projections, pre-verified by a third-party expert, to the Department of Mineral Fuel for consideration. PTTEP also utilized these projections to assess and reevaluate decommissioning cost projections for other projects. Currently, the Company estimated and recorded total decommissioning costs for all projects under "Provision for the decommissioning of production" in our financial statements at 2,275 MMUSD as of December 31, 2017, with provisions for domestic projects accounting for about 70%.

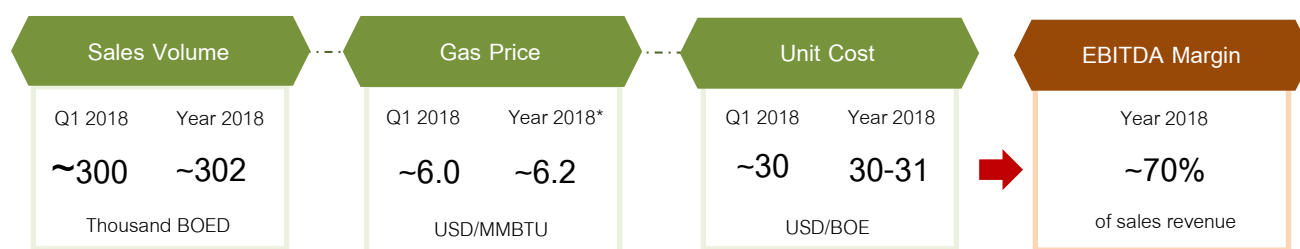
Enactment of Laws and Regulations that affect the Company's operations: PTTEP places the highest priority in complying with relevant laws in all areas of business. It is imperative that personnel of the PTTEP Group, including our directors, executives, and employees understand and abide by those laws to ensure legality and efficiency of the Company operations. PTTEP monitors laws and regulations that have the potential to affect our businesses on a continuous basis, reviews working processes to ensure their compliance, and clearly defines responsible persons for each of our operations.

Some laws and regulations enacted in 2017 that are significant to PTTEP's operations include, the Petroleum Act (No. 7) B.E. 2560, the Petroleum Income Tax Act (No. 7) B.E. 2560, the Government Procurement and Supplies Management Act B.E. 2560, and the Order of the Head of the National Council for Peace and Order (NCPO) No. 31/2560 regarding the Utilization of Agricultural Land under the Laws on Agricultural Land Reform for the Utmost Benefits on Farmers and Public Interests.

For 2018, PTTEP 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.

(6) PTTEP's Performance Outlook for 2018

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 2018

Sales volume: PTTEP focuses on maintaining the production level in Thailand with the estimated sales volume for Q1/2018 and full-year 2018 of approximately 300,000 BOED and 302,000 BOED, respectively. The target sales volume is supported by the improving situation on gas nomination in the Gulf of Thailand, as well as liquid production uplift initiatives in producing assets, especially the Gulf of Thailand projects and the S1 Project.

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 Q1/2018 and full-year 2018 are estimated at approximately 6.0 USD/MMBTU and 6.2 USD/MMBTU, respectively, reflecting the upturn in oil price environment. (Based on average Dubai price assumption of 60 USD/BBL for full-year 2018)
- Outstanding oil hedging volume as of year-end 2017 is approximately 7.7 MMBBL; the Company, however, consistently monitors crude oil price movements and has the flexibility to adjust the hedging plan as appropriate.

Unit Cost: PTTEP endeavors to uphold our competitive unit cost at around 30 USD/BOE level in Q1/2018 and in a range between 30-31 USD/BOE for the full-year 2018.

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Attachments

Information of the Board of Directors, Management, Controlling Persons, and Corporate Secretary

1. PTTEP's Board of Directors

As of December 31, 2017, PTTEP's Board of Directors consisted of 15 directors. Details of 15 directors and 2 directors who retired during year 2017 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. Prajya Phinyawat - Chairman - Chairman of the Independent Directors Committee Begin Date March 28, 2012	66	Education	0.00038 (15,000 shares)	None	Other Listed Companies		
		● Ph.D. (Civil Engineering), University of Texas at Austin, U.S.A.			2011 – 2014	● Director	● PTT Global Chemical Public Company Limited
		● M.S. (Civil Engineering), Stanford University, U.S.A.			2005 – 2013	● Director	● Bangkok Polyethylene Public Company Limited
		● B.E. (Civil Engineering), Chulalongkorn University			2004 – 2013	● Director	● Thai Lube Base Public Company Limited
		Training of Thai Institute of Directors Association					
● Board that Make a Difference (BMD) 4/2017	2011 – 2016	● Chairman	● PTT Asahi Chemical Company Limited				
● The Power of Culture: From Performance Culture to Winning Culture Seminar				2006 – 2012	● Director	● Thai Paraxylene Company Limited	
● Anti-Corruption: Leadership Role of the Board				2004 – 2012	● Chairman	● PTT Polyethylene Company Limited	
			Other Organizations				
			None				

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 					
		Other Trainings					
		<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. Ampon Kittiampon - Independent Director - Chairman of the Audit Committee - Chairman of the Nominating Committee	62	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			2009 – 2014	<ul style="list-style-type: none">● Chairman	<ul style="list-style-type: none">● Thai Airways International Public Company Limited● Thai Airways International Public Company Limited
					Mar. – Jul. 2014	<ul style="list-style-type: none">● Independent Director	
		Other Companies					
					2013 – 2014	<ul style="list-style-type: none">● Chairman	<ul style="list-style-type: none">● Thai Smile Airways Company Limited
Begin Date March 30, 2011		Training of Thai Institute of Directors Association			Other Organizations		
		<ul style="list-style-type: none">● Director Certification Program (DCP) 80/2006			Sep. 2017 – Present	<ul style="list-style-type: none">● Chairman and Ex officio Member of the National Strategy Committee	<ul style="list-style-type: none">● The National Economic and Social Development Board (NESDB)
		Other Trainings			Feb. 2017 – Present	<ul style="list-style-type: none">● Director	<ul style="list-style-type: none">● Prime Minister Delivery Unit
		<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 Defense Course (Class 45), National Defense College			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 the Prime Minister, Honorary Member of the Secretariat of the Cabinet	<ul style="list-style-type: none">● 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
<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"> ● Honorary Board Member in Economics, Public Sector Development Commission 	<ul style="list-style-type: none"> ● Office of the Public Sector Development Commission (OPDC)
					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
					2013 – Present	<ul style="list-style-type: none"> ● Chairman 	<ul style="list-style-type: none"> ● The Bank of Thailand
					2012 – Present	<ul style="list-style-type: none"> ● Committee Member 	<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. 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

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 - Member of the Audit Committee	64	Education	None	None	Other Listed Companies		
		<ul style="list-style-type: none"> L.L.B., Faculty of Law, Thammasat University Thai Barrister-at-Law, Institute of Legal Education of the Thai Bar Association 			2012 – 2015	<ul style="list-style-type: none"> Member of the Legal Committee 	<ul style="list-style-type: none"> Thai Airways International Public Company Limited
		Training of Thai Institute of Directors Association			Other Companies		
		<ul style="list-style-type: none"> None 			2013 – 2016	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Thai Smile Airways Company Limited
		Other Trainings			Other Organizations		
Begin Date January 1, 2013		<ul style="list-style-type: none"> Law Drafting Certificate, India The National Defense Course (Class 46), National Defense College 			Sep. 2017 – Present	<ul style="list-style-type: none"> Board Member in Legal 	<ul style="list-style-type: none"> The National Economic and Social Development Board (NESDB)
					Aug. 2017 – Present	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> National Reform Committee in Justice Process, National Reform Committee
					May 2017 – Present	<ul style="list-style-type: none"> Member of the Risk Oversight Committee 	<ul style="list-style-type: none"> The Bank of Thailand
					2015 – Present	<ul style="list-style-type: none"> Member 	<ul style="list-style-type: none"> Constitution Drafting Committee
					2014 – Present	<ul style="list-style-type: none"> Board Member 	<ul style="list-style-type: none"> Office of Insurance Commission
					2014 – Present	<ul style="list-style-type: none"> 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 – Aug. 2017	<ul style="list-style-type: none"> Board Member 	<ul style="list-style-type: none"> The National Economic and Social Development Board (NESDB)
					2013 – May 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, the 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
					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

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"> 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 Administrative Courts Officials Commission 	<ul style="list-style-type: none"> The Office of the Administrative Courts
					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
					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"> Board Member 	<ul style="list-style-type: none"> The Energy Conservation Promotion Fund

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"> 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	63	Education	None	None	Other Listed Companies		
		<ul style="list-style-type: none">● Master of Public and Private Management, National Institute of Development Administration (NIDA)● Bachelor of Science in Electrical Engineering, the National Defense Academy of Japan			None		
		Other Companies					
		2014 – 2015			<ul style="list-style-type: none">● Chairman	<ul style="list-style-type: none">● Bangkok Dock Company Limited	
		Apr. – Sep. 2015			<ul style="list-style-type: none">● Director	<ul style="list-style-type: none">● Thai Aviation Industries Company Limited	
		Other Organizations					
		2015 – Present			<ul style="list-style-type: none">● Royal Thai Navy Retired	<ul style="list-style-type: none">● Office of the Permanent Secretary for Defense	
		2014 – 2015			<ul style="list-style-type: none">● Chief of Staff	<ul style="list-style-type: none">● Royal Thai Navy	
		2014 – 2015			<ul style="list-style-type: none">● Chairman	<ul style="list-style-type: none">● Frigate Squadron Project, Royal Thai Navy	
		Apr. – Sep. 2015			<ul style="list-style-type: none">● Director, Equipment Control and Industry Development Committee	<ul style="list-style-type: none">● Defense Industry Department, Ministry of Defense	
		<ul style="list-style-type: none">● Risk Management for Corporate Leaders (RCL) 26/2016	Apr. – Sep. 2015	<ul style="list-style-type: none">● Deputy Chief of Joint Staff	<ul style="list-style-type: none">● Royal Thai Armed Forces Headquarters		
Begin Date							
September 1, 2014							

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"> ● Board that Make a Difference (BMD) 1/2016 ● Ethical Leadership Program (ELP) 1/2015 ● Director Certification Program (DCP) 204/2015 			2013 – 2014	<ul style="list-style-type: none"> ● Chairman 	<ul style="list-style-type: none"> ● Royal Thai Navy Transport Helicopter Procurement Project, Royal Thai Navy
		Other Trainings			2013 – 2014	<ul style="list-style-type: none"> ● Chairman 	<ul style="list-style-type: none"> ● HTMS Naresuan Frigate Squadron Improvement Project, Royal Thai Navy
		<ul style="list-style-type: none"> ● 22nd World Petroleum Congress (WPC), Istanbul, Turkey 			2012 – 2013	<ul style="list-style-type: none"> ● Senior Advisor 	<ul style="list-style-type: none"> ● Royal Thai Navy
		<ul style="list-style-type: none"> ● Maritime Joint Force Commander Course (Admiral Level), Hawaii, U.S.A. 			2011 – 2012	<ul style="list-style-type: none"> ● Assistant Chief of Staff for Operations 	<ul style="list-style-type: none"> ● Royal Thai Navy
		<ul style="list-style-type: none"> ● Advanced Security for Senior Executive, Hawaii, U.S.A. 					
		<ul style="list-style-type: none"> ● National Institute for Defense Studies (Japan) (Class 45) 					
		<ul style="list-style-type: none"> ● National Institute for Defense College (Class 51) 					

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 Nomination Committee	52	Education	None	None	Other Listed Companies		
		<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. 			2011 – 2012	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> TMB Bank Public Company Limited
		Training of Thai Institute of Directors Association			Other Companies		
		<ul style="list-style-type: none"> Advanced Audit Committee Program (AACP) 18/2015 Risk Management Committee Program (RMP) 6/2015 Director Accreditation Program (DAP) 94/2012 			2016 – Present	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Osotspa Company Limited
		Other Trainings			2011 – Present	<ul style="list-style-type: none"> Managing Partner 	<ul style="list-style-type: none"> The Advisor Company Limited
Begin Date September 1, 2014		<ul style="list-style-type: none"> None 			Other Organizations		
					May 2017 – Present	<ul style="list-style-type: none"> Member 	<ul style="list-style-type: none"> The Bank of Thailand
					2015 – Present	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Puey Ungphakorn Institute for Economic Research, the Bank of Thailand
					2014 – Present	<ul style="list-style-type: none"> Member, Monetary Policy Committee, 	<ul style="list-style-type: none"> The Bank of Thailand
					2000 – Aug. 2017	<ul style="list-style-type: none"> Visiting Professor of Economics 	<ul style="list-style-type: none"> Sasin Graduate Institute of Business Administration
					2012 – Feb. 2017	<ul style="list-style-type: none"> Executive Chairman 	<ul style="list-style-type: none"> Thailand Future Foundation
					2000 – 2016	<ul style="list-style-type: none"> Advisor on Academic Affairs 	<ul style="list-style-type: none"> 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
Colonel Nimit Suwannarat - Independent Director - Member of the Nominating Committee - Member of the Risk Management Committee Begin Date September 1, 2014	46	Education	None	None	Other Listed Companies		
		<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. 			None		
		Training of Thai Institute of Directors Association			Other Organizations		
		<ul style="list-style-type: none"> Director Certification Program (DCP) 216/2016 			Apr. 2017 – Present	<ul style="list-style-type: none"> Commanding Officer 	<ul style="list-style-type: none"> 1st Development Regiment, Royal Thai Army
		Other Trainings			2016 – Apr. 2017	<ul style="list-style-type: none"> Senior Operation Officer, Defense Industry and Energy Center 	<ul style="list-style-type: none"> Office of the Permanent Secretary for Defense
		<ul style="list-style-type: none"> Public Key Infrastructure (Certification Authority, Digital Signature) Course, Ottawa, Canada 			2015 – 2016	<ul style="list-style-type: none"> Commanding Officer of the 1st Field Artillery Regiment King's Guard 	<ul style="list-style-type: none"> Royal Thai Army
					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
		<ul style="list-style-type: none"> Electronic Commerce Course, Orlando, Florida, U.S.A. Computer Emergency Response Team, Carnegie Mellon, Pennsylvania, U.S.A. National Crisis Management Course, APCSS, 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 					

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. Piti Tantakasem - Independent Director - Member of the Nominating Committee - Member of the Risk Management Committee Begin Date October 1, 2014	47	Education	None	None	Other Listed Companies		
		<ul style="list-style-type: none"> Ph.D. in Strategic Management (Joint Program: University of Nebraska, U.S.A. and Bangkok University, Thailand) Master of Business Administration, University of North Carolina at Chapel Hill, U.S.A. Bachelor of Engineering (Industrial Engineering), Chulalongkorn University 			May 2017 – Present	<ul style="list-style-type: none"> Chief Financial Officer 	<ul style="list-style-type: none"> TMB Bank Public Company Limited
					2008 – Apr. 2017	<ul style="list-style-type: none"> Chief Wholesale Banking Officer 	<ul style="list-style-type: none"> TMB Bank Public Company Limited
					Other Companies		
					2009 – Present 1996 – Present 2011 – 2015	<ul style="list-style-type: none"> Director Director Director 	<ul style="list-style-type: none"> National ITMX Company Limited Tiyana Company Limited TRIS Corporation Limited and TRIS Rating Company Limited
		Training of Thai Institute of Directors Association			Other Organizations		
		<ul style="list-style-type: none"> Anti-Corruption: Leadership Role of the Board Board that Make a Difference (BMD) 2/2016 Director Certification Program (DCP) 202/2015 Anti-Corruption for Executive Program (ACEP) 15/2015 			2015 – Present	<ul style="list-style-type: none"> Member of the Working Group on Supporting Digital Economy Drive 	<ul style="list-style-type: none"> The Joint Standing Committee on Commerce, Industry, and Banking
					2016 – Jun. 2017	<ul style="list-style-type: none"> Senior Expert Committee 	<ul style="list-style-type: none"> Senior Expert Committee in Organizational Psychology on the Committee of the Public Sector Development Commission, 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
		Other Trainings <ul style="list-style-type: none"> ● Capital Market Academy Leader Program (Class 23), Capital Market Academy ● Energy Literacy for a Sustainable Future Program (Class 6), Thailand Energy Academy ● Financial Derivatives, Euromoney Training ● Chartered Financial Analyst, CFA Institute ● Executive Education: Building Leading Customer-Centric Organization, Harvard Business School 			2016 – Jun. 2017	<ul style="list-style-type: none"> ● Sub-committee Member 	<ul style="list-style-type: none"> ● Public Sector Development Commission Sub-committee on Public Finance and Budgeting Development, Office of the Public Sector Development Commission (OPDC)
					Apr. – May 2017	<ul style="list-style-type: none"> ● Chairman of the Sub-Committee 	<ul style="list-style-type: none"> ● Accounting and Finance Sub-Committee, State Railway of Thailand
					Feb. – May 2017	<ul style="list-style-type: none"> ● Director 	<ul style="list-style-type: none"> ● State Railway of Thailand
					2016 – Apr. 2017	<ul style="list-style-type: none"> ● Honorary Member 	<ul style="list-style-type: none"> ● Energy Conservation and Promotion Fund Office
					2014 – 2016	<ul style="list-style-type: none"> ● Project Sub-Committee 	<ul style="list-style-type: none"> ● Management Sub-Committee, Energy Conservation and Promotion Fund Office ● Thailand Board of Investment (BOI)

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 Uanarumit - Director - Member of the Risk Management Committee Begin Date February 23, 2015	55	Education	None	None	Other Listed Companies		
		● Master of Business Administration (Financial Management), Pennsylvania State University, U.S.A.			2016 – Present	● Chief Operation Officer, Upstream Petroleum and Gas Business Group	● PTT Public Company Limited
		● Bachelor of Engineering (Electrical Engineering), Chulalongkorn University				2014 – 2016	● Chief Financial Officer
		Training of Thai Institute of Directors Association			Jan. – Sep. 2016	● Director	● Thai Oil Public Company Limited
		● Ethical Leadership Program (ELP) 7/2017			2014 – 2015	● Director	● Bangchak Petroleum Public Company Limited
		● “CG in Germany - VW, Deutsche Bank and more” Session			2012 – 2014	● Executive Vice President – Corporate Finance	● PTT Public Company Limited
		Other Companies					
		2016 – Present			● Director	● Sakari Resources Limited	
		Jun. – Oct. 2017			● Chairman	● PTT Global LNG Company Limited	
		2016 – Jun. 2017			● Chairman	● PTT Energy Resources Company Limited	
		2014 – 2015	● Director	● PTT International Trading Private 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"> ● Ethical Leadership Program (ELP) 7/2017 			2012 – 2015	<ul style="list-style-type: none"> ● Director 	<ul style="list-style-type: none"> ● Star Petroleum Refining Public Company Limited (SPRC)
		Other Trainings			Other Organizations		
		<ul style="list-style-type: none"> ● 22nd World Petroleum Congress (WPC), Istanbul, Turkey 			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
		<ul style="list-style-type: none"> ● Advanced Certificate Course in Public Economics Management for Executive (Class 20), the College of Politics and Governance, King Prajadhipok's Institute (KPI) 			2016 – Present	<ul style="list-style-type: none"> ● Advisor to the President 	<ul style="list-style-type: none"> ● Association of Capital Market Academy (ACMA)
		<ul style="list-style-type: none"> ● Thailand CG Forum: Governance as a Driving Force for Business Sustainability, the Stock Exchange of Thailand 			2015 – Present	<ul style="list-style-type: none"> ● Chairman, Thailand – Malaysia Business Council 	<ul style="list-style-type: none"> ● The Federation of Thai Industries
		<ul style="list-style-type: none"> ● Advanced Management Program, INSEAD Business School, France 			2015 – Present	<ul style="list-style-type: none"> ● Director 	<ul style="list-style-type: none"> ● Chulalongkorn University Alumni Association (CUAA) (2015 – 2017)
		<ul style="list-style-type: none"> ● Advanced Management Program 184, Harvard Business School, U.S.A. 			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
		<ul style="list-style-type: none"> ● Capital Market Academy Leadership Program (Class 4), Capital Market 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
		<ul style="list-style-type: none"> ● The Program for Senior Executives on Justice Administration (Class 16), Office of the Judiciary ● Advanced Security Management Program (Class 2), the National Defense College Association of Thailand ● TLCA Executive Development Program (Class 1), Association of Listed Companies, the Stock Exchange of Thailand ● The Joint State – Private Sector Course (Class 2013), National Defense College ● Executive Management with Business Development and Investment (Class 2), Institute of Business and Industrial Development (IBID) 			2013 – Present	● Director & Audit Committee	● Thailand Management Association (TMA)
					2014 – Feb. 2017	● Director and Treasurer	● Kamnoetvidya Science Academy School (KVIS) & Vidyasirimedhi Institute of Science and Technology (VISTEC)
					2015 – 2016	● Advisory Committee, Promoting and Supporting Office of Industries	● The Federation of Thai Industries
					2015 – 2016	● Director	● The Joint Standing Committee on Commerce, Industry and Banking

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. Tevin Vongvanich - Director Begin Date November 30, 2009	59	Education	0.00369 (146,543 shares)	None	Other Listed Companies		
		● M.Sc. (Petroleum Engineering), University of Houston, U.S.A.			2015 – Present	● Director and President and Chief Executive Officer	● PTT Public Company Limited
		● M.Sc. (Chemical Engineering), Rice University, U.S.A.					
		● B.E. (Chemical Engineering), Chulalongkorn University					
		Training of Thai Institute of Directors Association					
		● Ethical Leadership Program (ELP) 7/2017			2012 – 2015	● President and Chief Executive Officer	● PTT Exploration and Production Public Company Limited
		● Anti-Corruption: Leadership Role of the Board					
		● Anti-Corruption for Executive Program (ACEP) 15/2015					
		● Director Certification Program (DCP) 21/2002					
		● Financial Statements for Directors (FSD) 6/2009			2010 – 2012	● Director	● Thai Oil Public Company Limited
		● Role of the Compensation Committee (RCC) 13/2011					
Other Companies			2009 – 2012	● CFO	● PTT Public Company Limited		
None							
Other Organizations							
Aug. 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
		Other Trainings <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 ● Capital Market Academy Leadership Program (Class 6), Capital Market Academy ● The Joint State - Private Sector Course (Class 2552), National Defense College ● Energy Literacy for a Sustainable Future (Class 3), Thailand Energy Academy 			Jun. 2017 – Present	● Advisor	● Chulalongkorn University Alumni Association under the Patronage of His Majesty the King
					2016 – Present	● Honorary Board Member	● Integrated Provincial and Provincial Clusters Administrative Policy Committee (OPDC)
					2016 – Present	● Honorary Board Member	● Office of the Public Sector Development Commission (OPDC)
					2016 – Present	● Chairman, Public Sector Development on Financial and Budgetary System Enhancement Sub-committee	● Office of the Public Sector Development Commission (OPDC)
					2015 – Present	● Chairman, Information and Public Communication Management Sub-committee	● 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
					2014 – Present	● Chairman	● TMA Center for Competitiveness Thailand Management Association
					2014 – Present	● Honorary Board Member	● National Committee on Competitive Advantage (NCC)
					2014 – Present	● Advisor	● The Board of Investment of Thailand
					2014 – Present	● Board of Trustees	● Thailand Management Association (TMA)
					2013 – Present	● Honorary Board Member	● National Science and Technology Development Agency
					2015 – May 2017	● Chairman	● Chulalongkorn University Alumni Association under the Patronage of His Majesty the King

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 - Director - Member of the Risk Management Committee Begin Date October 1, 2015	48	Education	None	None	Other Listed Companies		
		<ul style="list-style-type: none"> Ph.D. (Civil & Environmental Engineering), Massachusetts Institute of Technology (MIT), U.S.A. M.S. (Soil Mechanics), Asian Institute of Technology (AIT) B.E. (Civil Engineering), Chulalongkorn University 			2014 – 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> Thai Oil Public Company Limited
					Apr. – Jul. 2015	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> PTT Public Company Limited
					Other Companies		
					None		
		Training of Thai Institute of Directors Association			Other Organizations		
		<ul style="list-style-type: none"> Anti-Corruption: Leadership Role of the Board Director Certification Program (DCP) 115/2009 Financial Statements for Directors Program (FSD) 4/2009 			Dec. 2017 – Present	<ul style="list-style-type: none"> Association President 	<ul style="list-style-type: none"> Asian Institute of Technology (AIT)
					Nov. 2017 – Present	<ul style="list-style-type: none"> Director, The Civil Service Sub-Commission 	<ul style="list-style-type: none"> Office of the Civil Service Commission (OCSC)
					Nov. 2017 – Present	<ul style="list-style-type: none"> Association President 	<ul style="list-style-type: none"> Thai Government Scholarship Students Association, Office of the Civil Service Commission (OCSC)
		Other Trainings			Apr. 2017 – Present	<ul style="list-style-type: none"> Sub-Committee Member, Public Sector Development Commission Sub-Committee on Public Sector Drive 4.0 	<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"> 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 			2015 – Present	<ul style="list-style-type: none"> Director-General 	<ul style="list-style-type: none"> Energy Policy and Planning Office, The Ministry of Energy
					2014 – Present	<ul style="list-style-type: none"> Advisor to the Board of Directors 	<ul style="list-style-type: none"> Thai Green Building Institute
					2014 – Present	<ul style="list-style-type: none"> Spokesperson 	<ul style="list-style-type: none"> Ministry of Energy
					2014 – 2015	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> Department of Alternative Energy Development and Efficiency Co-Operative
					2014 – 2015	<ul style="list-style-type: none"> Deputy Director General 	<ul style="list-style-type: none"> Ministry of Energy
					2009 – 2014	<ul style="list-style-type: none"> Deputy Director General 	<ul style="list-style-type: none"> 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">● TLCA Executive Development Program (EDP) (Class 9), Capital Market Academy● The Civil Service Executive Program fo 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), the Ministry of Energy● Infrastructure in a Market Economics, Harvard University, Cambridge, U.S.A.					

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 - Director - Member of the Risk Management Committee - Member of the Corporate Governance Committee Begin Date November 1, 2015	61	Education	None	None	Other Listed Companies		
		<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			Dec. 2017 – Present	<ul style="list-style-type: none">● Director	<ul style="list-style-type: none">● Thai Airways International Public Company Limited● PTT Public Company Limited
					2015 – 2016	<ul style="list-style-type: none">● Chief Operation Officer, Upstream Petroleum and Gas Business Group	
		Training of Thai Institute of Directors Association			2015 – 2016	<ul style="list-style-type: none">● Acting Senior Executive Vice President, Human Resources & Organization Excellence	<ul style="list-style-type: none">● PTT Public Company Limited
		<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)			2010 – 2015	<ul style="list-style-type: none">● Senior Executive Vice President, Human Resources & Organization Excellence	<ul style="list-style-type: none">● PTT Public Company Limited
		Other Trainings					
		<ul style="list-style-type: none">● Strategic Human Resource Management, Harvard University, U.S.A.					
					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
		<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 			Apr. – Oct. 2016	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT Energy Resources Company Limited
					2012 – 2015	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT Polymer Logistics Company Limited
					2010 – 2015	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT ICT Solutions Company Limited
					2012 – 2014	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> PTT Polymer Marketing Company Limited
					2010 – 2012	<ul style="list-style-type: none"> Chairman 	<ul style="list-style-type: none"> Energy Complex Company Limited
					Other Organizations		
					2015 – Present	<ul style="list-style-type: none"> Council Member, Executive Board Member, and Chairman of the Personnel Management Committee 	<ul style="list-style-type: none"> Vidyasirimedhi Institute (VISTEC)
					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 - Independent Director - Member of the Audit Committee - Member of the Corporate Governance Committee Begin Date February 12, 2016	68	Education	0.00076 (30,000 shares)	None	Other Listed Companies		
		● Master of Business Administration (Finance & Banking), North Texas State University, U.S.A.			Apr. 2017 – Present	● Member of the Corporate Governance Committee	● Global Power Synergy Public Company Limited
		● Bachelor of Accounting, Faculty of Commerce and Accountancy, Thammasat University					
		Training of Thai Institute of Directors Association					
		● Board Role in Strategic Leadership Session			2014 – Present	● Member of the Corporate Governance Committee	● TISCO Financial Group Public Company Limited
		● Anti-Corruption: Leadership Role of the Board					
		● Directors Accreditation Program (DAP) 75/2008					
		● Directors Certification Program (DCP) 113/2009			2008 – Present	● Independent Director	● TISCO Financial Group Public Company Limited
		● Financial Institutions Governance Program (FGP) 2/2011					
		● Anti-Corruption for Executive (ACEP) 8/2013					
2013 – 2014	● Member of the Audit Committee	● TISCO Financial Group Public Company Limited					
			2013 – 2014	● Member of the Audit Committee	● TISCO Bank Public Company Limited		
						2008 – 2014	● Independent Director

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 Focus Group (C-FG) 4/2013 ● Directors Certification Program Update (DCPU) 2/2014 ● Risk Management Committee Program (RMP) 4/2014 Other Trainings <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. 			2011 – 2013	<ul style="list-style-type: none"> ● Chairman 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
					Other Companies		
					2015 – May 2017	<ul style="list-style-type: none"> ● Independent Director and Chairman of the Audit Committee 	<ul style="list-style-type: none"> ● Asia Biomass Public Company Limited
					Other Organizations		
					2014 – Present	<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. Kulit Sombatsiri - Director - Member of the Remuneration Committee Begin Date March 29, 2017	54	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 			None		
		Training of Thai Institute of Directors Association			Other Companies		
		Director Certification Program (DCP) 124/2009			None		
		Other Trainings			Other Organizations		
		<ul style="list-style-type: none"> Energy Literacy for a Sustainable Future (Class 6), Thailand Energy Academy 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 Defense Course (Class 54), National Defense College 			2015 – Present	<ul style="list-style-type: none"> Director General 	<ul style="list-style-type: none"> The Customs Department, Ministry of Finance
					2015 – Present	<ul style="list-style-type: none"> Chairman of the Board of Directors 	<ul style="list-style-type: none"> Government Saving Bank
					2015 – 2016	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> The Government Lottery Office, Ministry of Finance
					2014 – 2015	<ul style="list-style-type: none"> Director General 	<ul style="list-style-type: none"> State Enterprise Policy Office (SEPO), Ministry of Finance
					2011 – 2014	<ul style="list-style-type: none"> Inspector General 	<ul style="list-style-type: none"> 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
Mr. Bundhit Eua-Arporn - Director Begin Date August 1, 2017	52	Education	Spouse: 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, United Kingdom M.Eng., Chulalongkorn University B.Eng., Chulalongkorn University 			2016 – Present	<ul style="list-style-type: none"> Executive Board Member 	<ul style="list-style-type: none"> Banpu Power Public Company Limited
		Training of Thai Institute of Directors Association			Other Companies		
		<ul style="list-style-type: none"> Director Certification Program (DCP) 110/2009 			None		
		Other Trainings			Other Organizations		
		<ul style="list-style-type: none"> Energy Executive Program (Class 6), Ministry of Energy (2015) Power of the Kingdom (Bhumipalung Phandin) (Class 3), Chulalongkorn University Executive Program (2014) Temasek Foundation-NUS Programme for leadership in University Management (2012) 			2016 – Present	<ul style="list-style-type: none"> President 	<ul style="list-style-type: none"> Chulalongkorn University
					Aug. – Sep. 2017	<ul style="list-style-type: none"> Board Member 	<ul style="list-style-type: none"> National Reform Committee in Energy, National Reform Committee
					2015 – 2016	<ul style="list-style-type: none"> Honorary Board Member 	<ul style="list-style-type: none"> Thailand Institute of Scientific and Technological Research
					2013 – 2016	<ul style="list-style-type: none"> Dean, Faculty of Engineering 	<ul style="list-style-type: none"> Chulalongkorn University
					2007 – 2013	<ul style="list-style-type: none"> Director, Energy Research Institute 	<ul style="list-style-type: none"> 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
Mr. Somporn Vongvuthipornchai - Director - Chief Executive Officer Begin Date October 22, 2015	59	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, U.S.A. Master of Sciences (Petroleum Engineering), University of Tulsa, U.S.A. Bachelor of Sciences (Petroleum Engineering), University of Tulsa, U.S.A. 			Nov. 2017 – Present	<ul style="list-style-type: none"> Chief Executive Officer 	<ul style="list-style-type: none"> PTT Exploration and Production Public Company Limited
					2015 – Present	<ul style="list-style-type: none"> Senior Executive Vice President, PTT Public Company Limited, working on secondment as Chief Executive Officer of PTT Exploration and Production Public Company Limited 	<ul style="list-style-type: none"> PTT Public Company Limited
		<ul style="list-style-type: none"> Anti-Corruption: Leadership Role of the Board Director Certification Program (DCP) 224/2016 			2015 – Oct. 2017	<ul style="list-style-type: none"> President and Chief Executive Officer 	<ul style="list-style-type: none"> 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 Dhamasakti Anti-Corruption Institute (SDI), Office of the National Anti-Corruption Commission (NACC) 			Jan. – Oct. 2015	<ul style="list-style-type: none"> Executive Vice President, Strategy and Business Development Group 	<ul style="list-style-type: none"> PTT Exploration and Production Public Company Limited
					2010 – 2014	<ul style="list-style-type: none"> Executive Vice President, International Asset Group 	<ul style="list-style-type: none"> 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"> 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) 			Other Companies		
					Jun. 2017 – Present	● Director	● PTT Global LNG Company Limited
					2014 – 2015	● Director	● PTT FLNG Limited
					2012 – 2015	● Director	● PTTEP FLNG Holding Company Limited
					2008 – 2015	● Director	● PTTEP Southwest Vietnam Company Limited
					2008 – 2015	● Director	● PTTEP Hoan-Vu Company Limited
					2007 – 2015	● Director	● PTTEP Africa Investment Limited
					Other Organizations		
					Apr. 2017 – Present	● VISTEC Council Committee Member	● Vidyasirimedhi Institute (VISTEC)
					2016 – Present	● Director	● PIN & PLearning Foundation
					2015 – Present	● Director	● Thailand Energy Academy
					2015 – Present	● Director	● Thai Listed Companies Association
					2014 – 2015	● Director	● Thai-Myanmar Association for Friendship

Former Directors Retiring by Rotation or Resigning During 2017

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. Manas Jamveha Ex-Director	61	Education	None	None	Other Listed Companies		
		● Master of Business Administration, Sukhothai Thammathirat Open University			2016 – Present	● Director	● Airports of Thailand Public Company Limited
		● Master of Political Sciences, Thammasat University			Other Companies		
		● Bachelor of Laws, Thammasat University			2013 - 2015	● Director	● Bank for Agriculture and Agricultural Co-Operatives
		Training of Thai Institute of Directors Association			2011 - 2013	● Director	● Islamic Bank of Thailand
		Other Organizations					
		2016 - Present			● Director	● Metropolitan Electricity Authority	
		2015 - 2016			● Chairman	● Export-Import Bank of Thailand	
		2012 - 2016			● Comptroller General	● Comptroller General's Department, Ministry of Finance	
		2009 - 2015			● Director	● Metropolitan Waterworks Authority	
		2011 - 2012			● Deputy Permanent Secretary	● Ministry of Finance	
		Other Trainings					
● The National Defense Course (Class 50), National Defense 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
		<ul style="list-style-type: none"> ● Certificate from Public Director Institute (PDI) (Class 1) ● The Program for Senior Executives on Justice Administration (Class 11), Office of the Judiciary ● The Civil Service Executive Program for Senior Civil Servants (Class 46), Office of the Civil Service Commission ● Executive Development Program, Kellogg School of Management, Northwestern University, U.S.A. ● Middle Management Professional, Revenue, Canada ● Energy Literacy for a Sustainable Future Program (Class 5), Thailand Energy Academy ● Good Governance for Medical Executive Certification Program, Joint Program between the Medical Council of Thailand and King Prajadhipok's Institute (Class 2) ● Top Executive Program in Commerce and Trade (TEPCoT) (Class 7), University of Thai Chamber of Commerce 					

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. Songsak Saicheua Ex-Director	59	Education	None	None	Other Listed Companies		
		<ul style="list-style-type: none"> M.A. (Industrial Location and Development), Vrije Universiteit Brussels, Belgium B.A. (Economics), Thammasat University 			None		
		Training of Thai Institute of Directors Association			Other Companies		
		<ul style="list-style-type: none"> Anti-Corruption for Executive Program (ACEP) 15/2015 			None		
		Other Trainings			Other Organizations		
		<ul style="list-style-type: none"> Top Executive Program in Commerce and Trade (TEPCoT) (Class 3), University of Thai Chamber of Commerce The Civil Service Executive Program for Senior Civil Servants (Class 66), Office of the Civil Service Commission 			Mar. 2017 – Present 2013 – Mar. 2017 2011 – 2013	<ul style="list-style-type: none"> Ambassador Director General Minister 	<ul style="list-style-type: none"> Royal Thai Embassy, Vienna, Austria; Office of the Permanent Secretary, Ministry of Foreign Affairs Department of American and South Pacific Affairs, Ministry of Foreign Affairs Royal Thai Embassy, Kuala Lumpur, Malaysia; Office of the Permanent Secretary, Ministry of Foreign Affairs

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 January 12, 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. Somporn Vongvuthipornchai, the President, can sign singly.

2. Management

As of January 1, 2018, PTTEP management team had 23 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. Somporn Vongvuthipornchai Chief Executive Officer	Please see part 1 for details						
Mr. Phongstorn Thavisin President, Exploration and Production, and Acting Executive Vice President, Organization and Business Transformation Group	58	B.Sc. (Petroleum and Natural Gas Engineering), The Pennsylvania State University, U.S.A. IOD: DCP 223 (2016)	0.00179 (70,909 Shares)	None	Nov. 2017 – Present	● President, Exploration and Production, and Acting Executive Vice President, Organization and Business Transformation Group	PTTEP
					Sep. 2016 – Oct. 2017	● Acting Executive Vice President, Operations Support Group	PTTEP
					Jan. 2016 – Oct. 2017	● Chief Operating Officer, Production Asset and Operations Support Group	PTTEP
					2015	● Executive Vice President, Technology and Sustainability Development Group	PTTEP
					2012 – 2014	● Executive Vice President, Engineering and Development Group	PTTEP
Mr. Thiti Mekavichai Executive Vice President, Human Resources and Business Services Group	56	B.Sc. (Geography), Srinakharinwirot (Prasammitr) University	0.00238 (94,392 Shares)	None	Sep. 2012 – Present	● Executive Vice President, Human Resources and Business Services Group	PTTEP
					2011 – Aug. 2012	● Senior Vice President, Human Resources Division	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. Prapat Soponpongpiwat Executive Vice President, Geosciences and Exploration Group	59	M.Sc. (Geology), New Mexico, Institute of Mining and Technology, U.S.A.	0.00175 (69,320 Shares)	None	2016 – Present	● Executive Vice President, Geosciences and Exploration Group	PTTEP
					2015	● Senior Vice President, Geosciences and Technology Division	PTTEP
					2011 – 2014	● Senior Vice President, International Asset	PTTEP
Ms. Pannalin Mahawongtikul Executive Vice President, Finance and Accounting Group	53	M.Sc. (Business Administration), Thammasat University	0.00128 (50,701 Shares)	None	2016 – Present	● 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. Pranot Tirasai Executive Vice President, Corporate Affairs and Assurance Group and Acting Senior Vice President, Corporate Secretary Division, assigned as Company Secretary	59	LL.B (Laws), Thammasat University IOD: DCPU 5 (2015) CSP (2014) DCP 185 (2014)	0.00434 (172,341 Shares)	None	Jan. 2017 – Present	● Executive Vice President, Corporate Affairs and Assurance Group	PTTEP
					Jan. 2017 – Present	● Acting Senior Vice President, Corporate Secretary Division	PTTEP
					Oct. 2013 – 2016	● Senior Vice President, Corporate Secretary Division	PTTEP
					2010 – Sep. 2013	● Senior Vice President, Legal Division	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. Montri Rawanchaikul Executive Vice President, Strategy and Business Development Group and Acting Senior Vice President, New Business Unit	53	M.Sc. (Exploration Geophysics), University of New South Wales, Australia	0.00109 (43,214 Shares)	None	Oct. 2017 – Present	• Executive Vice President, Strategy and Business Development Group	PTTEP
					Nov. 2017 – Present	• 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
Mr. Vuthipon Thuapoomngam Executive Vice President, Engineering and Development Group	57	M.Sc. (Chemical Engineering), Chulalongkorn University	0.00148 (58,889 Shares)	None	2009 – Jun. 2013	• Vice President, Oman Asset, seconded as General Manager, Oman Asset, PTTEP Oman, Oman	PTTEP
					Jan. 2018 – Present	• Executive Vice President, Engineering and Development Group	PTTEP
					2015 – Dec. 2017	• Senior Vice President, Thai Offshore Asset	PTTEP
					Apr. 2013 – 2014 2012 – Mar. 2013	• Senior Vice President, Arthit Asset • Vice President, Maintenance and Inspection Department	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. Chatchawal Eimsiri Executive Vice President, seconded to PTT Natural Gas Distribution Company Limited (PTT NGD)	58	M.Sc. (Operation Research), London School of Economics and Political Science, University of London, United Kingdom IOD: DCP 91 (2007)	0.00147 (58,205 Shares)	None	Feb. 2015 – Present	● Executive Vice President, seconded as President, PTT Natural Gas Distribution Company Limited	PTT NGD
					Aug. 2014 – Jan. 2015	● Executive Vice President, attached to President and Chief Executive Officer	PTTEP
					2011 – Jul. 2014	● Executive Vice President, seconded to PTT Public Company Limited	PTT
Mrs. Suchitra Suwansinpan Executive Vice President, seconded to PTT Global LNG Company Limited	57	M.E. (Energy Technology), Asian Institute of Technology	Self: 0.00265 (105,290 Shares) Spouse: 0.00001 (300 Shares) Total: 0.00266 (105,590 Shares)	None	Oct. 2016 – Present	● Executive Vice President, seconded as Managing Director, PTT Global LNG	PTT Global LNG
					Dec. 2015 – Oct. 2016	● Executive Vice President, Strategy and Business Development Group	PTTEP
					2011 – Nov. 2015	● Senior Vice President, Corporate Strategy Division	PTTEP
Mr. Chayong Borisutsawat Acting Executive Vice President, Operations Support Group and assigned as Project Champion, SPEND SMART Project	50	B.Sc. (Petroleum), Chulalongkorn University	0.00139 (55,096 Shares)	None	Nov. 2017 – Present	● Acting Executive Vice President, Operations Support Group	PTTEP
					Jul. 2016 – Present	● 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
					2012 – Oct. 2013	● Vice President, Drilling Department	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. Waranon Laprabang Acting Executive Vice President, Production Asset Group	59	B.Sc. (Geology), Chiang Mai University	0.00363 (144,168 Shares)	None	Nov. 2017 – Present	● Acting Executive Vice President, Production Asset Group	PTTEP
					Sep. 2016 – Dec. 2017	● Senior Vice President, Thai Onshore Asset	PTTEP
					Nov. 2014 – Aug. 2016	● Senior Vice President, Myanmar Asset, seconded as General Manager, PTTEP International Limited, Union of Myanmar	PTTEP
					Apr. 2013 – Oct. 2014	● Senior Vice President, Exploration and New Venture Division	PTTEP
					2011 – Mar. 2013	● Senior Vice President, Arthit Asset	PTTEP
Mr. Yongyos Krongphanich Senior Vice President, Finance Division	57	M.Sc. (Accounting), Thammasat University	0.00265 (105,367 Shares)	None	Jul. 2014 – Present	● Senior Vice President, Finance Division	PTTEP
					Feb. 2014 – Sep. 2015	● Acting Senior Vice President, Accounting Division	PTTEP
					2013 – Jun. 2014	● Senior Vice President, Finance and Strategic Information Technology Division	PTTEP
					2011 – 2012	● Senior Vice President, Accounting Division	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	52	M.Sc. (Financial Accounting), Thammasat University IOD: DCP 220 (2016)	0.00195 (77,410 Shares)	None	Jul. 2016 – Present	● Senior Vice President, Accounting Division	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
					2010 – Jun. 2013	● Vice President, Corporate Accounting Department	PTTEP
Mrs. Netsuda Pokkasorn Vice President, Insurance Department	52	M.Sc. (Economics), University of Missouri, U.S.A.	0.00201 (79,857 Shares)	None	Aug. 2017 – Present	● Vice President, Insurance Department	PTTEP
					2011 – Jul. 2017	● Manager, Insurance	PTTEP
Mr. Anutra Bunnag Vice President, attached to Finance Division, assigned as Managing Director, PTTEP Treasury Center Company Limited	54	M.Sc. (Finance), University of Massachusetts, U.S.A.	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)

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. Kanchana Panananda Vice President, Capital and Investor Relations Department	47	M.Sc. (Business Administration), Thammasat University	0.00149 (59,081 Shares)	None	Jan. 2017 - Present	● Vice President, Capital and Investor Relations Department	PTTEP
					Apr. 2015 – Dec. 2016	● Vice President, Managerial Accounting Department	PTTEP
					2014 – Mar. 2015	● Manager, Accounting Policy	PTTEP
					2010 – 2013	● Manager, seconded as Finance Manager, Indonesia Asset, Indonesia	PTTEP
Mrs. Sirirat Sarattanakul Vice President, Financial Accounting Department	56	M.Sc. (Accounting), Thammasat University	0.00563 (223,490 Shares)	None	2014 – Present	● Vice President, Financial Accounting Department	PTTEP
					2008 – 2013	● Vice President, Office Facility Management Department	PTTEP
Mr. Sakchai Sarawek Vice President, Accounting Policy and Solutions Department	48	M.Sc. (Accounting Information System), Chulalongkorn University	Self: 0.00079 (31,475 Shares) Spouse: 0.00010 (4,000 Shares) Total: 0.00089 (35,475 Shares)	None	Jul. 2016 – Present	● Vice President, Accounting Policy and Solutions Department	PTTEP
					2009 – Jun. 2016	● Vice President, attached to Australia Asset, seconded as Finance and Accounting Manager, PTTEP Australasia, Australia	PTTEP
Mrs. Maneeya isukhumbowornchai Vice President, Tax Department	43	M.Sc. (Business Administration), Thammasat University	None	None	May 2015 – Present	● Vice President, Tax Department	PTTEP
					2014 – Apr. 2015	● Manager, Tax Compliance	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. Pratamaporn Deesrinthum Acting Vice President, Managerial Accounting Department	45	M.Sc. (Business Administration), Thammasat University	0.00133 (52,846 Shares)	None	Jan. 2018 – Present	● 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	● Senior Accountant	PTTEP
					Jul. 2013 – 2015	● Manager, Group Accounting Section	PTTEP
Ms. Pornpip Jansuksri Vice President, seconded as Corporate Administration and Finance Department, Energy Complex Company Limited (EnCo)	55	M.Sc. (Business Administration), Kasetsart University	0.00096 (37,938 Shares)	None	2010 – Jun. 2013	● Manager, Group Financial Accounting	PTTEP
					Oct. 2016 – Present	● Vice President, seconded as Vice President, Corporate Administration and Finance Department, Energy Complex (EnCo)	Energy Complex (EnCo)
					2014 – Sep. 2016	● Vice President, Treasury Department	PTTEP
					Jul. – Dec. 2013	● Vice President, Financial Accounting Department	PTTEP
					2011 – Jun. 2013	● Vice President, Project Accounting Department	PTTEP
Mrs. Thanyaporn Vangvasu Specialist	59	B.BA (Accounting), Assumption University	0.00391 (155,147 Shares)	None	May 2015 – Present	● Specialist	PTTEP
					2009 – Apr. 2015	● Vice President, Tax Department	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
Management Who Retired or Rotated During the Year 2017							
Mr. Kanit Sangwongwanich	60	B.Sc. (Petroleum Engineering), University of Wyoming, U.S.A.	0.00348 (138,152 Shares)	None	2015 – Dec. 2017	● Executive Vice President, Engineering and Development Group	PTTEP
					Mar. – Dec. 2014	● Executive Vice President, Operations Support Group	PTTEP
					2013 – Feb. 2014	● Senior Vice President, Well Technology Division	PTTEP
					2009 – 2012	● Senior Vice President, seconded as General Manager, Carigali-PTTEPI Operating Company SDN. BHD. (CPOC), Malaysia	PTTEP
Mrs. Chanamas Sasnanand Acting Senior Vice President, Internal Audit Division	48	M.B.A. (Business Administration), University of South Carolina, U.S.A. ● 2017 Annual Conference and Global IA Leadership Summit ● Audit Report Process, Federation of Accounting Professions under the Royal Patronage of His Majesty the King ● Audit Process, Federation of Accounting Professions under the Royal Patronage of His Majesty the King ● Senior Executive Program, Sasin Graduate Institute of Business Administration of Chulalongkorn University ● EP Lead Program, IMD Business School, Switzerland	0.00113 (44,779 Shares)	None	Jan. 2018 – Present	● Acting Senior Vice President, Internal Audit Division	PTTEP
					Jul. 2014 – 2017	● Vice President, Capital and Investor Relations Department	PTTEP
					2010 – Jun. 2014	● Vice President, Finance Department	PTTEP

Directors of Subsidiaries and Associated Companies¹

1. **Subsidiary:** As of December 31, 2017, there were 60 subsidiaries.

Name (only directors designated by PTTEP Group)	Subsidiaries														
	PTTEP AU	PTTEP AP	PTTEP AO	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
Ms. Pranot Tirasai	/	/	/	/	/	/	/	/							
Mr. Nirandorn Rojanasomsith	/	/	/	/	/	/	/	/							
Mr. Pakawet Booranawat	/	/	/	/	/	/	/	/							
Ms. Sirlene Santos Brêtas de Noronha									/						
Ms. Ratchada Lertwanichwatana										/	/				
Mr. Don Greenfield										/					
Ms. Pannalin Mahawongtikul											/				
Mr. Chaiyaphon Chirakorn											/				
Mr. Direk Wangudomsuk												/	/	/	
Ms. Stella Kattashi												/	/	/	
Mr. Kanok Intharawijitr															/
Mr. Preecha Peomwattanachai															/

Remarks: / = Director

¹ Notification of the Securities and Exchange Commission KorChor. 17/2551 Determination of Definitions in Notifications relating to Issuance and Offer for Sale of Securities

Name (only directors designated by PTTEP Group)	Subsidiaries														
	PTTEP HK	PTTEP HKO	CEKL	PTTEPO	PTTEP AG	PTTEPH	ATL	PTTEP KV	PTTEP SV	PTTEP HV	PTTEP HL	PTTEP SA	PTTEP IH	PTTEP ID	PTTEP AI
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ms. Jaroonsri Wankertphon*	/					/*									
Ms. Kanchanan Panananda*	/*														
Mr. Chalongrut Ya-anan		/													
Mr. Terapol Phoonsiri		/													
Mr. Suppakarn Thanatit		/													
Mr. Vuthiphon Thuampoomngam*			/		/*										
Mr. Direk Wangudomsuk			/												
Mr. Polasant Kullavanijaya*				/*											
Mr. Montri Rawanchaikul				/		/									
Mr. Peerapong Chailapo					/										
Mr. Piya Sukhumpanumet							/					/			
Mr. Kittisak Hiranyapraphip							/	/							
Ms. Natruedee Khositaphai*								/*			/				
Ms. Monton Santivongskul									/	/	/				
Ms. Supakorn Krisadasima									/						
Ms. Prawat Thong-In*												/*			
Mr. Noppadol Pinpipat													/		/
Mr. Anun Chonchawalit													/		/
Mr. Titi Thongjen														/	

Remarks: / = Director

* Effective from January 1, 2018

Name (only directors designated by PTTEP Group)	Subsidiaries														
	PTTEP SVPC	JV Marine	PTTEP NL	PTTEPR	PTTEP SMD	PTTEP SS	PTTEP SD	PTTEP ML	PTTEP SM	SHL	PTTEP MEP	PTTEP NC	PTTEP NH	PTTEP BI	PTTEPI
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Mr. Piya Oungpasuk	/														
Mr. Vuthiphon Thuampoomngam*		/	/*												
Mr. Denkey Thatchaichawalit		/													
Mr. Anun Chonchawalit				/											
Ms. Natruedee Khositaphai					/			/							
Mr. Titi Thongjen					/	/	/	/	/						
Ms. Jaroonsri Wankertphon							/								
Mr. Wanchai Mahasuwannachai									/						
Mr. Nopadon Chinabutr*										/*					
Mr. Dittapon Soothi-O-Soth										/					
Mr. Chalongrut Ya-anan											/			/	
Mr. Piya Wichitchanya											/				
Vistra Management Services (Netherlands) B.V.												/	/	/	
Ms. T.S.M. Van Dijk												/	/	/	
Ms. Ratchada Lertwanichwatana												/			
Mr. Yongyos Krongphanich													/		
Mr. Yongsith Kosawititkul													/		
Mr. Noppadol Pinpipat														/	
Mr. Chayong Borisuitsawat*															/*
Mr. Kitchai Pitiwiwat*															/*

Remarks: / = Director

* Effective from January 1, 2018

Name (only directors designated by PTTEP Group)	Subsidiaries														
	PTTEPS	PTTEP Services	Orange	PTTEP G7	PTTEP TC	PTTEP BC	COVE	PTTEP SP	EnCo	CPOC	PTT GL	PTT GLI	Mangalalu	Troughton Island	Natuna
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Mr. Nopadon Chinabutr*	/*														
Mr. Dittapon Soothi-O-Soth	/														
Mr. Putikarn Aurat		/													
Ms. Sujinda Phloi-Montri		/													
Mr. Kitchai Pitiwiat*			/*												
Mr. Denkey Thatchaichawalit			/	/											
Mr. Yongyos Krongphanich			/												
Mr. Vuthiphon Thuampoomngam				/											
Ms. Jaroonsri Wankertphon					/										
Ms. Sirirat Sararattanakul					/										
Mr. Anutra Bunnag					/										
Mr. Terapol Phoonsiri						/									
Mr. Noppadol Pinpipat						/									
Mr. Direk Wangudomsuk							/								
Mr. Mana Rojpiulstitt							/								
Mr. Kittisak Hiranyapraphip								/							
Mr. Supakorn Krisadasima								/							
Mr. Thiti Mekavichai									/						
Ms. Pannalin Mahawongtikul									/						
Ms. Kesara Limmeechokchai									/						
Mr. Anusorn Wuthijaroen									/						
Mr. Phongsthorn Thavisin										/					

Remarks: / = Director

* Effective from January 1, 2018

Name (only directors designated by PTTEP Group)	Subsidiaries														
	PTTEPS	PTTEP Services	Orange	PTTEP G7	PTTEP TC	PTTEP BC	COVE	PTTEP SP	EnCo	CPOC	PTT GL	PTT GLI	Mangalalu	Troughton Island	Natuna
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ms. Natruedee Khositaphai										/					
Mr. Somporn Vongvuthipornchai											/				
Mr. Montri Rawanchaikul											/				
Mr. Luck Tanasomwang												/			
Mr. Gavin Ryan													/	/	
Mr. Peerapong Hansakwong													/	/	
Ms. T.S.M. Van Dijk															/
Mr. Titi Thongjen															/

Remarks: / = Director

2. **Associated Company:** As of December 31, 2017, there were 12 associated companies.

Name (only directors designated by PTTEP Group)	Associated Companies					
	PTT Digital	B 8/32 Partners	MGTC	Erawan FSO 2	Bahamas	PTT SE
	1	2	3	4	5	6
Mr. Thiti Mekavichai	/					
Mr. Yongyos Krongphanich		/				
Mr. Denkey Thatchaichawalit		/		/		
Mr. Piya Sukhumpanumet			/			
Mr. Nopasit Chaiwanakupt*			/			
Ms. Nat Lohsuwan					/	
Ms. Patchara Romyanan						/

Remarks: / = Director

* = Alternate Director

Six associated companies which do not have any directors from PTTEP are:

- (1) TPC and Asia Pacific Marine Service are governed by shareholders' meetings.
- (2) HV JOC, HL JOC, GBRS and LAL are governed by the Management Committee.

Details of Head of the Internal Audit Division and Head of the Compliance Department

1. Details of Head of the Internal Audit Division as of January 1, 2018 are shown in the table below.

Name/Position	Education	Trainings	Work Experience in the Past 5 Years	
			Period	Position/Unit
Mrs. Chanamas Sasanand Acting Senior Vice President, Internal Audit Division	Details are disclosed in the "Management" part of the Attachment 1.			

Details of Head of the Internal Audit Division who retired on January 1, 2018

Name/Position	Education	Trainings	Work Experience in the Past 5 Years	
			Period	Position/Unit
Mrs. Chaveeporn Chamsang	B.B.A. (Banking and Finance), Chulalongkorn University	<ul style="list-style-type: none"> 2017 Annual Conference and Global IA Leadership Summit 2016 IIA Conference by Asia Confederation of Institute of Internal Auditors, Singapore 2015 IIA Conference by Asia Confederation of Institute of Internal Auditors Continuous Auditing P2P Process 5th National Conference on Collective Action Against Corruption IIA International Conference, The Institute of Internal Auditors, London Auditing Mergers and Acquisitions, MIS Training Institute, Hong Kong Internal Audit Asia Conference, Asia Business Forum Strategizing Approaches for Operational Risk, Marcus Evans (Thailand) Ltd. Risk Management in Drilling Activities, Asia Business Forum Construction Project Risk Management, Asia Business Forum Construction Project Cost Management and Control, Asia Business Forum 2007 Asian Conference on Internal Audit, The Institute of Internal Auditors, China The IIA Internal Audit Conference, The Institute of Internal Auditors, U.S.A. Due Diligence for M&A Master Class, Asia Business Forum Internal Audit Conference, The Institute of Internal Auditors, Australia Forensic Accounting, Accounting Alumni, Chulalongkorn University Anti-corruption: the Practical Guide, Thai Institute of Directors Association (IOD) Risk Management and Fraud Investigation Master Class, UNI Strategic Basic Compliance and Ethics Academies, Society of Corporate Compliance and Ethics 	Oct. – Dec. 2017	<ul style="list-style-type: none"> Senior Vice President, Internal Audit Division, PTTEP
			Jan. – Sep. 2017	<ul style="list-style-type: none"> Acting Senior Vice President, Internal Audit Division, PTTEP
			Oct. 2013 – 2016	<ul style="list-style-type: none"> Vice President, Internal Audit Department, PTTEP
			Jun. 2012 – Sep. 2013	<ul style="list-style-type: none"> Vice President, Compliance Department, PTTEP
			2005 – Jun. 2012	<ul style="list-style-type: none"> Senior Internal Auditor, PTTEP

2. Details of Head of the Compliance Department as of January 1, 2018 are shown in the table below.

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 – Present	<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

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
CNG ¹	Compressed Natural Gas
DCQ	Daily Contract Quantity
GSA	Gas Sales Agreement
HOA	Heads of Agreement
KBD	Thousand Barrels per Day
LNG ²	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



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