






Financial Highlights

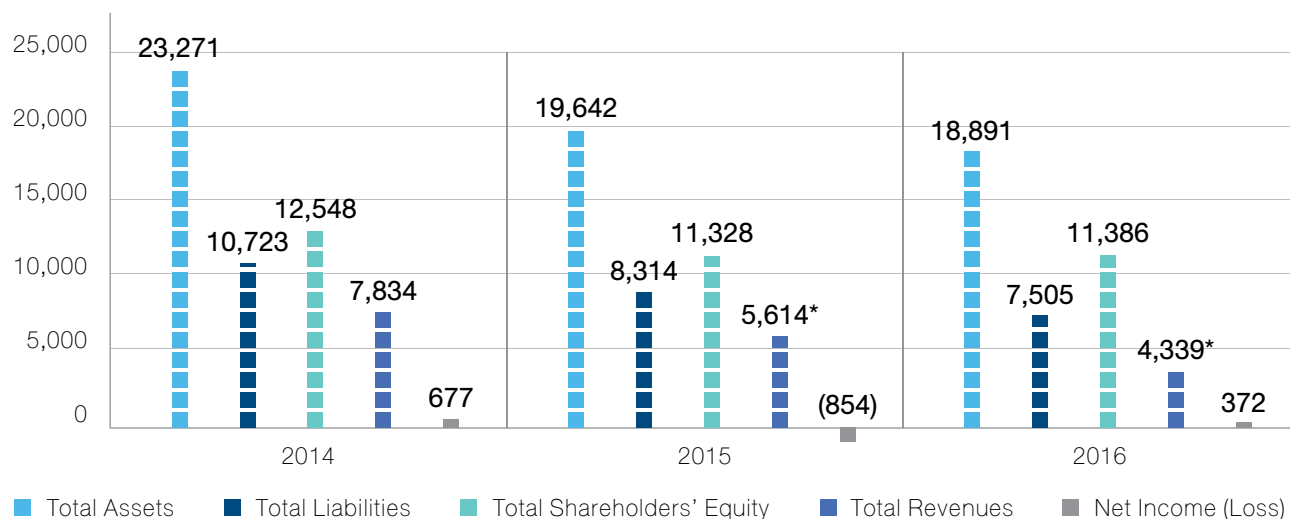
PTTEP continuously manages controllable factors in order to cope with the volatility of the oil prices. As a result of the improvements operational efficiency and cost optimization under the "SPEND SMART to Business Sustainability" campaign, the Company was able to maintain production and profitability levels which is reflected in the healthy business performance and strong financial position, ready to support new investment opportunities to support sustainable growth as well as to ensure the energy security of the country.

Million USD

 <p>Net Cash from Operating Activities*</p> <p>4,326 2014</p> <p>2,864 2015</p> <p>2,308 2016</p>	 <p>Net Cash Used in Investing Activities</p> <p>(3,002) 2014</p> <p>(1,872) 2015</p> <p>(1,002) 2016</p>	 <p>Net Cash Used in Financing Activities</p> <p>255 2014</p> <p>(1,662) 2015</p> <p>(544) 2016</p>
 <p>Cash and Cash Equivalent at the Beginning of the Period</p> <p>2,351 2014</p> <p>3,930 2015</p> <p>3,260 2016</p>	 <p>Cash and Cash Equivalent at the End of the Period</p> <p>3,930 2014</p> <p>3,260** 2015</p> <p>4,022** 2016</p>	<p>* Including effect of exchange rate changes ** Including short term investment</p>

Financial Highlights

Million USD



* Revenue of PTTEP OM was represented in discontinued operations

Dividend per Share (Baht)	4.50	3.00	3.25*
Dividend Yield (%)**	4.02	5.24	3.38
	2014	2015	2016

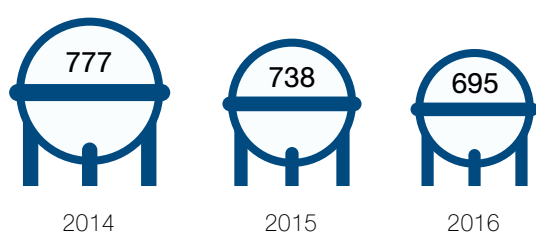
* The total dividend of 2016 will be 3.25 Baht per share including the interim dividend at the rate of 0.75 Baht per share and the second half-year operations dividend at the rate of 2.50 Baht per share. Payment of the interim dividend and the second half-year operation's dividend will be proposed in the 2017 General Shareholder's Meeting on March 29, 2017 for acknowledgement and approval, respectively.

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

Financial Ratios	2014	2015	2016
EBITDA to Revenue from Sales (%)	71	71	71
Debt to Equity (times)	0.34	0.27	0.25
Return on Equity (%)	6	(7)	3
Return on Assets (%)	3	(4)	2

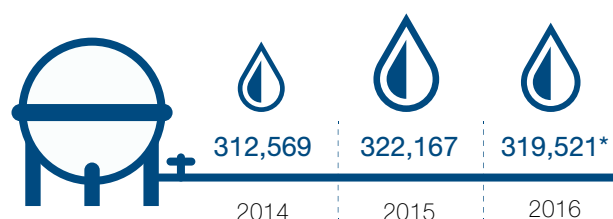
Petroleum Proved Reserves

(MMBOE)



Petroleum Sales Volumes

(BOED)

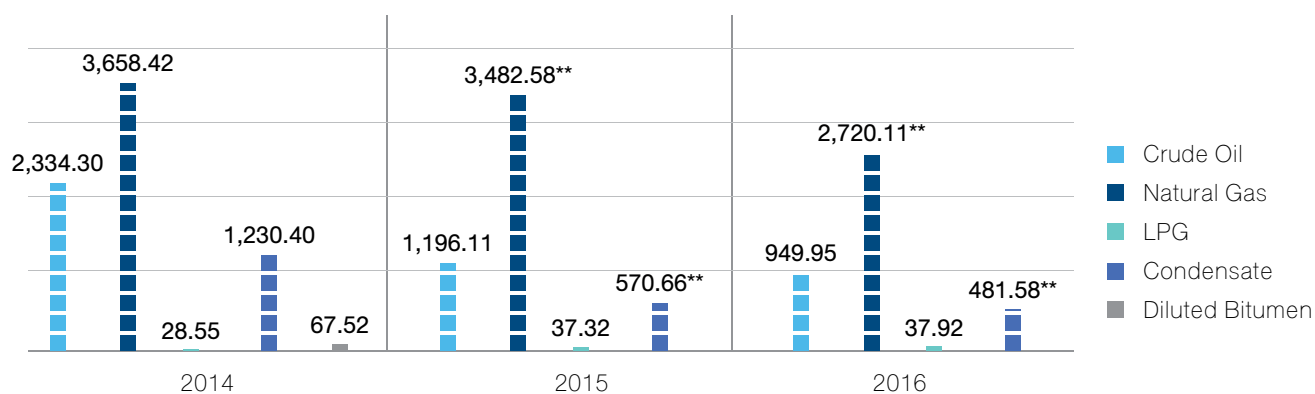


Volume

Products	2014	2015	2016
Crude Oil (MMBBL)	24.38	23.63	23.06
Natural Gas (MMSCF)	464,467.22	505,840.79	505,337.18*
Natural Gas (MMBOE)	75.44	81.05	81.05
LPG (Metric Tons)	93,504.68	96,529.19	96,731.01
LPG (MMBOE)	0.77	0.80	0.80
Condensate (MMBBL)	12.97	12.11	12.03*
Diluted Bitumen (MMBBL)	0.92	-	-

Value

(Million USD)



* 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,

The year 2016 was a period of great sorrow for Thailand after the loss of our beloved King, His Majesty King Bhumibol Adulyadej. With his ever-present sense of immeasurable grace, the late King bestowed the name “Navamindra Petroleum Area” on PTTEP’s petroleum fields of Bongkot and Arthit. All of PTTEP’s Board of Directors, management and employees offer their continuing loyalty and dedication to follow and keep in our thoughts His Majesty King Bhumibol Adulyadej’s guidance in our mission to secure energy security for the maximum benefit of the country with pride, honesty and perseverance.

The past year also presented daunting challenges for the petroleum exploration and production business globally as 2016 experienced relatively low crude oil prices and considerable volatility. During the first quarter of 2016, the Dubai crude price bottomed out at approximately 23 USD/BBL following the lifting of sanctions on Iran. This reflected the increased concerns over oversupply conditions after that crude prices rose slightly in the second quarter and third quarter. Prices ranged from 40 to 50 USD/BBL throughout the third quarter, and then peaked at a year-high record of 54 USD/BBL in December. As a result, the Dubai crude price annual average ultimately stood at 41.27 USD/BBL, lower than the previous year average of 50.91 USD/BBL.

The decline in global crude oil prices naturally continued to significantly affect PTTEP’s financial performance in 2016. The company revised its strategic plan to enhance its competitive advantage and sustainable growth under the



concept of “RESET REFOCUS RENEW”. In more detail, RESET has meant the formulation of a cost structure under the SAVE TO BE SAFE project which resulted in cost savings of USD 300 million to maintain competitiveness in the industry and the prioritization of investment in projects with competitive cost structures under present oil price conditions. This consequently has brought down overall unit costs from 38.88 USD/BOE in 2015 to 30.46 USD/BOE, representing a 22% reduction. REFOCUS has focused investment towards core areas in which PTTEP has extensive experience, and areas that demonstrate low cost structures and low risks, such as in Thailand and other nations in Southeast Asia, especially Myanmar. RENEW has adopted the development of technology as part of a long-term strategy for sustainable growth, so as to diversify sources of revenues and return on investment as well as to explore new business by synergizing with PTT Group in the LNG business.

By adhering to the strategic plan above, conducted with professional management and strong financial discipline, PTTEP recorded a recurring net profit for 2016 of 466 MMUSD and a non-recurring loss of 94 MMUSD. These results can be mainly attributed to losses on oil price hedging, which partly is the mark-to-market valuation of outstanding oil price hedging positions that has no impact on the company’s cash flow but was booked in accordance with internationally accepted accounting standards. The company also recognized asset impairment losses of 47 MMUSD as a result of adjustments



to the production profiles of the Yetagun and Natuna Sea A projects. However, the company recorded non-recurring gains and tax saving, arising from the appreciation of Thai Baht relative to the US Dollar over the year. Consequently, the company improved to a net profit of 372 MMUSD for 2016, compared to a net loss 854 MMUSD in 2015. Given this performance, the company's financial position remained robust with cash on hand and short-term investments of 4,022 MMUSD to maintain planned production levels, to develop future projects in the pipeline as well as to support new investment opportunities through merger and acquisition activities in line with the company's business plan.

Besides the year-end performance discussed above, it needs to be noted that PTTEP places great focus on organization development. In fact, we're proud that the company has been selected as a member of 2016 Dow Jones Sustainability Indices (DJSI) for the third consecutive year, and named as the industry leader in the World Oil and Gas Upstream & Integrated Industry. This recognition underlines our ongoing commitment to being a sustainable organization and our effort to balance our growth in business, with the benefits to society and environmental protection. In 2016 PTTEP was also selected as a member of Thailand Sustainability Investment

by the Stock Exchange of Thailand (SET) as one of the listed companies exhibiting outstanding business performance and corporate governance as well as responsibility to society and environment.

Looking forward PTTEP expects the crude oil price during the first half of 2017 to be range-bound between 50-60 USD/BBL due to bullish support for the agreement on production cuts between OPEC and non-OPEC members in the fourth quarter last year. However, everyone in the market will be closely monitoring events leading up to as well as the subsequent discussion between OPEC and non-OPEC members as they consider the renewal of the agreement during the second half of the year. Further, it is prudent that we keep an eye on US policy under the new government administration, particularly in the area of energy sector policies, which will affect the movement of oil prices in the global market.

PTTEP remains confident that the company's performance will stay solid with the potential for future growth in reserves and production driven by various project development in alignment with our portfolio management strategy which would support projected rising gas demand in Asia. This will be pursued with good corporate governance and transparency in risk and corporate management as well as through professionalism of the PTTEP team.

To further capitalize on rising gas demand in Thailand and globally, PTTEP is orientating its strategy to capture potential opportunities for joint investment with the PTT Group in the LNG chain in different regions to effectively serve increased future domestic and global gas demand.

PTTEP's Board of Directors, management and employees would like to express our sincere thanks for your continued trust. We commit to perform our duty effectively and efficiently and offer our profound loyalty to His Majesty King Bhumibol Adulyadej's guidance in order to lead PTTEP towards a sustainable future.

(Prajya Phinyawat)

Chairman

(Somporn Vongvuthipornchai)

President and Chief Executive Officer

1. Policy and Business Operations Overview

1.1 Vision, Mission, Objective and Strategy

PTTEP Group is one of the leading E&P companies in Thailand, exploring for sustainable sources of petroleum supplies 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 better than the industry's average and to have unit cost in the top quartile of Asian peer companies.

Business Sustainability: Target to maintain the proved reserves to production ratio (R/P Ratio or Proved Reserve/Production) of no less than 7 years by 2025 and to achieve 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 performance efficiency under low oil price environment, strategy in reducing operating cost is applied to all three phases of the Company's existing assets

(1.1) **Producing Assets:** Focusing 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:** Focusing 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 revenues and positive economic value under the low oil price environment

(1.3) **Exploration Projects:** Focusing on increasing reserves and production for the future 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 in reducing cost and increasing performance efficiency which help the Company to reduce 2016 expense by USD 330 million above target which is USD 115 million as well as to reduce 2017 budget for USD 324 million from the Company’s activities, such as logistics and supply chain management, drilling operation, engineering and modification, and maintenance process.

(2) **REFOCUS:** Strategy to expand growth driven through portfolio rationalization which is divided in two dimensions as follows:

(2.1) **E&P Conventional:** Focusing on value creation from new exploration acreage, and merger and acquisition (M&A) in Southeast Asia which is the Company’s experienced area by targeting to increase gas portion in the Company’s portfolio as well as to invest in low cost producing country.

(2.2) **E&P Transformative:** Focusing on expanding investment in LNG projects and increasing investment in the United States to increase competitive capability in US unconventional.

(3) **RENEW:** For long-term sustainability and growth, RENEW is a strategy which is 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 the Production as well as the 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, including the E&P industry trend, together with its implications and impacts on the Company regarding relevant opportunities and risks. The role of the Company as a national oil company to provide a reliable energy supply for Thailand’s energy sustainability is also reviewed. In addition, the Company’s investment portfolio is reviewed and assessed on returns and risks in order to identify the vision, mission, and short- and long-term strategic directions. These allow the Company to achieve sustainable growth and 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 direction and policy 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 direction and corporate target to promote a better understanding among all of the Company’s employees regarding corporate vision, mission, and strategy. In principle, 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

Sustainability Management in PTTEP is an integration of business, environmental, and social risks and opportunities to make us a company of choice for investors, shareholders, business partners, host governments, communities, and employees. The Company is continuously emphasizing effective management of the three pillars of sustainability to reflect the ongoing concerns regarding environmental and social issues. Sustainability targets, strategies and implementation are

driven by efficient business processes, funding, Governance, Risk, Control & Compliance (GRC) management, innovation and technology to enhance production, reduce cost, and build human capability to achieve work efficiency. All of these drivers create value for both the Company and all of our stakeholders.

In order 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 2016 the Company was selected as a DJSI member in the World Oil and Gas Upstream & Integrated Industry for the third consecutive year. In addition, with the highest score in the industry, the Company has also been named the industry leader of the DJSI World Oil and Gas Upstream & Integrated Industry for the first time. We are determined to maintain our DJSI World membership in the upcoming years.

1.2.2 PTTEP Materiality Assessment and 2016 Material Issues

PTTEP's materiality assessment process engages both internal and external stakeholders by using the Global Reporting Initiative (GRI G4) Sustainability Reporting Guideline: Oil and Gas Sector Supplement (OGSS) framework and SASB Materiality Map™ 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. The materiality analysis is conducted on an annual basis as part of the reporting cycle. In 2016, the following material sustainability issues were identified, some of which were included in the Company's 2016 KPI.

Material Economic Issues

- Sustainable Business Performance
- Corporate Governance
- Technology and Innovation
- Risk Management
- Supplier Collaboration

Material Social Issues

- Human Capital Development
- Talent Attraction and Retention
- Labor Rights
- Occupational Health and Safety
- Social Impact and Contribution

Material Environmental Issues

- Spill Prevention
- Operational Eco-Efficiency
- Water Management
- Biodiversity
- Energy Efficiency
- Climate Change

The Company's materiality assessment process includes a structured review of issues that 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 perspective of the Company's operations and stakeholders, defining reporting boundaries of the material aspects, prioritizing the issues by their level of significance using agreed criteria, and validating the issues through review and endorsement by the SD Working Team and SD Council. Details of the Company's materiality assessment process can be found in our website: <https://www.pttep.com/en/SustainableDevelopment/Disclosure/ApproachtoReporting.aspx>.

1.2.3 Benefits to Society and Environment

PTTEP's environmental and social initiatives are laid out in our sustainable development roadmap. In 2016, 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 2016 greenhouse gas emissions initiatives reduced greater than 239,000 tonnes of carbon dioxide equivalent (CO₂e) per year, while reducing approximately THB 95,000,000 in fuel and operating cost through logistics fleet management. Meanwhile, the other projects except the logistic fleet management project generated a revenue of approximately THB 413,000,000 from hydrocarbon recovery.

The Company's reforestation project, on the other hand, which was initiated in 2013 with objectives to mitigate global warming and maximize values for all stakeholders both inside and outside of the organization, has selected areas for reforestation by taking into account communities located nearby. This creates benefits for the communities such as creating jobs to stimulate the local economy by hiring local people to work as tree growers and maintainers. This project has managed to enhance economic value in the local communities surrounding the reforestation areas by generating an income of approximately THB 64,409,150, directly employing 178 local villagers. The project is also expected to help offset approximately 331,800 tonnes of carbon dioxide equivalent (CO₂e) by 2020. In addition, the Company's exploration and production operation is conducted in accordance with local regulations and our operating procedures that are in line with various international standards, such as the International Finance Corporation (IFC), to prevent impacts on communities. The Company believes that these efforts will provide us with a social license to operate, which helps to prevent operation disruption from community protests that can potentially lead to additional impacts on the society as well as higher operating cost for the Company.

1.3 Development and Significant Changes in 2016

In 2016, the Company and our subsidiaries had undertaken a number of portfolio managements and portfolio rationalization to ensure that the Company's strategic objectives can be achieved, as well as to expand our investment for future growth. The following are the highlights of these developments and changes by region.

Thailand

In March 2016, the Company received official approval from the Department of Mineral Fuels (DMF) for the relinquishment of concession block of L28/48 Project, after the fulfilment of the concession requirements.

In December 2016, another joint operation of the Project B6/27 terminated its 40% participating interests which was effective on January 1, 2015 based on Joint Operating Agreement. The termination is under the process of approval from the DMF. In addition, PTTEP established a subsidiary "PTTEP Business Center Company Limited" with a registered capital of THB 5 million in order to facilitate the future investments related to exploration and production.

South East Asia

In May 2016, the Company received official relinquishment of concession block Myanmar MD-8 from the Government of Republic of the Union of Myanmar resulting in the change in project name from Myanmar MD-7 & MD-8 Project to Myanmar MD-7 Project. Furthermore, the Project is in the process of seeking joint partner for project risk management and diversification.

In July 2016, the Company expanded its investment in "Sarawak SK410B Project", an exploration block in Malaysia, which is situated in a high petroleum potential area. The Company holds 42.50% interest with operatorship.

In December 2016, the Company received official approval from the Government of Republic of Indonesia for the relinquishment of Indonesia South Mandar Project.

Australasia

In April 2016, the Company received official approval from the Government of Commonwealth of Australia for the relinquishment of block WA-396-P and WA-397-P, which are the exploration block under PTTEP Australasia Project.

In June 2016, the Company received official approval from the Government of Commonwealth of Australia for the transfer of the participating interest in Block AC/L1, AC/L2, and AC/L3, which are the exploration block under PTTEP Australasia Project from the other joint operation partner. As a result, the Company's participating interests increased from 89.6875% to 100%.

In August 2016, the Company received official approval from the Government of Commonwealth of Australia for the transfer of the participating interests in Block AC/RL6, which is the exploration block under PTTEP Australasia Project from the other joint operation partner. As a result, its participating interests increased from 50% to 100%.

Africa and the Middle East

In March 2016, the Company received official approval from the Government of Republic of Mozambique for the relinquishment of the Mozambique Rovuma Onshore Project.

In November 2016, the Company received official approval from the Government of Kenya for the relinquishment of the Kenya L11A, L11B and L12 Project.

In December 2016, the Company divested PTTEP Oman Limited (PTTEP OM), which holds 100% interest in Oman 44 Project, a mature field. However, the Company continues to explore new investment opportunities in Oman as PTTEP has signed a Memorandum of Understanding (MOU) with a subsidiary of the national oil company of Oman.

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, 2016, PTTEP Group had 37¹ petroleum exploration and production projects in 10 countries. 14 projects were under the exploration phase and 23 projects were under the commercial production phase.

No.	Project Name	Phase	Location	Participation Interest	Operator
Thailand: 14 projects					
1.	Bongkot Project	Production	Gulf of Thailand	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	60% 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%	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: 21 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

¹ Excluding Indonesia Semai II and Indonesia Malunda projects which PTTEP has submitted relinquishment documents to the respective governments of each project and been waiting for the official approval.

² Another joint venture of the B6/27 Project terminated its 40% participating interests which was effective on January 1, 2015 based on Joint Operating Agreement. The termination is under the process of submitting the documents to the Department of Mineral Fuels for approval.

No.	Project Name	Phase	Location	Participation Interest	Operator
5.	Yetagun Project	Production	Gulf of Moattama	19.31784%	Petronas
6.	Myanmar PSC G & EP 2 Project	Exploration	Onshore	70%	PTTEP
7.	Myanmar MD-7 Project ³	Exploration	Andaman Sea	100%	PTTEP
8.	Myanmar MOGE 3 Project	Exploration	Onshore	75%	PTTEP
Vietnam					
9.	Vietnam 9-2 Project	Production	Offshore	25%	HV JOC
10.	Vietnam 16-1 Project	Production	Offshore	28.5%	HL JOC
11.	Vietnam B & 48/95 Project	Exploration	Offshore	8.5%	Petrovietnam
12.	Vietnam 52/97 Project	Exploration	Offshore	7%	Petrovietnam
Indonesia					
13.	Natuna Sea A Project	Production	Offshore	11.5%	Premier Oil
Malaysia					
14.	Sarawak SK410B Project ⁴	Exploration	Offshore	42.50%	PTTEP
Algeria					
15.	Algeria Hassi Bir Rekaiz Project	Exploration	Onshore	24.5%	PTTEP
16.	Algeria 433a & 416b Project	Production	Onshore	35%	GBRS
Australia					
17.	PTTEP Australasia Project	Production	Offshore	90 - 100% ⁵	PTTEP
Canada					
18.	Mariana Oil Sands Project	Exploration	Onshore	100%	PTTEP
Mozambique					
19.	Mozambique Rovuma Offshore Area 1 Project	Exploration	Offshore	8.5%	Anadarko
Brazil					
20.	Barreirinhas AP1 Project	Exploration	Offshore	25%	BG Brasil
21.	Brazil BM-ES-23 Project	Exploration	Offshore	20%	Petrobras

Principal Projects in Operation

The following is a summary of project activities undertaken during 2016. Production and sales figures described hereunder are total production and sales figures for the respective projects.

³ PTTEP had submitted a request to terminate and return the exploration block of Myanmar MD-8 Project to the Government of the Republic of the Union of Myanmar which was effective on May 15, 2016.

⁴ On 21 July, 2016, PTTEP signed the Product Sharing Contract (PSC) for the exploration block in Malaysia.

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

(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 2016.

Bongkot Project

The Bongkot Project is the largest gas field in the Gulf of Thailand, located in the southern part of the Gulf and consists 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.

In the year 2016, the Project continuously drilled production wells, installed wellhead platforms and constructed gas pipeline in order to maintain steady production levels. Sales volume from the Project averaged 887 million standard cubic feet per day (MMSCFD) of natural gas (equivalent to 144,311 barrels of oil equivalent per day (BOED)) and 26,638 barrels per day (BPD) of condensates.

S1 Project

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. Production 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 refineries, PTT Global Chemical Public Company Limited, and IRPC Public Company Limited. Produced gas undergoes a gas plant to separate LPG, before being sold to PTT and subsequently directed to EGAT as fuel for power generation, as well as partially used for production of CNG for natural gas vehicles (NGV).

In the year 2016, the Project has continuously drilled additional exploration, appraisal and production wells. Environment impact assessments were also undertaken in both existing and new production areas. The Project's average crude oil sales during the year was 27,380 BPD, while sales of natural gas averaged 22 MMSCFD (equivalent to 4,474 BOED), and average LPG sales was 264 metric tons per day (equivalent to 2,190 BOED).

PTTEP 1 Project

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 transported to the Bangchak refinery.

In the year 2016, the Project carried on the production wells drilling activities to maintain production plateau. The Project's average crude oil sales were 367 BPD.

B6/27 Project

The B6/27 Project is located in the Gulf of Thailand, off the coast of Chumphon province. The Company holds a 60% interest and is the operator. JX Nippon Oil & Gas Exploration Corporation terminated its 40% participating interest in the Project and is pending the approval from the Department of Mineral Fuels (DMF).

In the year 2016, the Project currently continued to focus on the geological and geophysical study.

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 with PTT on a take-or-pay basis. After the reassessment of reserve figures and appropriate production levels, a new Daily Contract Quantity (DCQ) of 220 MMSCFD was agreed upon, and came into effect on December 30, 2011.

In the year 2016, the Project continued to carry out production wells drilled as well as constructed and installed wellhead platforms and gas pipelines in order to maintain steady production. Average natural gas sales in 2016 from the Project was 222 MMSCFD (equivalent to 35,263 BOED) and average condensates sales was 9,338 BPD.

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 the 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.

L22/43 Project

The L22/43 Project is located in the Phitsanulok and Pichit provinces. The Company owns and operates 100% of the Project.

In the year 2016, the Project's average crude oil sales were 205 BPD. The Project was able to maintain crude oil production at this level as a result of the implementation of Artificial Lift techniques.

L53/43 and L54/43 Project

The L53/43 and L54/43 Project are located in Suphan Buri, Kanchanaburi, Ayutthaya and Ang Thong provinces. The Company owns 100% interest in the Project and is also the operator. Production commenced in 2010 with crude oil produced from the Project sold to the Bangchak refinery.

In the year 2016, the Project carried out the exploration and development drilling activities to uphold production level. The Project's average crude oil sales were 530 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. The Project embarked production since late 1990, and 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 to EGAT power plant.

In the year 2016, average natural gas sales volume for the Project amounted to 11 MMSCFD (equivalent to 1,775 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 crude oil sales agreement is under spot cargo with other purchasers.

In the year 2016, 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 583 MMSCFD, equivalent to 98,388 BOED, crude oil at an average rate of 24,320 BPD and condensates at an average rate of 21,301 BPD.

Contract 4 Project

The Contract 4 Project (inclusive of the G7/50 Block which is in the exploration phase) 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 2016, the Project continued to drill additional development wells aiming to maintain production plateau. The Project sold natural gas at an average rate of 328 MMSCFD (equivalent to 55,428 BOED) and condensates at an average rate of 14,971 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 together with B8/32 & 9A Project has long-term GSA with PTT and sale agreements for crude oil under spot cargo with other purchasers.

In the year 2016, the project continued to carry out development drilling to sustain production level. The sales volume of crude oil and natural gas averaged 6,084 BPD and 2 MMSCFD (equivalent to 325 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. The Sinphuhorm Project has long-term GSAs with PTT.

In the year 2016, sales volume of the Project averaged 118 MMSCFD for natural gas (equivalent to 19,473 BOED) and 435 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 sale agreements for crude oil under spot cargo with other purchasers.

In the year 2016, the Project continued to carry out development drilling and waterflood operations in order to maintain the crude oil production levels. Sales volume averaged 27,565 BPD for crude oil and 127 MMSCFD for natural gas (equivalent to 22,723 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 together with Contract 3 Project has long-term GSAs with PTT and crude oil sale agreements under spot cargo with other purchasers.

In the year 2016, sales volume from the G4/48 project averaged 7 MMSCFD for natural gas (equivalent to 1,025 BOED) and 1,580 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 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 2016, the Project continued to carry out production drilling activities to maintain current production levels. The Project is also in the preparation process of development plan for phase 4. Current sales volume from the Project averaged 300 MMSCFD (equivalent to 48,826 BOED) for natural gas and 7,848 BPD for condensates.

(2) **International Projects:** PTTEP has 21 projects overseas, broken down into the following regions.

(2.1) **Project Activity Highlights in South East Asia:** PTTEP has 14 projects in this region which are located in the Republic of the Union of Myanmar (Myanmar), Socialist Republic of Vietnam (Vietnam), Federation of Malaysia (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.

In the year 2016, the Project completed drilling appraisal wells as planned and is currently assessing the Project's resource potential and its prospects for commerciality.

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 December 9, 2015, the Government of Myanmar has extended the exploration period; as a result, the total exploration period is 3.5 years (October 23, 2014 to April 22, 2018).

In the year 2016, the Project completed 3D seismic campaign in the first quarter and is in the process of evaluation the Project's resource potential and its prospects.

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 Company entered into a 30-year GSA on a take-or-pay basis with PTT and MOGE. The gas production will be sold to PTT supplying into Thai market 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 2016, the Project maintained the production rate as targeted of approximately 305 MMSCFD (equivalent to 47,023 BOED). Additionally, the Project started the production operations from the fourth producing platform in Phase 1B since April 2016. The Project is currently in the construction phase for 4 production platforms in Phase 1C in order to support the production plateau of the Project.

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 a 30-year 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 2016, the Project was in the construction phase of Badamayar wellhead platform expecting to complete in 2017. The Project was also in the process of drilling four development wells, which target to complete and start first production in the second quarter of 2017. During year 2016, total gas sales volume averaged 747 MMSCFD (equivalent to 90,046 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 a 30-year GSA. To transport natural gas from Yetagun 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 2016, the Project completed three infill wells drilling and found gas flow rate as planned. The Project also carried out the 3D seismic activities covering 1,734 square kilometers and currently, is in the process of evaluating petroleum prospects for future development plan. For the year, the Project's total sales volume averaged 229 MMSCFD (equivalent to 36,352 BOED) for natural gas and 4,921 BPD for condensates.

Myanmar PSC G and EP2 Project

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 received the official approval from the Government of Myanmar to extend the exploration period for another 1.5-year (February 28, 2016 to August 27, 2017). Currently, the Project is under the geological and geophysical study.

Myanmar MD-7 Project

The MD-7 Project is located in deep waters of the Gulf of Moattama, Myanmar. The Company has a 100% interest in the Project and is the operator. The Project received the official approval from the Government of Myanmar to extend the exploration period for another 2-year (May 15, 2016 to May 14, 2018).

In the year 2016, the Project completed 3D seismic survey in the second quarter. The Project is also in the process of evaluating the fields' resources potentials and seeking for a joint partner for project risk management and diversification.

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. The Project was officially approved to entry into the initial exploration phase for three years (August 21, 2015 to August 20, 2018).

The Project is in the process of 2D seismic and 3D seismic acquisition which expected to complete in the mid of 2017.

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. First production commenced in 2008, and the crude oil produced 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 2016, the Project's sales volume of crude oil averaged 4,372 BPD, while sales volume of natural gas averaged 12 MMSCFD (equivalent to 2,391 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. First production commenced in 2011, and the crude oil production 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 2016, the Project carried out two production wells drilling aiming to maintain production plateau and expects to begin first production within early 2017. During the year, sales volume from the Vietnam 16-1 Project averaged 26,681 BPD of crude oil and 10 MMSCFD of natural gas (approximately 2,656 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.

The Project is in the process of reviewing development plans and negotiating the gas sales agreement as well as other commercial contracts.

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.

The Project is in the process of reviewing development plans and negotiating the gas sales agreement as well as other commercial contracts.

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 2016, the Project produced natural gas and condensates at average rates of 226 MMSCFD (equivalent to 39,478 BOED) and 1,085 BPD, respectively.

Sarawak SK410B Project

The Sarawak SK410B Project is located in offshore Sarawak, Malaysia. In July 2016, PTTEP Hong Kong Offshore Limited (PTTEP HKO) PTTEP's subsidiaries, signed the Product Sharing Contract (PSC) with a 42.5% interest in the Project and being an operator. Other joint partners are KUFPEC and Petronas Carigali with holding interest of 42.5% and 15%, respectively.

The Project is in the preparation of 3D seismic acquisition which plans to commence in the second quarter of 2017.

(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.

The Project successfully finished a drilling campaign. Currently, the Project's development plans are being prepared to be submitted to the Algerian government in early 2017.

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. Project successfully marked its first sales of crude oil in late 2015 at the capacity of 20,000 BPD. Production for the year 2016 averaged 15,463 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 2016, the Project made progress by achieving several key milestones including the receipt of the onshore LNG Engineering and Construction contract as well as the receipt of government approval for Resettlement Action Plan. The Project is currently in the process of finalizing the LNG off-take agreement, and negotiating for project finance with financial institutions.

(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. PTTEP AA 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. The Project began producing crude oil from the Montara Field in 2013. The Project produced crude oil at an average rate of 14,655 BPD during 2016.

Cash-Maple Field

The Company holds 100% interest in the Project. The Project received the approval from the Australian's government to extend "Retention Lease Period" for another five years (2017-2021). Discussions with neighboring operators are ongoing to create a joint-development plan.

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

(2.4) **Project Activity Highlights in North 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. In 2011, PTTEP Canada Limited (PTTEP CA), a subsidiary of the Company, acquired a 40% interest in the Canada Oil Sands KKD Project from Statoil Canada Limited (SCL), the operator of the Project holding the remaining 60% interest. The Project formerly comprised five areas, namely, Leismer, Corner, Thornbury, Hangingstone and South Leismer. In May 2014, PTTEP completed the asset swap transaction as stipulated in the Partnership Units Redemption Agreement (PURA) with Statoil Canada Limited (SCL) resulting in PTTEP CA having 100% ownership of the Thornbury, Hangingstone, and South Leismer fields, and receiving USD 426 million in cash.

The Project submitted the development proposal for Thornbury Phase 1 to the government of Alberta in May 2015. The Project is re-assessing the investment strategy going forward to reduce costs and to mitigate development risks in response to the low oil price environment.

Barreirinhas AP1 Project

The Barreirinhas AP1 Project is located in the Barreirinhas Basin, offshore to the northeast of Brazil. During April 2014, PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL, a subsidiary of PTTEP) farmed-in to the Barreirinhas AP1 Project to hold a 25% interest with BG Brasil as an operator. The Project comprises four exploration blocks called BAR-M-215, BAR-M-217, BAR-M-252 and BAR-M-254.

In the year 2016, 3D seismic acquisition for the area was completed, and petroleum potential is being evaluated.

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. During September 2014, PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL) acquired a 20% stake in the BM-ES-23 Project whose operator is Petrobras. The Project is currently studying the petroleum potential.

Projects Divestment and Relinquishment in 2016

Oman 44 Project

The Oman 44 Project is located onshore, to the west of Muscat, Oman. The Company owns 100% of the Project and is also the operator. Natural gas and condensate production began from the Shams fields in 2007.

In the year 2016, the Company divested PTTEP Oman Company Limited (PTTEP OM, a subsidiary of PTTEP) who hold 100% interest in Oman 44 Project to ARA Petroleum LLC.. Concurrently, the Company continues to explore for new investment opportunities in Oman as PTTEP has signed a Memorandum of Understanding (MOU) with a subsidiary of the national oil company of Oman.

Kenya L11A, L11B and L12 Project

The Kenya L11A, L11B and L12 Project is located offshore of Kenya. The Company holds a 10% interest in the blocks, with Anadarko as the operator. In November 2016, the Company received official approval from the Government of Kenya for the relinquishment of exploration block of the Kenya L11A, L11B and L12 Project.

L28/48 Project

The L28/48 Project is located in the Chaiyaphum and Khon Kaen provinces in north-eastern Thailand. The Company owns a 70% interest of the Project and is the operator. In 2015, the Project completed the abandonment of Ratana-1 and Ratana-2 wells and the site reclamation. In March 2016, the Project received official approval from DMF for the relinquishment of Block L28/48.

Indonesia South Mandar Project

The Indonesia South Mandar Project is located offshore in the Makassar Straits, in Indonesia. The Company owns 50.75% interest in the Project and is the operator. The exploration activities were carried out and discovered limited petroleum potential. In December 2016, the Project received official approval from the Government of Indonesia for the relinquishment of exploration block in the South Mandar Project.

Mozambique Rovuma Onshore Project

The Mozambique Rovuma Onshore Project is located onshore, in the north of Mozambique. The Company owns a 10% interest in the onshore concession area of the Rovuma Block, with Anadarko as the operator. The Project completed Kifaru-1 exploration well which found no commercial discovery. In March 2016, the Project received official approval from the Government of Mozambique for the relinquishment of exploration block in the Mozambique Rovuma Onshore Project.

1.4.2 Structuring Policy of PTTEP Group

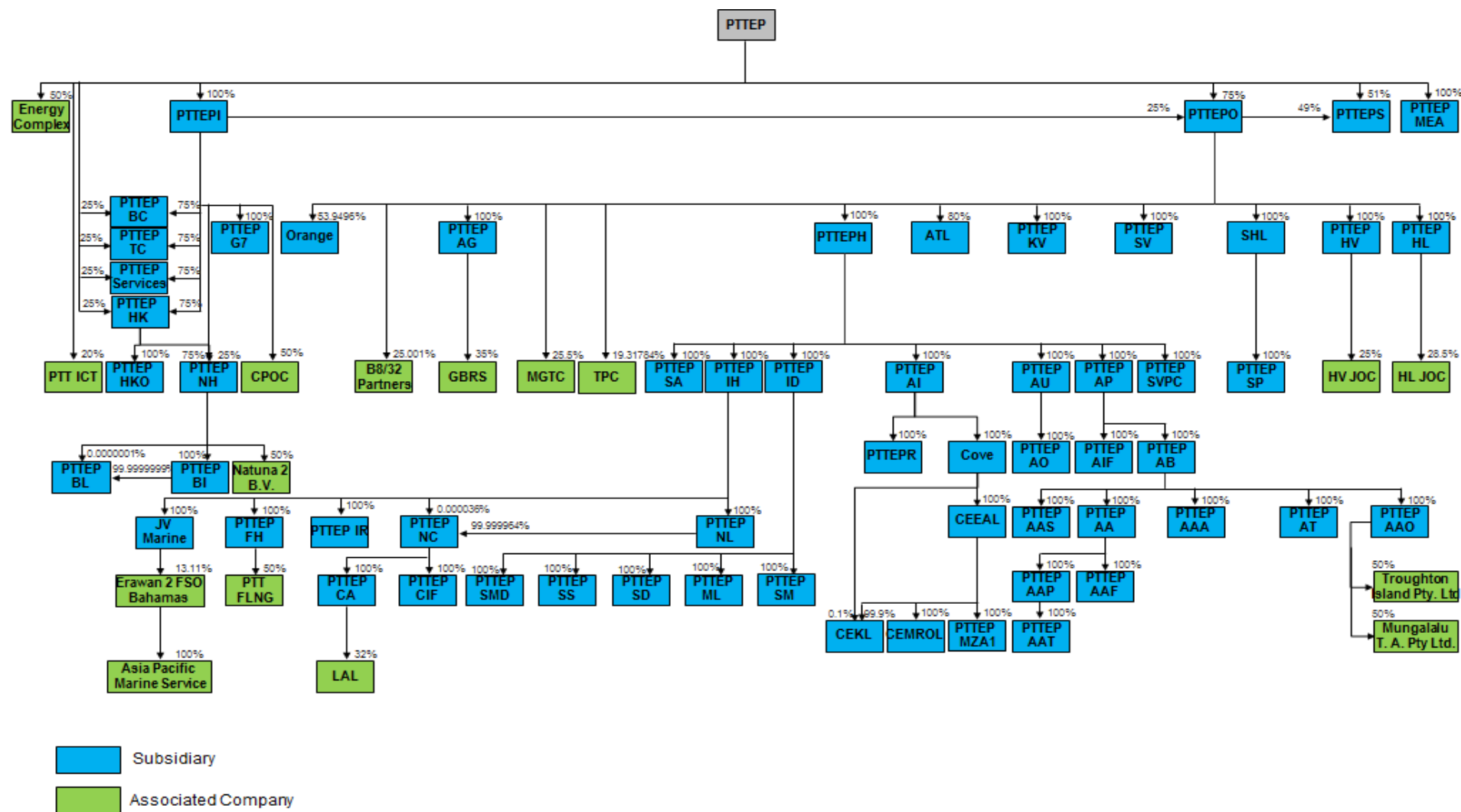
PTTEP has continuously expanded our E&P business both domestically and overseas. Due to the continuous expansion, establishing of subsidiaries and associated companies in various regions is necessary for the efficiency and competitive advantages of the Company comparable to other international oil companies as well as the operational flexibility resulted from several factors, such as laws and regulations, financial structure, tax regimes, business and investment conditions, and risk management.

The Company's policy is to manage our subsidiaries strictly in line with our business direction and strategy. Subsidiaries' operations are managed mainly by the Company's executives and employees who are in turn guided by our management and internal control systems. In managing our associated companies, our nominated representatives serve as a shareholder and/or a member of the Board of Directors accordingly to the terms of the investment in order to be able to effectively define the overall business strategy and policy of the companies. The Good Corporate Governance and Business Ethics of PTTEP Group meanwhile is strictly adhered to in order to ensure the effectiveness, transparency, fairness, and success towards the goals.

The Company usually assigns and places our executives in the subsidiaries and associated companies as directors to ensure that they are managed in line with the Company's business direction and strategy. The Company may also appoint a local director, if required by the laws and regulations or investment conditions of the specific countries. To provide operational flexibility for the subsidiaries and associated companies, the Company delegates sufficient authority to the executives as specified by the Corporate DAS (Delegation of Authority and Signatures) similarly to the practice of other leading E&P companies. 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.

1.4.3 Shareholding Structure of PTTEP Group

As of December 31, 2016, PTTEP invested in 75 legal entities, comprising 59 subsidiaries and 16 associated companies. Shareholding structure of the PTTEP Group is illustrated as follows:



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 capitals, 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 2016, 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.

2. 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 2014 – 2016 are presented here in US Dollar in order to reflect the Company's revenue structure.

The petroleum exploration and production projects in the production phase of PTTEP and our subsidiaries as at December 31, 2016 comprised 23 projects: the Bongkot, Contract 4, S1, Yadana, Yetagun, Contract 3, B8/32 & 9A, PTTEP1, E5, B6/27, Sinphuhorm, G4/43, Arthit, Vietnam 9-2, PTTEP Australasia, G4/48, MTJDA, Vietnam 16-1, L53/43 & L54/43, Natuna Sea A, Zawtika, L22/43 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 (TPC) and Andaman Transportation Limited (ATL).

Revenue structure of PTTEP and our subsidiaries during 2014-2016

Product	Operated by	% of interest	2014 (Restated)		2015		2016	
			Revenue (Million USD)	%	Revenue (Million USD)	%	Revenue (Million USD)	%
Sales								
Crude	PTTEP	-	263.67	3.36	141.37	2.51	115.46	2.66
	PTTEPI	100	65.49	0.83	40.18	0.71	36.30	0.83
	PTTEPS	100	676.00	8.61	367.76	6.54	290.41	6.68
	Orange	53.9496	182.64	2.32	87.69	1.56	75.49	1.74
	B8/32 Partners	25.0009	76.20	0.97	35.04	0.62	28.75	0.66
	PTTEP HV	100	50.42	0.64	22.34	0.40	17.34	0.40
	PTTEP AP	100	677.11	8.62	334.62	5.95	235.79	5.42
	PTTEP HL	100	339.73	4.32	162.18	2.88	114.77	2.64
	Natuna 2	50	3.04	0.04	2.05	0.04	1.54	0.04
	PTTEP AG	100	-	-	2.88	0.05	34.10	0.78
Natural Gas	PTTEP	-	2,209.84	28.13	1,899.45	33.78	1,560.28	35.89
	PTTEPI	100	1,019.95	12.98	1,218.06	21.66	856.73	19.71
	PTTEPS	100	59.33	0.76	45.42	0.81	36.34	0.84
	Orange	53.9496	34.82	0.44	28.66	0.51	31.84	0.73
	B8/32 Partners	25.0009	14.48	0.18	11.02	0.20	9.90	0.23
	PTTEP HV	100	1.77	0.02	1.54	0.03	1.36	0.03
	PTTEP OM*	100	14.29	0.18	-	-	-	-
	PTTEP HL	100	6.05	0.08	2.52	0.04	1.70	0.04
	Natuna 2	50	105.21	1.34	64.64	1.15	43.97	1.01
	PTTEP SP	100	192.68	2.45	211.27	3.76	177.99	4.09
LPG	PTTEP	-	7.14	0.09	9.33	0.17	9.48	0.22
	PTTEPS	100	21.41	0.27	27.99	0.50	28.44	0.65

Product	Operated by	% of interest	2014 (Restated)		2015		2016	
			Revenue (Million USD)	%	Revenue (Million USD)	%	Revenue (Million USD)	%
Condensate	PTTEP	-	997.90	12.70	480.31	8.54	401.05	9.22
	PTTEPI	100	92.92	1.18	48.08	0.85	43.02	0.99
	PTTEPS	100	2.23	0.03	1.32	0.02	1.07	0.02
	PTTEP OM*	100	71.11	0.91	-	-	-	-
	PTTEP SP	100	66.24	0.84	40.95	0.73	36.44	0.84
Diluted Bitumen**	PTTEP CA	100	67.52	0.86	-	-	-	-
Total Sales			7,319.19	93.17	5,286.67	94.01	4,189.56	96.36
<u>Revenue from Pipeline Transportation</u>								
Gas Pipeline Transportation	MGTC	25.5	75.05	0.96	53.16	0.95	28.20	0.65
	TPC	19.3178	41.59	0.53	19.80	0.35	9.30	0.21
	ATL	80	21.28	0.27	45.53	0.81	28.99	0.67
Total Revenue from Pipeline Transportation			137.92	1.76	118.49	2.11	66.49	1.53
<u>Other Income</u>								
Gain On Foreign Exchange			-	-	-	-	11.59	0.27
Interest Income			22.93	0.29	31.92	0.57	30.06	0.69
Gain On Financial Derivatives			197.02	2.51	132.16	2.35	-	-
Other Income			156.64	1.99	45.20	0.80	41.48	0.95
Total Other Income			376.59	4.79	209.28	3.72	83.13	1.91
Total Revenues			7,833.70	99.72	5,614.44	99.84	4,339.18	99.80
Share of Gain of Associates and Joint ventures			21.94	0.28	9.03	0.16	8.55	0.20
Grand Total after include Share of Gain of Associates and Joint ventures			7,855.64	100.00	5,623.47	100.00	4,347.73	100.00

*Revenue of PTTEP OM was represented in discontinued operations. The additional information is disclosed in Note 13 - Divestment of PTTEP Oman Company Limited and Discontinued Operations

**A mixture of bitumen and condensate or naphtha in order to create a product that is saleable, transportable, and refineable

For 2016, total revenues for PTTEP and our subsidiaries was 4,348 MMUSD (equivalent to 153,047 MMTHB), a decrease of 1,276 MMUSD or 23% when compared with the revenues in 2015 which was 5,624 MMUSD (equivalent to 192,219 MMTHB). The decrease was primarily due to a decrease in sales revenue of 1,097 MMUSD from a reduction in the average selling price to 35.91 USD/BOE (2015: 45.29 USD/BOE). In addition, sales volume decreased to 319,521 BOED (2015: 322,167 BOED). The decrease in the sales volume was mainly from the divestment of PTTEP Oman Company Limited (PTTEP OM), a subsidiary of PTTEP Group and holds 100% of participating interest of Oman 44 Project.

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 processes, 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 and 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 between the Republic of the Union of Myanmar and Thai borders.

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, and KrisEnergy G10 (Thailand) Ltd. 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 which are 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 which are 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 which are 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 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 response and employ new technologies and methods for continuity of the operation.

2.2.4 PTT ICT Solutions Company Limited (PTT ICT)

PTT ICT Solutions Company Limited, an affiliate of which 20% shares is owned by PTTEP, has signed an agreement with PTTEP to provide the Company with all information technology and communication services accordingly 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 for driving and increasing of synergy within the group. The 5-year renewal contract has been in effect since 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 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)

The concept that eventually became PTTEP Services was originated from PTTEP's Board Meeting No. 12/2546/216. The objective of the company is to supply manpower to support operational activities of PTTEP Group companies and to support PTTEP business expansion domestically and internationally where more capable manpower is necessarily required.

To fulfill these requirements, the company has recruited and hired staff to serve PTTEP since July 1, 2004. Since then, it has continuously developed and improved its compensation and benefits policies and practices to ensure that standardized welfare and benefits are provided.

To enhance staff's capability to effectively support PTTEP operations, PTTEP Services has provided training and development activities, focusing on compulsory Safety, Security, Health and Environment (SSHE) training and functional training guided by advices of the line management. In addition, the company has also provided basic skills training, such as soft skills training and computer skills training to support the staff in their day-to-day work.

2.3 Permission to Operate, Concession or Business Promotion

PTTEP operates petroleum exploration and production 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 Agreement, and Services Agreement. Within the Kingdom of Thailand, the Company must comply with the Petroleum Act B.E. 2514 which addresses details and procedures of, such as application process, process for awarding petroleum concessions, and period of production. The act also addresses various forms of benefits to be provided to the government who is the owner of petroleum resources. These are, such as royalty, petroleum income tax, and other benefits. Key points in the petroleum business operation are as follows.

(1) Issue of Concession Areas

The Department of Mineral Fuels, a department of the Ministry of Energy, delineates exploration blocks and invites oil companies to submit their applications for concessions. The Petroleum Committee meanwhile is responsible to consider the applications initially screened by its sub-committee. The Energy Minister with the approval from the Cabinet has the power to award and sign the concessions. The government, on the other hand, is the authority who considers the qualifications of each applicant, taking into account the proposed work program, adequacy of the investment funds to be brought in and used in the exploration activities, transfer of technology, employment of Thai nationals, and the utmost other benefits which the country can derive.

(2) Role of the Operator

A petroleum concession may be awarded to one concessionaire or a joint venture of two or more co-concessionaires. Since the petroleum exploration and production business is relatively high in risk, it is common for companies to form a joint venture in order to diversify the risks. In a joint venture, one company will be designated as the "operator" to conduct the exploration and production operations on behalf of its partner and commonly under the supervision of a management committee composed of representatives from all the related parties. Other companies which participate in the joint venture are called "non-operators". The operator sets the cash call on all of the partners to finance the project, while the non-operators through their representation in the management committee participate in technical and financial decisions. Generally, whether an oil company will become a project operator depends largely on its investment conditions, readiness, and business strategy in that particular project.

(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 petroleum concession or, if the concession is already awarded, "farm-in" to the existing petroleum concession.

After the oil company is awarded a concession area for exploration of 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. 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. Generally, once the commencement period as stated in the contract is reached, the buyer will be responsible for the petroleum produced immediately after the production. 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.

(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. Several major features of these laws are as follows.

(1) Applicant for a concession 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.

(2) Concessionaire, co-concessionaire(s), or joint-partner(s) must pay royalty which is normally in cash. The Minister may authorize a payment in kind of petroleum, but with a prior notice of at least not less than 6 months. The royalty can be used as credit against income tax (Thailand I) or deducted as expenses (Thailand III).

(3) Petroleum income tax may be prescribed at a rate not less than 50%, but not over than 60%, of the net interest from the petroleum business.

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

(5) Concessionaire has a right to obtain concessions for exploration blocks without any limitations regarding the number.

Thailand I for the petroleum concessions issued 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 issued by the Ministry of Industry³ from B.E. 2525 to B.E. 2532

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

Thailand IV for the petroleum concessions issued by the Ministry of Energy⁴ from B.E. 2550

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

Term	Thailand I	Thailand II	Thailand III	Thailand IV
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	progressive rate at sliding scale of 5-15%, deemed to be expenses which could be deducted in tax calculation

¹ Currently, the Ministry of Energy

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

³ Op. Cit., footnote 1

⁴ Petroleum Act B.E. 2514 as amended by No. 6 B.E. 2550 became effective on October 18, 2007.

Term	Thailand I	Thailand II	Thailand III	Thailand IV
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	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	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	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	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	not exceeding 4,000 sq. km. per exploration block, without limitation over number of exploration blocks

2.4 Market and Competition

PTTEP has invested in both domestic and overseas projects, including Indonesia, the Republic of the Union of Myanmar, Vietnam, the Sultanate of Oman, Algeria, Australia, Canada, the Republic of Mozambique and 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 2016, total sales by the Company and our subsidiaries averaged 319,521 BOED which was approximately the same as the previous year's. The total sales ratio of natural gas to liquid was 70%:30% by volume and 65%:35% by revenue, as shown below.

Product	Volume	Value (million USD)
Natural Gas	505,337 MMSCF or 81.05 MMBOE	2,729.65
Condensate	12.03 MMBBL	489.89
Crude Oil	23.06 MMBBL	949.95
LPG	96,731 metric tons or 0.80 MMBOE	37.92

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 at the price which is referenced to the ex-refinery prices announced 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 is sold and consumed in the Republic of the Union of Myanmar, with the excess volume sold in the regional spot markets. All the gas output from Yetagun Project is currently sold to PTT for the consumption in Thailand.

- Oman 44 Project in the Sultanate of Oman: The gas output is sold to the government of the Sultanate of Oman, whereas the condensate is sold to PTT for the consumption in Thailand.
- Vietnam 9-2 and Vietnam 16-1 projects in 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 Vietnam, for the consumption in 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 Vietnam.
- Algeria 433a & 416b Project in Algeria: The Bir Seba Field has been commenced the production with its first commercial sales of crude oil since December 2015. The crude oil is sold and marketed by PTT as the marketing agent in the spot markets.
- Montara Project in 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 an oligopolistic due to the business' relatively high investment and advanced technology required. The growing demand especially for natural gas and the GSAs which are predominantly long-term contract coupled with take-or-pay clauses however have continued to attract new investments to the market.

Regarding the approximate domestic production in 2016, PTTEP's petroleum production accounts for 31% of the total domestic production in 2016, making the Company the leader among the domestic producers.

Producers	% Domestic Production Volume
PTTEP	31
Chevron	26
Total	10
MOECO	7
Petronas	7
Shell	5
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 the 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 firm 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, 2016, the total amount of Proved Reserves of PTTEP Group's projects was 170 million stock-tank barrels (MMSTB) of crude oil and condensate⁵, and 3,371 billion standard cubic feet (BSCF) of natural gas or 525 million barrels of oil equivalent (MMBOE). The total amount of Proved Reserves in terms of oil equivalent in consolidation was therefore 695 MMBOE. Details of the Company's Proved Reserves are shown in the following table.

⁵ LPG included

PTT Exploration and Production Public Company Limited

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

As of December 31, 2016

	Crude Oil and Condensate ⁽²⁾			Natural Gas			Barrel of Oil Equivalent		
	(MMSTB)			(BSCF)			(MMBOE)		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
Proved Reserves as of Dec 31, 2015	108	72	180	2,021	1,570	3,591	440	298	738
1) Revision of previous estimates	18	1	19	292	(18)	274	65	(1)	64
2) Improved recovery	4	-	4	5	-	5	5	-	5
3) Extensions and discoveries	5	-	5	111	-	111	23	-	23
4) Purchases/Sales of petroleum in place	-	-	-	-	-	-	-	-	-
5) Production	(27)	(11)	(38)	(411)	(199)	(610)	(95)	(40)	(135)
Proved Reserves as of Dec 31, 2016	108	62	170	2,018	1,353	3,371	438	257	695

(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 2016, the total production of PTTEP Group was 135 MMBOE, consisting of 38 MMSTB of crude oil and condensate* and 610 BSCF or 97 MMBOE of natural gas. This was equivalent to a production rate of approximately 368,279 barrels of oil equivalent per day (BOED) which was approximately 5,609 BOED or 1.5% decrease from the previous year. The decrease was mainly due to temporary production facility shutdown for maintenance and natural production decline of PTTEP Australasia, Vietnam 16-1, and Yetagun projects. The reduction of the production however is compensated by an increase of the production from Algeria 433a & 416b Project.

2.5.4 Environmental Impact Mitigation and Management

Since 2016, an effective and standardized environmental management system of PTTEP has been developed 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

PTTEP conducts environmental impact assessment prior to commencing new exploration and production projects, which is legally required to ensure that the environmental mitigation and monitoring programs has 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 impacts 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 environmental impacts from 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 for conducting of environmental impact assessments 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 satisfy 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 14001:2004 Environmental Management System (EMS) Standard by PTTEP's domestic operational projects

According to the ISO14001 requirements, an environmental management system should be in compliance with the Company's policies and standards, national legislations, and other national and international standards/requirements to prevent environmental pollution and degradation, promote energy conservation, and ensure the improvement of the performance. 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 are implemented and up to the standards for domestic and international projects.

(4) Establishment of 2020 greenhouse gas emissions reduction target for domestic assets to be at 20% from base year 2012. Details of the Company's greenhouse gas emission are disclosed in the 2016 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.

(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 2016 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, and PTTEP 1 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. New technology regarding the discharge has also been studied.

(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 equipment, response plans, 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 2016, the Company's representatives participated in the 9th Thailand Oil Spill Response Exercise (TOREX-16) to familiarize with the incident command system.

(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 Implementation Results 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 2016, both LTIF and TRIR were better than the 2015 IOGP average and have been expected to be even lower in 2017.

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, and becoming a target-zero company.

Since 2014, the Company has strictly complied with both Thai and International legislation, and other regulations and requirements concerning the area of Safety, Security, Health and Environment (SSHE).

(1) The Company has been selected as a DJSI member of the Dow Jones Sustainability Index (DJSI) from since 2014. In 2016, PTTEP was also selected as an Industry Leader for Oil and Gas Upstream and Integrated activities.

(2) Since 2014, the Company has been rated by the Carbon Disclosure Project, a well-known organization which compiles and evaluates information regarding environmental governance, and shortlisted in the Carbon Disclosure Leader Index (CDLI) 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.

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

(4) The Company conducts 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 are also conducted and submitted periodically to local authorities and regulators as required.

(5) The Company strictly complies with waste management regulations required by the Department of Mineral Fuels and other regulatory bodies.

(6) The Company submits 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) The Company 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, Sinphuhorm, PTTEP Petroleum Development Support Bases, Arthit, and Bongkot (for both North & South fields). The Company also plans to expand coverage of the OHSAS to international assets meanwhile.

(8) The Company is constantly improving and developing our Environmental Management System Standard to comply with the revised edition of international standards ISO 14001 (ISO 14001:2004), being audited 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:

- Greater Bongkot North and Bongkot South fields of the Bongkot Project)
- Arthit Project
- S1 Project
- PTTEP 1 Project
- Sinphuhorm Project
- PTTEP Petroleum Development Support Base (Songkhla province and Ranong province) – 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 will implement the Environmental Management System Standard to be in line with the ISO 14001:2015 revision. Environmental performance will be continuously improved to ensure that our operations fully comply with regulations. The standard will also be applied at other international operating units of the Company to bring them in compliance with the ISO 14001 standard in the near future.

Regarding the spill which is one of the key performance indicators of environment management, during 2014 and 2016, the spills accounted for 1.45, 17.14 and 0.040 tonnes, respectively. Details of spill incident are disclosed in the 2016 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 2014, 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 Safety, Security, Occupational Health and Environment Management

PTTEP strives to ensure that our operations do not cause harm to people, communities and environment. In all of the operations, the Company strictly complies with all relevant SSHE legislation requirements. The Company also has in place SSHE Management System (SSHE MS) which stipulates that, for all activities, SSHE risks shall be identified, assessed, and managed to As Low As Reasonably Practicable (ALARP). PTTEP SSHE MS was developed based on legal requirements and international best practices from the International Association of Oil and Gas Producers (IOGP). SSHE trainings and SSHE publications are also published to consistently promote SSHE awareness within the Company.

PTTEP SSHE MS consists of the following seven key elements:

- (1) Leadership and commitment
- (2) Policy and strategic objectives
- (3) Organization, resources and documentation

- (4) Evaluation and risk management
- (5) Implementation and operational control
- (6) Monitoring and measurement
- (7) Audit and review

As part of the Step Change in SSHE, PTTEP Life Saving Program was also launched in 2012 to reinforce the compliance culture. The program comprises 18 safety icons, based on the IOGP study of E&P incidents that lead to fatalities and serious injuries. The Life Saving Program focuses on raising awareness of activities which are most likely to result in fatalities and also highlights simple actions which individuals can take to protect themselves and others. The program has also been continuously promoted to ensure that all staff and contractors are aware of its importance and motivated to make us become a target-zero organization. The Company has developed and promoted our SSHE culture accordingly to a specific roadmap, such as providing SSHE training to improve efficiency and effectiveness, improving and updating SSHE documentation, audit by third-party auditors, and conducting risk assessments prior to work. The Company has conducted SSHE Culture Surveys by using IOGP methodology as a reference since 2011 and going forward, while the results are analyzed for ongoing improvement in our SSHE Management System and Culture.

The Company places SSHE as a core value which is integrated into our business. We believe that all incidents are preventable, and are fully committed to being a zero-incident organization. The Company therefore adheres to safe operating standards to ensure operational and process safety, occupational health, security and environmental protection for the communities in which we operate to prevent personal injuries and accidents to meet one of the key objectives of our sustainable development.

In 2016, PTTEP's Safety Key Performance Indicators of Lost Time Injury Frequency Rate (LTIF) and Total Recordable Injury Rate (TRIR) were the best in the Company's history, while our TRIR was in the Top Quartile of IOGP's performance for the group of companies with less than 50 million worked hours. Based on our SSHE analysis, the key contribution came from a decline in accidents from land transportation, chemical and hydrocarbon spills, and equipment moving/lifting activities.

The Company has been audited by the Department of Mineral Fuels (DMF) annually to ensure safe operations and regulatory compliance. In 2016, the Company received 3 Excellence in Safety, Health and Environmental Management Awards for safety of the S1, Bongkot South, and Sinphuhorm projects from General Anantaporn Kanjanarat who is currently the Minister of Energy. The Company also conducted for the first time a Mass Casualty Exercise in the Gulf of Thailand with collaboration between the Royal Thai Navy, Bangkok Hospital Group, and Faculty of Medicine from the Prince of Songkla University to ensure readiness of each supporting unit to mitigate the consequences in case of a major accident.

3. Risk Factors

Due to the technical and operational complications of the petroleum exploration and production business, together with the high investment cost in project development, consideration of both internal and external risk factors associated with PTTEP's business is highly important.

3.1 Internal Risk Factors

3.1.1 New Investment Risks

In 2016, PTTEP continued to face the oil price crisis, and thus we revised our investment strategy to support sustainable growth as well as to reduce cost to increase the Company's competitiveness. By focusing on E&P opportunities in Southeast Asia, the region that we are familiar with and have operating experience, acquisition or farming in potential areas in Thailand, Myanmar and Indonesia is the short term target. For the medium term, we are considering increasing investment in Malaysia and Vietnam as well as low cost producing countries in the Middle East. Although our investments are mainly concentrated in this familiar region, risks and uncertainties still exist, e.g., the lack of clarity on decommissioning decree and profit splits in fiscal regimes, energy policy changes, political stability, and climate change.

In this regard, PTTEP has mitigated those risks which may have potentially impacted our operations and investment growth in various ways, including implementing careful due diligence process, securing proficient consultants, promoting understanding of petroleum exploration and production (E&P) business among stakeholders, proactively conducting public relations, coordinating, monitoring and providing opinions for appropriate decommissioning in terms of the technical aspect, regulatory requirements, economic feasibility as well as the study of environmental and social impact that could result from all related activities. In addition, PTTEP also regularly assessed and analyzed the influence of climate change and identified a "Low Carbon Footprint Reduction" roadmap, targets and action plans to manage impacts of those risks, such as a potential carbon tax in the countries where we operate, and the physical damage to our asset structures from the rise in global temperatures.

Investment in new countries or unfamiliar areas contains inherent risks. The Company therefore has instituted risk mitigation guidelines for the assessment of each investment. The guidelines provide consideration 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. All risks are then taken into account, from which prevention measures and options are formulated and integrated into the return-on-investment analysis or into the joint venture agreement.

Investment in new projects, including farm-in and farm-out joint ventures, mergers and acquisitions as well as withdrawals or divestment of a given project must be intensively screened by the Investment Committee and Management Committee whose responsibility are 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 endorsement prior to final approval from the Board of Directors.

3.1.2 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 and created company's revenues, and to add new reserves to support future production targets and the Company's future growth strategy.

The objective of 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).

To manage risks in exploration activities is hence associated with the chance of success of the exploration and appraisal drilling, and the size of petroleum resources, which are subject to the exploration period and expenditures. The criteria for exploration decisions are based on assessment of the chance of success or the geological risk assessment, resource estimation, assessment of the size of petroleum resource, expenditures during the exploration period, such as geological studies, seismic acquisition and interpretation, and drillings as well as exploration economic evaluation, considering all exploration and development expenditures and the government take in accordance with the conditions of the contract.

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 reflect and ensure it remains in line with changing of the environment, outcome of exploration activities, and agreement with corporate targets.

Moreover, PTTEP 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 before decision making.

3.1.3 Project Development Risks

Following the low oil price situation, PTTEP adjusted our development plans and reduced cost to enable continued operation. Development projects will contribute to the increase of reserves and production in the near future 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 the potential for project development delays and cost overruns, the Company has implemented the following risk mitigation measures to enable successful and timely project completion.

(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, budgets, and schedules for project completion, the Company focuses on developing our project team's skills which help the Company to better prepare for and protect ourselves from the increased competition in the employment market of those competitors with extensive skills and experience. 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 operations so that targets are achieved.

(3) Commercial contracts: To ensure maximum efficiency in order to minimize the risks associated with non-contractual compliance and disputes while working with our contractors, the Company focuses on contract drafting, terms and condition 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 damage that could potentially result from delays which could adversely affect a given project and the Company's performance at large.

3.1.4 Production Risks

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

Mitigation of production risks focuses on the areas of process planning and platform design, production control systems, and preventive maintenance. In addition, 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 of the Company's operation personnel.

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

3.1.5 Commercial Risks

PTTEP sells the majority of our main product, which is natural gas, to the Thai market. Therefore, the Company's revenue could drop if the domestic demand decreases from the projection. The Company has therefore expanded and invested more internationally, for instance, in oil projects such as Vietnam 9-2 Project, Vietnam 16-1 Project, PTTEP Australasia Project and Algeria 433a & 416b Project in order to diversify the risk of depending entirely on Thailand's natural gas demand.

PTTEP has entered into long-term gas sales agreements (GSAs) with PTT, which is the Company's major domestic buyer. The terms of these GSAs generally last 25-30 years. To mitigate market risks that 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 the Thailand energy market, PTTEP 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 in order to ensure that the development master plan is able to optimize reserves and resources of existing assets to match the country's energy demand. The Company has a project in Mozambique which possesses large natural gas reserves that can be developed as a Liquefied Natural Gas (LNG) project. This project is a good example of a project that fits in well with PTT's plan to import LNG as well as to contribute effectively to the enhancement of the energy security of Thailand.

3.1.6 Organization Capability Risks

The abilities of an organization are key factors on the path towards the efficient achievement of the company's targets, inevitably including human resources to support the company's growth and business process efficiency and effectiveness. Potential risks that may occur are the risk of a lack of expertise and knowledge to support growth, and the risk of business process inefficiency. PTTEP, regarding this in particular, 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 into line with the Company's growth strategy. Our Capability and Technology Development Roadmap has been created and research on technology has been supported to foster business growth. Three areas of focus have been targeted: to increase exploration success, to enhance more production, and to develop green practices.

(2) Systems, procedures, and organization structure are developed in accordance with PTTEP's growth strategy and business plan, for example, work process improvement towards matrix organization in order to maximize work efficiency, Delegation of Authority and Signatures (DAS) development and proper implementation, enhancement of IT Global Platform and system stability as well as confidentiality control. Development of our financial and accounting management capability is aimed at becoming World Class Finance level, which includes increasing the efficiency of our managerial accounting data analysis for decision making in M&A, establishment of a Shared Service Center, and In-house Financial Academy training.

(3) In order to prepare for future overseas investment, Human Resources Development plans for recruiting sufficient local members of staff in targeted countries, developing staff capabilities and leadership in response to requirements as well as enhancing employee engagement programs with a target of reaching Thailand's Top Quartile by 2020. In addition, Human Resource process improvement and PTTEP's Values and Culture embedding are also key foundation efforts for development and growth of the Company in the same direction as the PTT Group's goals.

3.1.7 Safety, Security, Health and Environmental Risks

PTTEP is continuously analyzing 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 that help to prevent major accident events and reduce the risks that would impact employees and assets to ensure operational effectiveness.

PTTPE has managed SSHE Risks utilizing our SSHE Management System to set SSHE Policy, Standards, Guidelines and Procedures for employees and contractors, so that they understand SSHE objectives and so that SSHE awareness is embedded in the Company culture by providing training to improve knowledge and performance, including training on safety culture, conducting risk management prior to starting work tasks to mitigate SSHE risk in operations, and in process and engineering to keep risks as low as reasonably practicable (ALARP)

PTTEP has monitored SSHE Risk Management via our Risk Management Committee in many levels with key risk indicators, for example, Total Recordable Injury Rate, follow up audit findings, close out status, natural disaster, security status and health infection in high risk countries to ensure all situations are being monitored to determine mitigation plans for improvement, correction, prevention and readiness to create social and business sustainability.

3.1.8 Financial Risks

Financial risks mainly consist of counterparty risks, 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.

Regarding 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 External Risks Factors

3.2.1 Political Risk in Investment Countries

In accordance with PTTEP's foreign investment policy to secure resources to meet the expanding domestic energy market and ensure long-term sustainable growth, the Company has necessarily maintained our growth strategy of expanding business in countries that have been experiencing geopolitical risks. Given these circumstances, the Company has, therefore, appointed a geopolitical risk team to monitor all these factors and periodically analyze as well as report on the development of these forms of risk. PTTEP has analyzed and evaluated a number of geopolitical risk factors, including political stability, macro-economics, legal and regulatory, and security risks across a range of investment countries and has found that the high risk areas remain in Africa and the Middle East, mainly as a result of political and economic instability. Comprehensive assessment of these risks are immediately conducted, and response promptly from the Company, especially when significant incidents happen, would immediately be made. The Company, in such cases, has a process of evaluating risks in various scenarios that assists our management and relevant departments in efficiently mitigating risks that are related to the countries in which we invest.

Analysis is also conducted to formulate geopolitical risk 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 their respective national energy policies.

3.2.2 Compliance Risk

Generally, these risks can result from a variety of factors, e.g., complexity of articles of a specific law, continual changes to laws and regulations, incorrect interpretation of a law, or even nuances of the foreign language in which the law is written. The risks can potentially lead to incorrect compliance with a law, ultimately causing a violation of or non-compliance with applicable laws which in effect may lead to pecuniary punishments, e.g., fines, operational difficulties such as potential revocation and 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 that relates to government official bribery. PTTEP recognized the importance and impact of the latest amendment to the Act and therefore included an anti-corruption risk into our Corporate Risk Profile to closely monitor as well as improve internal control measures, so that they would effectively prevent all possible forms of corruption. This internal control improvement and the monitoring program continued in 2016. Details are disclosed in the "Corporate Governance" section, "Anti-Corruption" part.

3.2.3 Price Risks

PTTEP Group's product prices vary from those of world oil prices, which are subject to multiple factors beyond our control, for instance, market demand and supply, political and economic stability of various countries, OPEC's production policy, and oil reserves in each country and the seasonal changes of the global climate.

Fluctuations in world oil prices immediately affect the prices of PTTEP Group's crude oil and condensate. While natural gas prices tend to also follow oil prices, the built-in natural gas pricing mechanisms in the Gas Sale Agreement (GSA) typically cushion natural gas prices from oil prices volatility (Natural Hedge). 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. The natural gas price will move correspondingly to a certain degree compared to the prices of crude oil and condensate.

In 2016, the overall oil market situation had been weakened from the oversupply situation. January saw the lowest Dubai price at 23 USD/BBL. However, there were supporting factors, such as the OPEC and non-OPEC attempts to freeze and cut production, Canadian wildfires, unrest in Nigeria and Libya, and declining production in the U.S., which eventually elevated the Dubai yearly average price to approximately 41 USD/BBL. PTTEP Group regularly analyzes the impact of oil price to the Company's revenues and profits in order to establish our annual oil price risk management program which will be proposed to the Risk Management Committee and the Board of Directors for consideration before implementation.

As of December 31, 2016, PTTEP Group has implemented an oil price hedging program for the volume of 9.1 million barrels for the year 2017 and achieved the objectives in accordance with risk management framework.

3.2.4 Exchange Rate Risks

PTTEP Group uses the U.S. Dollar (USD) as the functional currency in accordance with 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 customer that is 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 the Company's cash flows. Under this circumstance, the Company has minimized the foreign exchange risk by using available financial derivative instruments in the market, such as forward or 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 the 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, the Company has 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 in order to reduce the impact from the exchange rate volatility by converting both interest and principal payments to USD.

In addition, PTTEP Group's operating performance is affected by the USD/CAD (Canadian Dollar) volatility as PTTEP Canada Limited (PTTEP CA), a Canadian subsidiary who operates the Mariana Oil Sands Project in Canada, uses CAD as its functional currency while most of its debts are denominated in USD. This consequently causes an unrealized gain or loss from translating PTTEP CA's liabilities from CAD to USD whenever USD/CAD changes. The Company in this case has managed the translation risks in PTTEP CA by entering cross currency swaps to change USD-denominated debts to CAD-denominated debts, securing new loans in CAD, while undertaking several other actions as deemed appropriate correspondingly to nature of the business, the market conditions, and the Company's acceptable cost and risk limits.

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 this 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 risk limits that are acceptable to the Company.

3.2.6 Risk Arising from Disruptive Technology that Adversely Impacts Oil and Gas Industry

Technological advancement and renewable energy are playing an increasingly crucial role in energy industry, for example, a more reliable and efficient energy storage, a battery-powered car (Electric Vehicle) as well as the cost of renewables and EV business which have been driven down exponentially over the years. As such, the oil demand could be reduced so significantly that the end of oil era is imminent by 2030.

In this regard, PTTEP has formulated several mitigation plans to manage the risk by, for instance, setting up New Generation Exploration Team (NExT) to study new diversified businesses that are aligned with the corporate strategy (RENEW strategy), focusing on gas projects acquisition with committed market in short-term and gas potential exploration projects in long-term, and expanding the investment opportunity in Midstream (Liquefaction, Trading, Shipping) through the joint cooperation with PTT in LNG Value Chain.

4. 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, 2016, 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
L28/48 ²	-
PTTEP1	100
G9/43	100
L22/43	100
Myanmar M3	80

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

² On March 11, 2016, PTTEP International Limited (PTTEPI), an operator of the exploration Block L28/48 received the official approval letter of the return of the concession block L28/48 from the Department of Mineral Fuels after the fulfilment of the concession requirements.

Myanmar M11	100
Zawtika	80
L53/43 & L54/43	100
<u>PTTEPO's joint venture</u>	<u>Company's interest (%)</u>
B8/32 & 9A ³	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 OM's joint venture</u>	<u>Company's interest (%)</u>
Oman 44 ⁴	-
<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 ⁵	60
S1	75
<u>PTTEP SM's joint venture</u>	<u>Company's interest (%)</u>
Indonesia Semai II ⁶	28.33
<u>PTTEP SA's joint venture</u>	<u>Company's interest (%)</u>
Myanmar PSC G & EP 2	70
Myanmar MD-7	100

³ PTTEP Offshore Investment Company Limited (PTTEPO) has shareholding in Orange Energy Limited and B8/32 Partners Limited, which hold the project's concession.

⁴ During the year 2016, the Group had divested PTTEP Oman Company Limited (PTTEP OM). The additional information is disclosed in Note 13 – Divestment of PTTEP Oman Company Limited and Discontinued Operations.

⁵ On December 22, 2016, another joint operation partner of the B6/27 Project, in which PTTEP Siam Limited (PTTEPS) was an operator, had terminated its 40% participating interests which was effective on January 1, 2015 based on Joint Operating Agreement. The termination is under the process of submitting the documents to the Department of Mineral Fuels for approval.

⁶ On November 7, 2014, PTTEP Semai II Limited (PTTEP SM) and its joint operation partners had submitted a request to terminate and return the exploration block of Indonesia Semai II 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.

Myanmar MD-8 ⁷	-
Myanmar MOGE 3	75
<u>PTTEP SMD's joint venture</u>	<u>Company's interest (%)</u>
Indonesia South Mandar ⁸	-
<u>PTTEP ML's joint venture</u>	<u>Company's interest (%)</u>
Indonesia Malunda ⁹	100
<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 ¹⁰	100
● AC/RL10	90
● AC/RL4 (Tenacious)	100
● AC/RL6 (Audacious), AC/RL6 (exclusive of Audacious) ¹¹	100
● AC/RL4(exclusive of Tenacious), AC/RL5	100
● WA-396-P and WA-397-P ¹²	-
<u>Cove Energy Group</u>	<u>Company's interest (%)</u>
Mozambique Rovuma Offshore Area 1	8.5
Mozambique Rovuma Onshore ¹³	-

⁷ On April 22, 2016, PTTEP South Asia Limited (PTTEP SA) had submitted a request to terminate and return the 100% participating interests in the exploration block of Myanmar MD-8 Project to the Government of Republic of the Union of Myanmar which was effective on May 15, 2016.

⁸ On December 23, 2016, PTTEP South Mandar Limited (PTTEP SMD) received the official approval from the Government of Republic of Indonesia to terminate its 50.7463% of Indonesia South Mandar Project.

⁹ 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.

¹⁰ On June 10, 2016, PTTEP Australasia (Ashmore Cartier) Pty Limited (PTTEP AAA) received the official approval from the Government of Commonwealth of Australia for the transfer of the participating interests in the exploration Block AC/L1, AC/L2 and AC/L3 from the other joint operation partner. As a result, its participating interests increased from 89.6875% to 100%.

¹¹ On August 16, 2016, PTTEP Australia Timor Sea Pty Limited (PTTEP AT) received the official approval from the Government of Commonwealth of Australia for the transfer of the participating interests in the exploration Block AC/RL6 from the other joint operation partner. As a result, its participating interests increased from 50% to 100%.

¹² On April 11, 2016, PTTEP Australasia (Ashmore Cartier) Pty Limited (PTTEP AAA) received the official approval from the Government of Commonwealth of Australia to terminate the 20% participating interests in the exploration block of WA-396-P and WA-397-P.

¹³ On March 16, 2016, Cove Energy Mozambique Rovuma Onshore Limited (CEMROL) received the official approval from the Government of Republic of Mozambique to terminate and return the exploration block of Mozambique Rovuma Onshore Project.

Kenya L11A, L11B & L12 ¹⁴	-
<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 ¹⁵	42.5

As at December 31, 2016, details of properties' net book value are as follows:

Unit: Million USD

Details of properties	Historical cost	Accumulated depreciation	Allowance for impairment of assets	Net book value
Oil and Gas Properties	25,136.51	(16,120.99)	(1,222.87)	7,792.65
Exploration and Evaluation Assets	4,717.12	-	(1,165.86)	3,551.26
Goodwill	1,134.08	-	(119.70)	1,014.38
Pipeline and Others	1,167.06	(328.55)	(5.25)	833.26
Total	32,154.77	(16,449.54)	(2,513.68)	3,191.55

¹⁴ On November 18, 2016, Cove Energy Kenya Limited (CEKL) received the official approval from the Government of Kenya to terminate the 10% participating interests in the Kenya L11A, L11B and L12 Projects.

¹⁵ On July 21, 2016, PTTEP HK Offshore Limited (PTTEP HKO) had entered into the Production Sharing Contract to obtain the exploration and production rights of Block Sarawak SK410B located in Malaysia. PTTEP HKO holds 42.5% participating interests and is the operator of this project.

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)	
			2016	2015
<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)	Cayman Islands	Petroleum	100	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) ¹	Thailand	Petroleum	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 Oman Company Limited (PTTEP OM) ⁴	Cayman Islands	Petroleum	-	100
PTTEP Algeria Company Limited (PTTEP AG)	Cayman Islands	Petroleum	100	100
PTTEP Iran Company Limited (PTTEP IR) ⁵	Cayman Islands	Petroleum	-	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 Limited (PTTEP AU)	Commonwealth of Australia	Petroleum	100	100

¹ On December 27, 2016, the Group had established PTTEP Business Center Company Limited (PTTEP BC). The information is disclosed in Note 17.6 - 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.

⁴ The information is disclosed in Note 13 – Divestment of PTTEP Oman Company Limited and Discontinued Operations.

⁵ On September 30, 2016, PTTEP Iran Company Limited (PTTEP IR) had received the approval of dissolution of the company from the registrar, as disclosed in Note 17.6 – Significant Transactions during the Year.

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2016	2015
<u>Subsidiaries (continued)</u>				
PTTEP Australia Offshore Pty Limited (PTTEP AO)	Commonwealth of Australia	Petroleum	100	100
PTTEP South Asia Limited (PTTEP SA)	Cayman Islands	Petroleum	100	100
PTTEP New Zealand Limited (PTTEP NZ) ⁶	Cayman Islands	Petroleum	-	100
PTTEP Semai II Limited (PTTEP SM)	Cayman Islands	Petroleum	100	100
PTTEP Australia Perth Pty Limited (PTTEP AP)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australia Browse Basin Pty Limited (PTTEP AB)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australia International Finance Pty Limited (PTTEP AIF) ⁷	Commonwealth of Australia	Investment funding for the Group's business	100	100
PTTEP Australasia Pty Limited (PTTEP AA) ⁷	Commonwealth of Australia	Petroleum	100	100
PTTEP Australia Timor Sea Pty Limited (PTTEP AT)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Finance) Pty Limited (PTTEP AAF) ⁷	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Petroleum) Pty Limited (PTTEP AAP) ⁷	Commonwealth of Australia	Petroleum	100	100
Tullian Pty Limited (PTTEP AAT) ⁷	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Operations) Pty Limited (PTTEP AAO)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Ashmore Cartier) Pty Limited (PTTEP AAA)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Staff) Pty Limited (PTTEP AAS)	Commonwealth of Australia	Petroleum	100	100
PTTEP International Holding Company Limited (PTTEP IH)	Cayman Islands	Petroleum	100	100

⁶ On June 30, 2016, PTTEP New Zealand Limited (PTTEP NZ) had received the approval of dissolution of the company from the registrar, as disclosed in Note 17.6 – Significant Transactions during the Year.

⁷ On December 19, 2016, the companies in the Group of PTTEP Australia Perth Pty Limited (PTTEP AP) have submitted document for liquidation to the registrar. The information is disclosed in Note 17.6 – Significant Transactions during the Year.

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2016	2015
<u>Subsidiaries (continued)</u>				
PTTEP Southwest Vietnam Pipeline Company Limited (PTTEP SVPC)	Cayman Islands	Gas pipeline transportation	100	100
PTTEP FLNG Holding Company Limited (PTTEP FH)	Hong Kong	Petroleum	100	100
JV Shore Base Limited (JV Shore Base) ⁸	Cayman Islands	Petroleum	-	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 Limted (PTTEP ML)	Cayman Islands	Petroleum	100	100
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)	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 Mozambique Terra Limitada (CMTL) ⁹	Mozambique	Petroleum	-	100
Cove Mozambique Energia Limitada (CMEL) ¹⁰	Mozambique	Petroleum	-	100
Cove Energy Kenya Limited (CEKL)	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

⁸ On June 30, 2016, JV Shore Base Limited (JV Shore Base) had received the approval of dissolution of the company from the registrar, as disclosed in Note 17.6 – Significant Transactions during the Year.

⁹ On June 6, 2016, Cove Mozambique Terra Limitada (CMTL) had received the approval of dissolution of the company from the Government of Republic of Mozambique, as disclosed in Note 17.6 – Significant Transactions during the Year.

¹⁰ On June 6, 2016, Cove Mozambique Energia Limitada (CMEL) had received the approval of dissolution of the company from the Government of Republic of Mozambique, as disclosed in Note 17.6 – Significant Transactions during the Year.

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2016	2015
<u>Subsidiaries (continued)</u>				
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) ¹¹	Hong Kong	Petroleum	100	100
<u>Associated Companies</u>				
Energy Complex Company Limited (EnCo)	Thailand	Property rental services	50	50
PTT ICT Solutions Company Limited (PTT ICT)	Thailand	Information technology and communication services	20	20
PTTEP AP Group's Associates ¹²	Commonwealth of Australia	Air base	50	50
UAQ Petroleum Limited (UAQ) ¹³	Hong Kong	Petroleum	-	30
<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)	Algeria	Petroleum	35	35

¹¹ PTTEP HK Investment Limited (PTTEP HKI) has changed its name to PTTEP HK Offshore Limited (PTTEP HKO), as disclosed in Note 17.6 – Significant Transactions during the Year.

¹² PTTEP AP's group associates are Mungalalu Truscott Airbase Pty Ltd. and Troughton Island Pty Ltd.

¹³ On October 9, 2016, PTTEP FLNG Holding Company Limited (PTTEP FH) has withdrawn its investment in UAQ Petroleum Limited (UAQ), which has a joint partnership in the Block Umm Al-Quwain. The information is disclosed in Note 17.6 - Significant Transactions during the Year.

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2016	2015
<u>Joint Operations (continued)</u>				
Andaman Transportation Limited (ATL)	Cayman Islands	Gas pipeline transportation	80	80
Natuna 2 B.V. (Natuna 2)	Netherlands	Petroleum	50	50
<u>Joint Ventures</u>				
PTT FLNG Limited (PTT FLNG) ¹⁴	Hong Kong	Produce and sale of petroleum product	50	50
Erawan 2 FSO Bahamas Limited (Erawan 2) ¹⁵	Bahamas	FSO rental services	13.11	13.11

4.2 Net Book Value

As at December 31, 2016, PTTEP's net book value amounted to 11,386 MMUSD (equivalent to 407,984 MMTHB) or USD 2.87 per share (equivalent to THB 102.77 per share).

¹⁴ On December 26, 2014, the Board of Directors of PTT FLNG Limited (PTT FLNG) approved the dissolution of this company. It is currently in the process of the dissolution.

¹⁵ Erawan 2 has a 100% shareholding in Asia Pacific Marine Services (EF) B.V.

5. Legal Dispute

- None -

6. 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, 2016

6.2 Subsidiaries' Information

As of December 31, 2016, there were 59 subsidiaries. All of them had the same contact address, telephone and facsimile as those of PTTEP (see Item 6.1). Details of the directors designated by PTTEP Group for each subsidiary are disclosed in Attachment 2.

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
Petroleum Exploration and Production Business						
1.	PTTEP International Limited	PTTEPI	2,000,000,000	THB 10	Ordinary Share	PTTEP 100%
2.	PTTEP Siam Limited	PTTEPS	1,000,000	THB 100	Ordinary Share	PTTEP 51% PTTEPO 49%
3.	Orange Energy Limited	Orange	1,000,000	THB 100	Ordinary Share	PTTEPO 53.95% MOECO B.V. 36.05% KrisEnergy 10%
4.	PTTEP G7 Limited	PTTEP G7	6,413,741	THB 100	Ordinary Share	PTTEPI 100%
5.	JV Marine Limited	JV Marine	50,000	USD 1	Ordinary Share	PTTEP IH 100%
6.	PTTEP Algeria Company Limited	PTTEP AG	50,000	USD 1	Ordinary Share	PTTEPO 100%
7.	PTTEP Africa Investment Limited	PTTEP AI	50,000	USD 1	Ordinary Share	PTTEPH 100%
8.	PTTEP Holding Company Limited	PTTEPH	50,000	USD 1	Ordinary Share	PTTEPO 100%
9.	PTTEP Hoang-Long Company Limited	PTTEP HL	50,000	USD 1	Ordinary Share	PTTEPO 100%
10.	PTTEP Hoan-Vu Company Limited	PTTEP HV	50,000	USD 1	Ordinary Share	PTTEPO 100%
11.	PTTEP Indonesia Company Limited	PTTEP ID	50,000	USD 1	Ordinary Share	PTTEPH 100%
12.	PTTEP International Holding Company Limited	PTTEP IH	50,000	USD 1	Ordinary Share	PTTEPH 100%
13.	PTTEP Iran Company Limited	PTTEP IR	50,000	USD 1	Ordinary Share	PTTEP IH 100%
14.	PTTEP Kim Long Vietnam Company Limited	PTTEP KV	50,000	USD 1	Ordinary Share	PTTEPO 100%
15.	PTTEP Malunda Limited	PTTEP ML	50,000	USD 1	Ordinary Share	PTTEP ID 100%
16.	PTTEP South Asia Limited	PTTEP SA	50,000	USD 1	Ordinary Share	PTTEPH 100%
17.	PTTEP Netherland Holding Limited	PTTEP NL	50,000	USD 1	Ordinary Share	PTTEP IH 100%

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
18.	PTTEP Offshore Investment Company Limited	PTTEPO	6,667	USD 1	Ordinary Share	PTTEP 75% PTTEPI 25%
19.	PTTEP Rommana Company Limited	PTTEPR	50,000	USD 1	Ordinary Share	PTTEP AI 100%
20.	PTTEP Sadang Limited	PTTEP SD	50,000	USD 1	Ordinary Share	PTTEP ID 100%
21.	PTTEP Semai II Limited	PTTEP SM	50,000	USD 1	Ordinary Share	PTTEP ID 100%
22.	PTTEP South Mandar Limited	PTTEP SMD	50,000	USD 1	Ordinary Share	PTTEP ID 100%
23.	PTTEP South Sageri Limited	PTTEP SS	50,000	USD 1	Ordinary Share	PTTEP ID 100%
24.	PTTEP Southwest Vietnam Company Limited	PTTEP SV	50,000	USD 1	Ordinary Share	PTTEPO 100%
25.	PTTEP MEA Limited	PTTEP MEA	50,000	USD 1	Ordinary Share	PTTEP 100%
26.	Sinphuhorm Holdings Limited	SHL	50,000	USD 0.01	Ordinary Share	PTTEPO 100%
27.	PTTEP Australia Pty Ltd	PTTEP AU	50,000	AUD 1	Ordinary Share	PTTEPH 100%
28.	PTTEP Australia Offshore Pty Ltd	PTTEP AO	50,000	AUD 1	Ordinary Share	PTTEP AU 100%
29.	PTTEP Australia Perth Pty Ltd	PTTEP AP	50,000	AUD 1	Ordinary Share	PTTEPH 100%
30.	PTTEP Australia Browse Basin Pty Ltd	PTTEP AB	50,000	AUD 1	Ordinary Share	PTTEP AP 100%
31.	PTTEP Australasia (Staff) Pty Ltd	PTTEP AAS	10	AUD 1	Ordinary Share	PTTEP AB 100%
32.	PTTEP Australasia Pty Ltd	PTTEP AA	409,895,440	various price ¹ (average AUD 0.4895)	Ordinary Share	PTTEP AB 100%
			40,000,000	AUD 0.4957	Preference Share	
			1,575,000	AUD 0.4895	Class B Share ²	
33.	PTTEP Australasia (Petroleum) Pty Ltd	PTTEP AAP	10	AUD 1	Ordinary Share	PTTEP AA 100%
34.	Tullian Pty Ltd	PTTEP AAT	1	AUD 1	Ordinary Share	PTTEP AAP 100%
35.	PTTEP Australasia (Finance) Pty Ltd	PTTEP AAF	1	AUD 1	Ordinary Share	PTTEP AA 100%

¹ Total amount equals to AUD 200,631,256.48 plus by AUD 19,826,452.31 for the preference shares and AUD 770,914.25 for the Class B shares or AUD 221,288,623.04 in total.

² A type of shares issued to employees under an Employee Share Option Plan, which was subsequently acquired by PTTEP AB.

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
36.	PTTEP Australasia (Ashmore Cartier) Pty Ltd	PTTEP AAA	1,700,000	AUD 2	Ordinary Share	PTTEP AB 100%
37.	PTTEP Australasia (Operations) Pty Ltd	PTTEP AAO	106,686,517	AUD 0.20	Ordinary Share	PTTEP AB 100%
38.	PTTEP Australia Timor Sea Pty Ltd	PTTEP AT	50	No Par Value (average AUD 827,048.78) ³	Ordinary Share	PTTEP AB 100%
39.	PTTEP Netherlands Coöperatie U.A.	PTTEP NC	- ⁴	-	-	PTTEP IH 0.000036% PTTEP NL 99.999964%
40.	PTTEP Netherlands Holding Coöperatie U.A.	PTTEP NH	- ⁵	-	-	PTTEP HK 75% PTTEPI 25%
41.	PTTEP Brazil Investment B.V.	PTTEP BI	324,423,816.34	USD 1	Ordinary Share	PTTEP NH 100%
42.	PTTEP Canada Limited	PTTEP CA	2,477,810,872.84	CAD 1	Ordinary Share	PTTEP NC 100%
43.	PTTEP FLNG Holding Company Limited	PTTEP FH	10,000	HKD 1	Ordinary Share	PTTEP IH 100%
44.	PTTEP HK Holding Limited	PTTEP HK	10,000	HKD 1	Ordinary Share	PTTEP 25% PTTEPI 75%
45.	Cove Energy Limited	COVE	5,089,129.47	GBP 1	Ordinary Share	PTTEP AI 100%
46.	Cove Energy East Africa Limited	CEEAL	1,000	EUR 1	Ordinary Share	COVE 100%
47.	Cove Energy Mozambique Rovuma Onshore Limited	CEMROL	1,000	EUR 1	Ordinary Share	CEEAL 100%
48.	PTTEP Mozambique Area 1 Limited	PTTEP MZA1	1,000	EUR 1	Ordinary Share	CEEAL 100%
49.	Cove Energy Kenya Limited	CEKL	1,000	KES 100	Ordinary Share	CEEAL 99.9% COVE 0.1%
50.	PTTEP Brasil Investimentos Em Exploração e Produção de Petróleo e Gás Ltda.	PTTEP BL	790,293,700	BRL 1	Ordinary Share	PTTEP BI 99.9999999% PTTEP NH 0.0000001%

³ PTTEP AB acquired PTTEP AT's 50 shares for a total amount of AUD 41,352,439.

⁴ PTTEP NC had total amount of Member Contribution of USD 2,151,049,500.00 from 2010 to 2016.

⁵ PTTEP NH had total amount of Member Contribution of USD 324,423,816.77 from 2013 to 2014 (no member contribution in 2016).

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
51.	PTTEP SP Limited	PTTEP SP	2	GBP 1	Ordinary Share	SHL 100%
			95,279,585	USD 1	Ordinary Share	
52.	PTTEP HK Offshore Limited ⁶	PTTEP HKO	61,921,550.39	HKD 1	Ordinary Share	PTTEP HK 100%
Service Business						
53.	PTTEP Services Limited (Personnel Services Support)	PTTEP Services	100,000	THB 10	Ordinary Share	PTTEP 25%
						PTTEPI 75%
54.	Andaman Transportation Limited (Investments in gas pipeline projects in Myanmar)	ATL	62,500	USD 1	Ordinary Share	PTTEPO 80%
						MOGE 20%
55.	PTTEP Southwest Vietnam Pipeline Company Limited (Investments in gas pipeline projects in Vietnam)	PTTEP SVPC	50,000	USD 1	Ordinary Share	PTTEPH 100%
56.	PTTEP Australia International Finance Pty Ltd (Raise Fund for PTTEP Business)	PTTEP AIF	50,000	AUD 1	Ordinary Share	PTTEP AP 100%
57.	PTTEP Canada International Finance Limited (Raise Fund for PTTEP Business)	PTTEP CIF	50,000	CAD 1	Ordinary Share	PTTEP NC 100%
58.	PTTEP Treasury Center Company Limited (Treasury Center for PTTEP and subsidiaries)	PTTEP TC	1,000,000	THB 10	Ordinary Share	PTTEP 25%
						PTTEPI 75%
59.	PTTEP Business Center Company Limited (Business Center for PTTEP and subsidiaries)	PTTEP BC	500,000	THB 10	Ordinary Share	PTTEP 25%
						PTTEPI 75%

Remark: Name of other shareholders in subsidiaries

Abbreviation	Name
KrisEnergy	KrisEnergy (Gulf of Thailand) Ltd.
MOGE	Myanmar Oil and Gas Enterprise
MOECO B.V.	MOECO International B.V.

⁶ Formerly known as PTTEP HK Investment Limited

6.3 Associated Companies' Information (including those in which the Company invests for more than 10% and not exceeding 50%)

As of December 31, 2016, PTTEP had 16 associated companies. Details of the directors designated by PTTEP Group for each associated company are disclosed in Attachment 2.

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
1	Energy Complex Company Limited	Property Leasing	EnCo	180,000,000	THB 10	Ordinary Share	<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						
	Telephone: 66 (0) 2140-1000						
	Facsimile: 66 (0) 2 140-1122						
2	PTT ICT Solutions Company Limited	Information Technology and Communication Services	PTT ICT	15,000,000	THB 10	Ordinary Share	<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						
	Telephone: 66 (0) 2537- 3456						
	Facsimile: 66 (0) 2537- 2935						
3	Carigali-PTTEPI Operating Company Sdn Bhd	Petroleum Exploration and Production	CPOC	350,000	MYR 1	Ordinary Share	<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						

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
4	Moattama Gas Transportation Company	Gas Pipeline in Myanmar	MGTC	1,000,000	USD 0.03	Ordinary Share	<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: (951) 650-977, 660-466						
	Facsimile: (951) 650-478, 650-479						
5	Taninthayi Pipeline Company LLC	Gas Pipeline in Myanmar	TPC	100,000	USD 1	Ordinary Share	<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: (951) 526-411-4						
	Facsimile: (951) 525-698						
6	B8/32 Partners Limited	Petroleum Exploration and Production	B8/32 Partners	110,000	THB 100	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 3rd Building, 5 th Floor, Ratchadaphisek Road, Chatuchak, Bangkok, 10900						
	Telephone: 66 (0) 2545-5555						
	Facsimile: -						
7	Hoang Long Joint Operating Company	Petroleum Exploration and Production	HL JOC	- ⁷	-	-	<ul style="list-style-type: none"> ● PTTEP HL 28.50% ● 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						

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	Par Value	Share Type	Shareholders
8	Hoan-Vu Joint Operating Company	Petroleum Exploration and Production	HV JOC	- ⁸	-	-	<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 Mihn City, S.R. Vietnam						
	Telephone: (84) 8 3823-9525						
	Facsimile: (84) 8 3823-9526						
9	Mungalalu Truscott Airbase Pty Ltd	Operation of Air Base	Mungalalu	600	AUD 1	Ordinary Share	<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						
10	Troughton Island Pty Ltd	Operation of Air Base (Secondary)	Troughton	100	AUD 1	Ordinary Share	<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						
11	Groupement Bir Seba	Petroleum Exploration and Production	GBRS	- ⁹	-	-	<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) (0) 29 79 71 66						
	Facsimile: (213) (0) 29 79 09 15						

⁸ No share was issued. Percentage of shareholding is subject to participation interest of the concession.

⁹ 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	Par Value	Share Type	Shareholders
12	PTT FLNG Limited	Manufacture/Production/ Trading of Oil/Gas/ Other Energy Supply	PTT FLNG	1,000	HKD 10	Ordinary Share	<ul style="list-style-type: none"> PTTEP FH 50% PTT International 50%
	Head Office: 1401 Hutchison House, 10 Harcourt Road, Hong Kong						
	Telephone: (852) 2846 1888						
	Facsimile: (852) 2845 0476						
13	Erawan 2 FSO Bahamas Ltd.	Lease of FSO (vessel)	Erawan 2 FSO Bahamas	100	USD 1	Ordinary Share	<ul style="list-style-type: none"> JV Marine Ltd. 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: -						
14	Leismer Aerodrome Limited	Operation of Air Base	LAL	200	-	Ordinary Share	<ul style="list-style-type: none"> PTTEP CA 32% Statoil Canada 48% FCCL 20%
	Head Office: Suite 3600, 308 – 4 th Ave S.W., Calgary, Alberta T2P 0H7, Canada						
	Telephone: (403) 234-0123						
	Facsimile: (403) 234-0103						
15	Asia Pacific Marine Services (EF) B.V.	Lease of FSO (vessel)	Asia Pacific Marine Services	18,000	EUR 1	Ordinary Share	<ul style="list-style-type: none"> Erawan 2 FSO 100%
	Head Office: Naritaweg 165, Telestone 8, 1043 BW Amsterdam, The Netherlands						
	Telephone: -						
	Facsimile: -						
16	Natuna 2 B.V.	Petroleum Exploration and Production	Natuna	90,000	EUR 1	Ordinary Share	<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 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.
Chevron Global	Chevron Global Energy Inc.
Erawan 2 FSO	Erawan 2 FSO Bahamas Ltd.
FCCL	FCCL Partnership
KrisEnergy	KrisEnergy (Gulf of Thailand) Ltd.
MOGE	Myanmar Oil and Gas Enterprise
MOECO BV	MOECO International B.V.
MOECO	Mitsui Oil Exploration Co.,Ltd.
Nippon	Nippon Oil Exploration (Myanmar) Ltd.
OPECO	OPECO Vietnam Ltd.
PC JDA	PC JDA Ltd.
PCML	Petronas Carigali Myanmar (Hong Kong) Ltd.
PCM III	Petronas Carigali Myanmar III Inc.
PHE OG	Pertamina Hulu Energi Oil and Gas Company
PTT International	PTT International (Singapore) Company Pte. Ltd.
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
Statoil Canada	Statoil Canada Ltd.
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 Call 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	+66-2299-1536, +66-2299-1824
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	3 rd Floor, Building 2, 1060 Phetchaburi Road, Makkasan, Ratchthewee, Bangkok 10400, Thailand
Telephone	+66-2256-2325, +66-2256-2326, +66-2256-2327, +66-2256-2328, +66-2256-2329
Facsimile	+66-2256-2406

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 capital debentures issued in June 2012

Name	Siam Commercial Bank Public Company Limited
Address	3 rd Floor, Building 2, 1060 Phetchaburi Road, Makkasan, Ratchthewee, Bangkok 10400, Thailand
Telephone	+66-2256-2316
Facsimile	+66-2256-2401, +66-2256-2402, +66-2256-2403, +66-2256-2404

4) Trustee

- 4.1) Trustee for USD 700 million debentures issued in April 2011, USD 323.45 million debentures issued in September 2013, and USD 1,000 million subordinated capital debentures issued in June 2014

Name BNY Mellon Corporate Trust
Address #03-01 Millenia Tower, 1 Temasek Avenue, Singapore 039192
Telephone +65-6432-0570, +65-6432-0351, +65-6432-0354
Facsimile +65-6883-0338

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

Name Citicorp International Limited
Address 39th Floor, Citibank Tower, 3 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 +66-2299-1536, +66-2299-1824
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 6th 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 5th 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 13th Floor, 111 Eighth Avenue, New York, NY 10011, U.S.A.
 Telephone +1-212-894-8800
 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 +66-2470-2020
 Facsimile +66-2470-3065

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 +66-2470-2020
 Facsimile +66-2470-3065

10.2) **Name** Deutsche Bank AG, Bangkok Branch
 Division Corporate Treasury Sales
 Address 63 Athenee Tower, 27-29th 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 8th Floor, Zone B, 9 Ratchadaphisek Road,
 Chatuchak, Bangkok 10900, Thailand
 Telephone +66-2544-2483
 Facsimile +66-2937-7969

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 | +66-2470-2020 |
| | Facsimile | +66-2470-3065 |
| | | |
| 11.2) | Name | Krung Thai Bank Public Company Limited |
| | Division | Corporate Sales, Treasury |
| | Address | Building 1 (Nana Nua), 8 th Floor, 35 Sukhumvit Road,
Klongtoey Nua, Wattana, Bangkok 10110, Thailand |
| | Telephone | +66-2208-4815 |
| | Facsimile | +66-2256-8398 |
| | | |
| 11.3) | Name | Siam Commercial Bank Public Company Limited |
| | Division | Financial Market Division |
| | Address | 8 th Floor, Zone B, 9 Ratchadaphisek Road,
Chatuchak, Bangkok 10900, Thailand |
| | Telephone | +66-2544-2483 |
| | 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 | +66-2614-4847, +66-2614-4848 |
| | Facsimile | +66-2632-4831 |
| | | |
| 11.5) | Name | Bank of America, National Association |
| | Division | FICC Sales |
| | Address | 87/2 All Seasons Place, CRC Tower, 20 th Floor,
Wireless Road, Bangkok 10330, Thailand |
| | Telephone | +66-2305-2985, +66-2305-2986 |
| | Facsimile | +66-2685-3224 |

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- 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
- 11.7) **Name** CIMB Thai Bank Public Company Limited
Division Global Sales Division
Address 44 Langsuan Road, Lumpini, Pathumwan,
Bangkok 10330, Thailand
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- 11.8) **Name** Bank of Ayudhya Public Company Limited
Division Global Sales Division
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Bangkok 10120, Thailand
Telephone +66-2021-6380, +66-2021-6385
Facsimile +66-2266-3048
- 11.9) **Name** Bangkok Bank Public Company Limited
Division Treasury
Address 333 Silom Road, Silom, Bangrak,
Bangkok 10500, Thailand
Telephone +66-2021-1111, +66-2021-1199
Facsimile +66-2636-4633
- 11.10) **Name** Oversea-Chinese Banking Corporation Limited
Division Global Markets
Address 1 Q.House Lumpini Bulding, 15th Floor Unit 2,
Sathon Road, Tungmahamek, Sathon, Bangkok 10120, Thailand
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-

- 11.11) Name TMB Bank Public Company Limited
Division Capital Markets
Address 3000 Phahon Yothin Road, Chatuchak,
Bangkok 10900, Thailand
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- 11.12) Name United Overseas Bank (Thai) Public Company Limited
Division Global Markets
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12) Auditor

- 12.1) Name Office of the Auditor General of Thailand
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13) Legal Advisors

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- 13.3) **Name** Baker & McKenzie
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- 13.5) **Name** Herbert Smith Freehills (Thailand) Limited
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- 13.9) **Name** Pracha Tooppoltup Law Office
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6.5 Other Significant Information

- None -