

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 technology and green practices

Goal and Objective: PTTEP Group continuously and consistently monitors domestic and global economies for conducting energy trend and situation analysis in order to develop effective strategy and execution plan. The Company's objective is to create the balance between production (Big), reserves (Long), and financial (Strong), according to the following goals:

- **Production (Big):**

PTTEP Group's operating plan is to maintain and increase the production of our current domestic and overseas projects. The Company also has a clear and focused strategic plan to support our future growth. The Company has set a production target to achieve 600,000 BOED by 2025 for the sustainability and stability as our growth aspiration.

- **Reserves (Long):**

PTTEP Group plans to maintain the proved reserves to production ratio (R/P Ratio or 1P/Production) of no less than 7 years by 2025.

- **Return on Investment (Strong):**

PTTEP Group plans to have a Return on Capital Employed (ROCE) and cost at a level better than the industry's average, while maintaining the Company's credit rating at par with that of the country.

Strategy: To attain the above, PTTEP Group has formulated our strategic directions as follows:

1. **Current Assets Management:** Current assets are grouped into three phases and managed with the aim of increasing production capacity and reserves.

1.1 **Producing Assets:** PTTEP Group focuses on maintaining the production level of our current domestic and overseas assets, including those operated by the Company and by our joint venture partners. Under low oil price environment, PTTEP Group enhances our operational efficiency and reliability, as well as increasing petroleum reserves through technological advancement. In addition, the Company also focuses on cost reduction of all major projects and work plans to ensure their economic return under the ongoing low oil price environment. The uneconomic projects or work plans meanwhile are reconsidered through various approaches such as cost reduction, postponement or cancellation.

1.2 **Development Assets:** These projects are for increasing of proved reserves and replacing existing producing assets that are declining. The Company remains focused on managing these projects to ensure that they are executed as planned, schedule and budget, and able to generate revenues and positive economic value under the current oil price environment.

1.3 **Exploration Assets:** These projects are essential for PTTEP Group's sustainable growth as they will help to increase reserves and production for the future. The Company focuses on management of the exploration portfolio, implementation of higher technology and staff learning for higher exploration success rate.

2. **Investment for Sustainable Growth:** Growth continues to be driven through portfolio rationalization by focusing on value creation from new exploration acreage and merger and acquisition (M&A) of near producing stage especially in the areas that are considered to be the Company's future growth platform. Divestment and Farm-down investment of current assets are also considered in order to reduce risk and exposure as well as to align with the Company's strategic direction. PTTEP Group's growth and investment will be in the context of balancing stakeholders' benefit, being socially responsible and environmental-friendly, while adhering to the good corporate governance principles.

3. **Organizational Capability Development:** To increase the value, reduce lifting, finding and development costs, and therefore increase our return on investment, PTTEP Group has enhanced our organizational capabilities and developed new capability enablers in the following areas:

3.1. **Funding and Financial Risk Management:** Funding is managed to be in line with the growth investment plan, aiming to maintain PTTEP Group's credit rating at the same level as the country's, by maintaining financial ratios, debt-to-shareholders' equity ratio, and

debt-to-reserves ratio at appropriate levels. Financial risks such as currency risk, interest rates, and liquidity are meanwhile closely monitored. PTTEP Group constantly improves financial and accounting management capabilities, trying to be at the level of World Class Finance by, for example, setting up of the newly established Treasury Center and the In-House Financial Academy. PTTEP Group has also significantly increased the cost efficiency by the SAVE to be SAFE initiative for short- and long-term cost reduction.

3.2. Acceleration of Knowledge Base, Technology and Development Capability:

PTTEP Group's Capability and Technology Development Roadmap, now being progressively implemented, is designed and aligned with the business objective to support our growth strategy. The Company's Research and Development Technology Center is also established to serve this objective as well as to be as the center of the organization's knowledge.

3.3. Systems & Process Development:

PTTEP Group's operational management systems, procedure and corporate structure are designed to support the Company's business to expand overseas, such as Global Operating Model Organization and standardized Management Systems, in order to support future growth.

3.4. Human Resources Management and Organizational Capability Development:

To be able to compete in internationally, PTTEP Group not only needs to have sufficient qualified personnel, but also must continuously advance staff capabilities, enhance leadership skills and retain these capable employees by continuing to improve employee engagement level. The Company's corporate values and cultures are being constantly cultivated meanwhile, along with the Sustainable Development to pave the way for a sustainable future as well as to gain acceptance and earn social license to operate from the public, Governance, Risk, Control&Compliance (GRC) for operational efficiency and effectiveness, and Safety, Security, Health and Environment (SSHE).

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 executive management and for this year taking into account especially 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 implication and impact on the Company with regards to 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 and considered. In

addition, the Company's investment portfolios are 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 still be able to cope with business changes. The executive management will then develop the Company's work plan, budget, and Key Performance Indicators (KPI) based on the given strategic direction and policy, which will 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 in order to promote a better understanding among all of the Company's employees regarding corporate vision, mission, and strategy. In principle, this will lead to the sub work plan development and implementation which align with the corporate target, work plan and core values to achieve the Company's goals at the end.

Strategy Adjustment under Low Oil Price Environment

The crude oil price in the world market has continuously decreased since 2014 to USD 40-60 per barrel and continued to fluctuate within the range throughout 2015.

Given this outlook, PTTEP has adjusted and developed the following new strategies and initiatives in order to balance between business growth and sustainable performance in the long run.

- For producing assets, cost reduction initiatives are applied, while maintaining the production level.
- For development assets, the Company has re-evaluated the "Final Investment Decision" for projects which have high development costs.
- For exploration assets, the Company will invest in low risk areas.
- For M&A for growth, the Company will mainly invest in producing or near-producing projects which could increase the reserves and revenues of the Company in the short term.
- For the corporate expenses, the Company has reduced consulting, and travelling as well as information technology expenses.

PTTEP has analyzed the impact of oil price at different price ranges to be more confident in making investment decision of new development projects which are currently six of them, namely Contract 4 (Ubon Field), Mozambique Rovuma Offshore Area 1, Algeria Hassi Bir Rekaiz,

PTTEP Australasia (Cash/Maple Field), Mariana Oil Sands and Myanmar M3. In addition, the Company is paying more attention to M&As, searching for the opportunity that could create value and provide energy stability. This is in order to maintain a strong domestic production base and expand investment opportunities in the Southeast Asia. The Company also considers investment opportunity in other countries according to our growth strategy, for example, the United States.

To align with growth objectives of the Company, PTTEP focuses on development of exploration and production technologies in order to strengthen the capabilities and expertise required for future growth in the following areas/objectives:

1. Unconventional Resources
2. Enhance More Production
3. Exploration Success
4. Develop Deep Water
5. Green Practices

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 into our business decisions to make PTTEP the company of choice for investors, shareholders, business partners, host governments, communities, and employees. The Company is continuously developing the three pillars of sustainability to reflect current global concerns in terms of business, environmental and social aspects into targets, strategies and implementation driven by efficient business processes; sufficient funds; good Governance Risk Control & Compliance, productive human capital management; innovation and technology to enhance production, reduce cost; build human capability to achieve work efficiency. All of these are to create value for both the Company and all of our stakeholders.

In order to measure and benchmark our sustainability performances with our peers, PTTEP's goal is to maintain the status as a listed company in the Dow Jones Sustainability Index (DJSI) World Oil and Gas Industry as the DJSI is a set of indices that is the most internationally accepted measurement for sustainability performances. The Company has successfully achieved DJSI World Oil and Gas Industry membership for two consecutive years, 2014 and 2015 respectively.

(1.2.2) PTTEP Materiality Assessment and 2015 Material Issues

PTTEP's materiality assessment engages with both internal and external stakeholders by using the Global Reporting Initiative (GRI G4) Sustainability Reporting Guideline: Oil and Gas Sector Supplement (OGSS) framework; SASB Materiality MapTM; DJSI to identify and prioritize the Company's material sustainability issues, (relative importance of specific economic, environmental and social issues) which include a structured review of current and future business risks and opportunities. The materiality analysis is conducted on a yearly basis as part of the reporting cycle. In 2015, the process was carried out, and the following material sustainability issues have been identified; some of which have been included in the Company's 2015 KPI.

Material Economic Issues

- Sustainable Business Governance
- Supply Chain Risk Management
- Risk Management

Material Social Issues

- Human capital development
- Talent attraction and retention
- Labor rights
- Occupational health and safety
- Process safety and asset integrity
- Security and emergency management
- Social impacts on communities
- Community development

Material Environmental Issues

- Spills
- Operational Eco-efficiency
- Water Management
- Biodiversity
- Energy Efficiency
- Climate Change

PTTEP's materiality assessment for 2015 includes a structured review of current aspects which reflect significant economic, environmental and social impacts for the Company, as well as significant aspects to both our internal and external stakeholders. The materiality assessment is conducted by using the process of identifying material issues by addressing the full scope of sustainability issues from the perspective of PTTEP's business operations and stakeholders, defining reporting boundaries for each material aspects, prioritizing issues by level of significance using agreed criteria, validating material issues through our SD governance system (SD Working Team and approved by SD Council), and finally continuous developing and reviewing of issues using principles of 'Stakeholder Inclusiveness' and 'Sustainability Context' to ensure continuous improvement of information disclosed. The details of PTTEP materiality assessment process can be found on our website: <http://www.pttep.com/en/Sustainable%20Development/Disclosure/Approach%20to%20Reporting.aspx>

(1.2.3) Contribution in Sustainable Development

PTTEP's mission is to operate globally to provide reliable energy supply and sustainable value to all stakeholders, with a vision to become a leading Asian E&P company driven by technology and green practices.

The Company provides society with a cleaner and reliable source of energy through the supply of natural gas which is predominantly reflected in our reserve and production portfolio by 70%. The natural gas supplied by PTTEP is used for power generation, resulting in lower greenhouse gas emission than the traditional coal-fired power plant while providing greater energy security than crude oil import. In 2015, PTTEP supplied natural gas at approximately 222,057 barrels of oil equivalent per day (BOED), or a total of 81,050,000 barrels of oil equivalent per year, or 32 percent of Thailand's total natural gas demand during the year. Natural gas sale generated THB 118,486 million for the Company in 2015.

(1.2.4) Benefits to Society and Environment

PTTEP's environmental and social initiatives are laid out in our sustainable development roadmap. In 2015, key environmental initiatives include flare gas recovery and utilization, heat recovery steam generator, and methane (CH₄) emissions reduction at the S1 Project, Flash Gas Recovery Unit (FGRU) at the Greater Bongkot South Field, logistics fleet management, partial startup operation of sea water cooling water pump at the Arthit Project, and the Company reforestation campaign. These 2015 greenhouse gas emissions initiatives reduced

approximately 227,000 tonnes of carbon dioxide equivalent (CO₂e) per year while reducing THB 640,000,000 in operating cost. Meanwhile, these projects which include flare gas recovery and utilization from the Clean Development Mechanism (CDM) project at Sao Thien A Petroleum Location, S1 Project, methane emissions reductions from the S1 Project, and the Greater Bongkot South's flash gas recovery unit generated revenue of approximately THB 680,000,000. (exclusive of revenue from anticipated carbon credit sales). In addition, the Sao Tien A Petroleum in S1 Project has been registered as Clean Development Mechanism (CDM) and received Certified Emission Reduction (CERs) or carbon credit from the United Nations Framework Convention on Climate Change (UNFCCC) for the reduction of greenhouse gas. If this carbon credit is sold in Thailand Voluntary Emission Reduction (T-VER) Program, it can generate revenue of approximately THB 3,400,000.

PTTEP'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 community such as creating jobs in the area to stimulate the local economy by hiring local people to work for the project as tree growers and maintainers. This project has managed to enhance economic value in the local communities surrounding the reforestation area by generating an income of THB 124,590,000 for approximately 306 directly-employed local villagers. The project will also help offset approximately 331,800 tonnes of carbon dioxide equivalent (CO₂e) by 2022. In addition, our petroleum exploration and production operation is conducted according to local regulations, including our operating procedure which is in line with various international standards to prevent impacts on communities, i.e., the International Finance Corporation (IFC). PTTEP believes that these efforts will provide the Company with a social license to operate which helps to prevent operation disruption from community protest which, in turns, can potentially lead up to impacts on the society and higher operating cost for the Company.

1.3 Development and Significant Changes in 2015

Significant changes and developments in 2015 for the Company and our subsidiaries include the operational success of existing projects, investments in new projects, and changes in participating-interests of projects carried out per the Company's portfolio management strategy. The following are the highlights of these developments and changes by region.

Thailand

In May 2015, PTTEP established a subsidiary "PTTEP Treasury Center Company Limited" with a registered capital of THB 10 million to operate as a PTTEP Group's Treasury Center.

In June 2015, PTTEP received official approval from the Department of Mineral Fuels (DMF) for the relinquishment of Block A4/48 & A5/48.

In November 2015, PTTEP submitted documents for the relinquishment of Block L28/48, an onshore exploration field in Chaiyaphum and Khon Kaen provinces in which PTTEP held 70% interest. The relinquishment is pending official approval from the DMF.

South East Asia

In February 2015, PTTEP and partner received official approval from the government of Indonesia for the relinquishment of Indonesia Sadang Project.

In May 2015, PTTEP submitted documents for the relinquishment of our entire participating interest in the Indonesia Malunda and the Indonesia South Mandar projects. The relinquishment is currently awaiting official approval from the government of Indonesia.

In August 2015, PTTEP divested 20% participating interest of Block Myanmar PSC G & EP 2 to a subsidiary of Mitsui Oil Exploration Co., Ltd. (MOECO) and PALANG SOPHON OFFSHORE PTE. LTD. The transaction was approved by the government of Republic of the Union of Myanmar (Myanmar), resulting in decreased participating interest of PTTEP from 90% to 70%.

In December 2015, the government of Myanmar officially approved the divestment of other partners from the Myanmar M11 Project, PTTEP currently holds entire participating interest in the project. Also, PTTEP divested 10% participating interest in Block MOGE 3 to a subsidiary of Mitsui Oil Exploration Co., Ltd. (MOECO). The transaction was approved by the government of Myanmar, resulting in decreased participating interest of PTTEP from 85% to 75%.

Africa and the Middle East

In July 2015, the government of Kenya approved the relinquishment of Kenya L10A Project. In addition, PTTEP submitted documents for the relinquishment of Mozambique Rovuma Onshore Project to the government of the Republic of Mozambique. The relinquishment is pending official approval from the government of Indonesia.

In September 2015, PTTEP and partners agreed on the relinquishment of Block Kenya L5 and L7 and effectively changed the project name to Kenya L11A, L11B and L12 Project.

In October 2015, Algeria 433a & 410b Project commenced its first production with current flow rate of approximately 20,000 BOED and had the first crude oil sales in the fourth quarter of 2015.

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, 2015, PTTEP Group had 38¹ petroleum exploration and production projects in 11 countries. 14 projects were under the exploration phase and 24 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

¹ Excluding Indonesia Semai II, Indonesia Malunda, Indonesia South Mandar, Mozambique Rovuma Onshore and L28/48 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 had terminated its 40% participating interests which was effective on January 1, 2015 base on Joint Operating Agreement. The termination is under the process of approval from the Department of Mineral Fuels.

No.	Project Name	Phase	Location	Participation Interest	Operator
Overseas: 22 projects					
Myanmar					
1.	Myanmar M3 Project	Exploration	Gulf of Moattama	80%	PTTEP
2.	Myanmar M11 Project	Exploration	Gulf of Moattama	100%	PTTEP
3.	Zawtika Project	Production	Gulf of Moattama	80%	PTTEP
4.	Yadana Project	Production	Gulf of Moattama	25.5%	TOTAL
5.	Yetagun Project	Production	Gulf of Moattama	19.31784%	Petronas
6.	Myanmar PSC G & EP 2 Project	Exploration	Onshore	70%	PTTEP
7.	Myanmar MD-7 and MD-8 Project	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
Oman					
14.	Oman 44 Project	Production	Onshore	100%	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	20 - 100% ³	PTTEP
Canada					
18.	Mariana Oil Sands Project	Exploration	Onshore	100%	PTTEP

³ PTTEP Australasia Project holds many petroleum blocks which have various participation interests from 20 – 100%.

No.	Project Name	Phase	Location	Participation Interest	Operator
Mozambique					
19.	Mozambique Rovuma Offshore Area 1 Project	Exploration	Offshore	8.5%	Anadarko
Kenya					
20.	Kenya L11A, L11B & L12 Project ⁴	Exploration	Offshore	10%	Anadarko
Brazil					
21.	Barreirinhas AP1 Project	Exploration	Offshore	25%	BG Brasil
22.	Brazil BM-ES-23 Project	Exploration	Offshore	20%	Petrobras

Principal Projects in Operation

The following is a summary of key project activities undertaken during 2015. Production and sales figures described hereunder are total production and sales figures for the respective projects.

1) **Highlights of Project Activity in Thailand:** PTTEP has 16 projects in Thailand including projects in the overlapping claims area. Most projects are in the production phase, located both in the Gulf of Thailand and onshore. The following are highlights of key project activities in Thailand during 2015.

Bongkot Project

The Bongkot Project is the largest gas field in the Gulf of Thailand, located in the southern part of the Gulf. The Company holds 44.4445% interest and is also 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 2015, the Project drilled exploration and appraisal wells and also installed wellhead platforms in order to maintain steady production levels. Sales volume from the project averaged 905 million standard cubic feet per day (MMSCFD) of natural gas (equivalent to 147,266 barrels of oil equivalent per day (BOED)) and 27,678 barrels per day (BPD) of condensates. Gas production from the Bongkot Project represents approximately 25% of Thailand's natural gas supply. This is an achievement for PTTEP as the company continues to fulfil Thailand's role in providing energy supply security to Thailand.

⁴ All concessionaires agreed to relinquish blocks L5 and L7 in the project resulting in the change of project name to be Kenya L11A, L11B & L12 Project.

S1 Project

The S1 Project is the largest onshore oil field in Thailand, with an area covering parts of the Kamphaengphet, 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 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 2015, 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 29,021 BPD, while sales of natural gas averaged 26 MMSCFD (equivalent to 4,907 BOED), and average LPG sales was 264 metric tons per day (equivalent to 2,192 BOED). The S1 Project is able to maintain crude oil production at this level as a result of infill drilling and the implementation of Artificial Lifting and Waterflood techniques.

PTTEP 1 Project

The PTTEP 1 Project is located in the 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 2015, the Project increased crude oil production levels from the implementation of Pilot Enhanced Oil Recovery Technique in Au-Thong Field. The Project's average crude oil sales was 386 BPD.

B6/27 Project

The B6/27 Project is located in the Gulf of Thailand, off the coast of Chumphon Province. The Company holds 60% interest and is the operator. PTTEP submitted document for the withdrawal of JX Nippon Oil & Gas Exploration Corporation who hold 40% participating interest and is pending the approval from the Department of Mineral Fuels (DMF).

In the year 2015, the Project finished drilling an exploration well (NKW-N01) with no commercial discovery, and the Project currently continues to study the petroleum geology.

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 2015, the Project continued to carry out exploration and development activities, with 2 appraisal wells and 57 production wells drilled. The Project also constructed and installed wellhead platforms and gas pipelines in order to maintain production. Average natural gas sales in 2015 from the Project was 213 MMSCFD (equivalent to 33,763 BOED) and average condensates sales was 9,422 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 is currently in the development phase for production via Arthit's Central Processing Platform. The project has drilled 15 development wells and expects to begin production in the first quarter of 2016. 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 2015, the Project drilled exploration wells in the Wang Pai Sung Field and commenced crude oil production from Wang Pai Sung A and Wang Pai Sung B. The project's average crude oil sales was 50 BPD.

L53/43 and L54/43 Project

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

In the year 2015, the Project's average crude oil sales was 297 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 an EGAT power plant.

In the year 2015, average natural gas sales volume for the project amounted to 12 MMSCFD (equivalent to 1,932 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 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 2015, the Project continued development drilling in order to maintain production levels. The Project sold natural gas at an average rate of 561 MMSCFD, equivalent to 92,704 BOED, crude oil at an average rate of 20,443 BPD and condensates at an average rate of 19,043 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 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 2015, the Project continued drilling additional exploration and development wells in order to maintain the production plateau. The Project sold natural gas at an average rate of 305 MMSCFD (equivalent to 51,818 BOED) and condensates at an average rate of 14,213 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 GSAs with PTT and crude oil sales agreements under spot cargo with other purchasers.

In the year 2015, the Project drilled one appraisal well. The sales volume of crude oil and natural gas averaged 6,711 BPD and 2 MMSCFD (equivalent to 386 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 2015, sales volume of the project averaged 121 MMSCFD for natural gas (equivalent to 19,853 BOED) and 460 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 2015, the project continued to carry out development drilling and waterflood operations in order to maintain the crude oil production levels. Sales volume averaged 26,077 BPD for crude oil and 98 MMSCFD for natural gas (equivalent to 17,349 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 the Contract 3 Project has long-term GSAs with PTT and crude oil sale agreements under spot cargo with other purchasers.

In the year 2015, sales volume from the G4/48 Project averaged 5 MMSCFD for natural gas (equivalent to 785 BOED) and 981 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.

In the year 2015, the Project continued to carry out exploration, appraisal and development drilling in order to access for additional petroleum potential in the area and maintain current production levels. Current sales volume from the Project averaged 326 MMSCFD (equivalent to 52,895 BOED) for natural gas and 7,308 BPD for condensates.

1.4.1.2. International Projects: PTTEP has 22 projects overseas, broken down into the following regions.

1.4.1.2.1 Project Activity Highlights in South East Asia: PTTEP has 13 projects in this region which are located in the Union of the Republic of Myanmar (Myanmar), Socialist Republic of Vietnam (Vietnam) 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 2015, 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% (formerly 52.9412%) interest in the Project and is the operator. On December 9, 2015, the government of Myanmar officially approved the divestment of JX Nippon Oil & Gas Exploration (Myanmar) Limited (JX Myanmar) and TOTAL E&P Myanmar (TEPM) taking effect from October 23, 2014.

The Project is currently assessing the potential in the nearby areas in order to plan for further activities after the completing the exploration well which found no hydrocarbon potential for commercial development. Moreover, the government of Myanmar has extended the exploration period from the original expiry in October 9, 2015 by 3 years and 6 months.

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 with PTT and MOGE at a DCQ of 300 MMSCFD. The gas production will be sold to PTT supplying into Thai market and MOGE for domestic use in Myanmar at the average rate of 240 and 60 MMSCFD, respectively. 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 2015, the Project maintained the production rate of approximately 314 MMSCFD (equivalent to 47,541 BOED). Additionally, the Project completed the construction of one wellhead platform and is in the process of constructing three more wellhead platforms for the development phase 1B to maintain current production level. The Project also completed the drilling of 10 appraisal wells, which began during the third quarter of 2014, and is currently in the process of result evaluation.

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 2015, the Project carried out the construction of Badamyar wellhead platform and low-pressure wellhead platform expecting to complete in 2017. The Project also plans to drill 2 development wells in 2016 and another 2 development well in 2017. During 2015, total gas sales volume averaged 751 MMSCFD (equivalent to 90,330 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 agreement. 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 2015, the Project carried out the development of the Yetagun-North natural gas field to maintain contractual production rates. The Project plans for 3 additional infill wells; drilling for which commenced in late 2015. For the year, the Project's total sales volume averaged 286 MMSCFD (equivalent to 45,338 BOED) for natural gas and 5,833 BPD for condensates.

Myanmar PSC G and EP2 Project

The Myanmar PSC G and EP 2 Project is located in onshore Myanmar. The Company has 70% interest in the Project and is also the operator.

The Project completed the drilling of 4 exploration wells in accordance with the work commitment during the first exploration period. The wells showed no commercial potential. The Project is currently in the process of extending the exploration period to further assess the petroleum potential.

Myanmar MD-7 and MD-8 Project

The MD-7 and MD-8 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). The Project is under preparation for 3D seismic survey to define exploration prospects in the area.

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 to which it acquired the exploration and production rights in August 2014 through the signing of a Production Sharing Contract between PTTEP South Asia Limited (PTTEP SA, a subsidiary of PTTEP) and MOGE.

The Project is under preparation for 2D seismic and 3D seismic acquisition which it expects to commence in the end of 2016.

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 2015, the Project's sales volume of crude oil averaged 4,823 BPD, while sales volume of natural gas averaged 13 MMSCFD (equivalent to 2,775 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 August 2015, the project successfully commenced production from the H5 area, which is situated in the south of Te Glac Trang Field (TGT). Crude oil production from the H5 area approximately stood at 11,000 BPD. In the year 2015, sales volume from the Vietnam 16-1 Project averaged 31,294 BPD of crude oil and 16 MMSCFD of natural gas (approximately 3,981 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 Chevron as the operator.

In the year 2015, the Project was under the process to review development plans and negotiate 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.

In 2015, the Project was under the process to review development plans and negotiate 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 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.

In the year 2015, the project installed a well head platform, and is drilling additional development wells in order to increase production capacity. During the year, the project produced natural gas and condensates at average rates of 213 MMSCFD (equivalent to 37,273 BOED) and 1,407 BPD, respectively.

1.4.1.2.2 Project Activity Highlights in Africa and the Middle East:

PTTEP has 5 projects in this region, located in Sultanate of Oman, People's Democratic Republic of Algeria (Algeria), Republic of Mozambique (Mozambique) and Republic of Kenya (Kenya) with the following as key highlights:

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 Field in 2007. The Project has a long-term GSA in place with the Ministry of Oil and Gas of Oman.

In the year 2015, the Project drilled additional exploration and appraisal wells in order to further assess petroleum potential in the western area of the project. During the year production of natural gas from the Project averaged 22 MMSCFD (equivalent to 4,195 BOED), and production of condensates averaged 1,097 BPD.

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 is in the third exploration phase and completed the drilling of five out of six planned exploration and appraisal wells.

Algeria 433a & 416b Project

The Algeria 433a & 416b Project is located onshore in the eastern Algeria. The Company holds a 35% interest in the Project, with Groupement Bir Seba Joint Operating Company is the operator.

The Project successfully marked its first crude oil production at the level of around 20,000 BPD. First sales from the Project were made in the fourth quarter of 2015.

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.

In the year 2015, the Project completed the drilling of six appraisal wells and, with respect to LNG development, selected the contractor for the onshore LNG Engineering Procurement and Construction Contract. In addition, the Decree Law to support the Project operations has been approved by the government and ratified by the congress of the Republic of Mozambique. The Project is currently in the process of selecting contractors for the installation of offshore facilities and preparing for project finance.

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 the year 2015, the Project carried out geological and geophysics studies.

1.4.1.2.3 Project Activity Highlights in Australasia: PTTEP has 1 project in this region which is located in the Commonwealth of Australia (Australia) comprising of 14 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 14 permits with 2 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 16,288 BPD during 2015. In relation to the claims submitted by the Government of Indonesia seeking compensation for the oil spill from the Montara Incident occurring in 2009, PTTEP is ready to continue discussions with the Government of Indonesia to determine the impact (if any) using scientific evidence.

Cash-Maple Field

The Company holds 100% interest in the Project. The Project is under assessment to determine monetization options for the gas field.

For other concessions, PTTEP has interests ranging from 20% to 100%, all of which are undergoing geological and geophysics studies to determine potential for petroleum.

1.4.1.2.4 Project Activity Highlights in North America: PTTEP has 3 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 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 5 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 PTTEPCA 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 on reduce costs and 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. The Brazilian government approved the transaction in August 2014.

The Project received approval from the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) on its environmental impact assessment (EIA) report. The seismic activities are expected to begin in the first quarter of 2016.

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 BL acquired a 20% stake in the BM-ES-23 Project whose operator is Petrobras. The Brazilian government approved the acquisition in October 2014. During 2015, the Project completed the drilling of one appraisal well, which did not encounter commercial petroleum potential and one exploration well, which discovered petroleum and is currently in the process of evaluating the result.

Projects Relinquished in 2015

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 November 2015, the Project submitted documents for the relinquishment of Block L28/48 and is pending the official approval from the DMF.

Indonesia Malunda Project

The Indonesia Malunda Project is located in the Makassar Straits, in Indonesia. The Company acquired the exploration rights in 2010, and owns 100% interest in Project and is the operator. The exploration activities carried out discovered limited petroleum potential. The Company has submitted documents regarding the relinquishment of its exploration rights to the government of Indonesia in May 2015 and is pending official approval from the government.

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 carried out discovered limited petroleum potential. The Company has submitted documents regarding the relinquishment of its investment rights to the government of Indonesia in May 2015 and is pending official approval from the government.

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. The Project has submitted notice of relinquishment, pending official approval from the government of Mozambique.

Kenya L10A Project

The Kenya L10A Project is located offshore of Kenya. The Company owns a 31.25% interest in Block L10A, whose operator is BG. The Project completed the Sunbird-1 exploration well which showed no commercial discoveries. The Project has submitted notice of relinquishment to government of Kenya and received official approval in July 2015.

In addition, PTTEP and partners agreed on the relinquishment of Block Kenya L5 and L7 and changed the project name to Kenya L11A, L11B and L12 Project in September 2015.

1.4.2 Structuring Policy of PTTEP Group

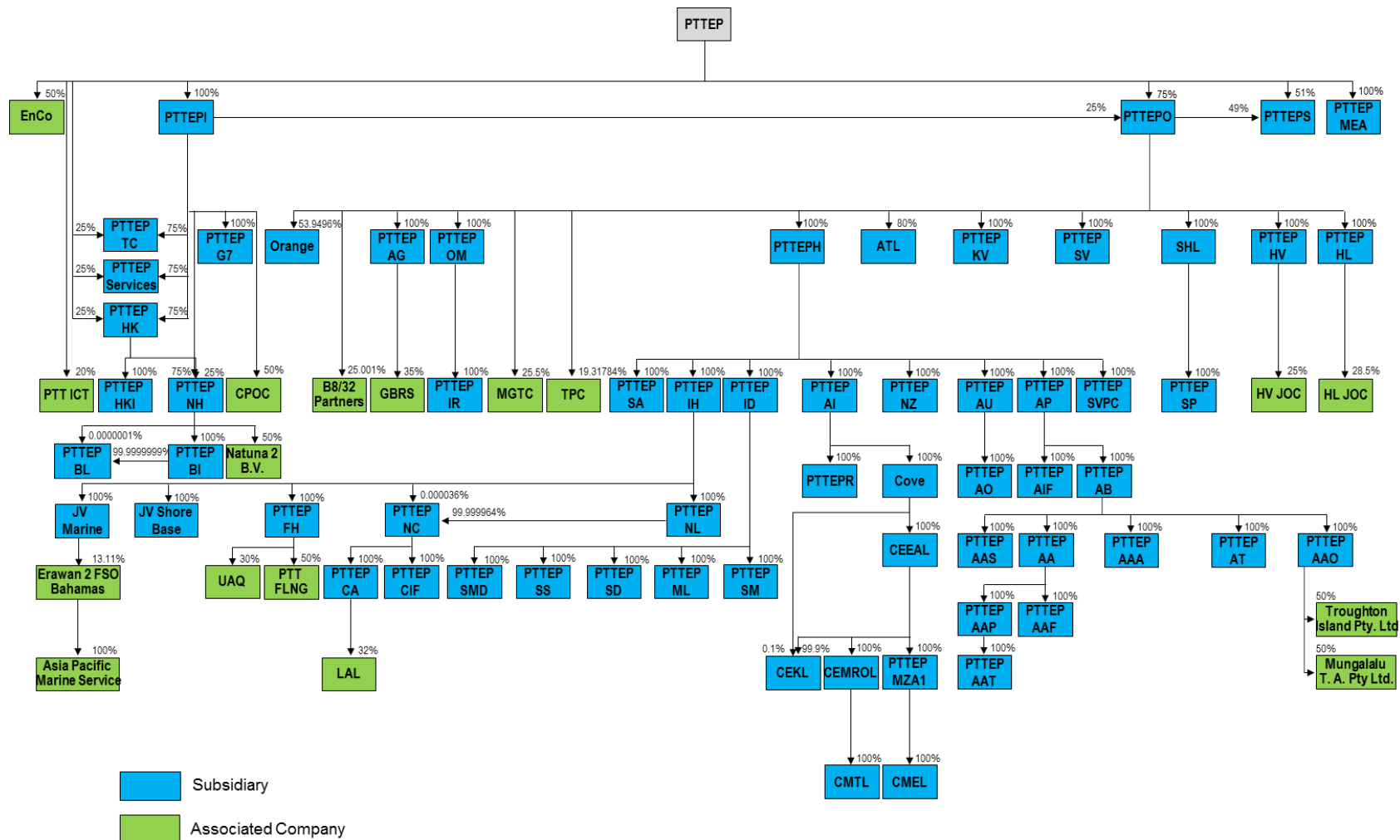
PTTEP has continuously expanded our E&P business both domestically and overseas. Due to the continuous expansion, establishing subsidiaries and/or associated companies in various regions is necessary for the investment purpose, the efficiency and competitive advantages comparable to other international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

PTTEP's policy is to manage our subsidiaries as "One Company" with the view that they must strictly follow the Company's business direction and strategy. Subsidiaries' operations are mainly managed by the Company's executives and employees, while adopting PTTEP's management and internal control systems. In managing our associated companies, PTTEP nominates representatives to serve as a shareholder and/or a member of the Board of Directors, at least to a proportion corresponding to the Company's shareholding interest held in each associated company, in order to be able to effectively define the overall business strategy and policy of these companies. To manage both the subsidiaries and associated companies, the Company adheres to the Good Corporate Governance and Business Ethics of PTTEP Group to ensure effectiveness, transparency, fairness, and achievement of our business goals.

With respect to the directors of the Company's subsidiaries and/or associated companies, PTTEP assigns the executives responsible for the project under such subsidiary and associated company as directors of these entities to ensure that they are managed in line with the Company's business direction and strategy. 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, PTTEP delegates sufficient authority to directors of those companies 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 in order to ensure their performance and effectiveness.

1.4.3 Shareholding Structure of PTTEP Group

As of December 31, 2015, PTTEP invested in 80 legal entities, comprising 63 subsidiaries and 17 associated companies. The PTTEP Group shareholding structure 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 PTTEP'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 PTTEP's petroleum products, PTT, in turn, refines and processes these products, and supplies them as energy and raw materials to be used in the power, petrochemical and transportation sectors as well as other industries and households.

In 2015, PTTEP 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 other connected transactions between PTTEP and PTT are disclosed in "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 2013 – 2015 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 of December 31, 2015 comprised 24 projects: the Bongkot, Contract 4, S1, Yadana, Yetagun, Contract 3, B8/32 & 9A, PTTEP 1, E5, B6/27, Sinphuhorm, G4/43, Oman 44, 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 LLC (TPC) and Andaman Transportation Limited (ATL).

Revenue Structure of PTTEP and Our Subsidiaries during 2013 – 2015

Product	Operated by	% of interest	2013		2014 (Restated)		2015	
			Revenue (Million USD)	%	Revenue (Million USD)	%	Revenue (Million USD)	%
Sales								
Crude	PTTEP	-	342.39	4.60	263.67	3.36	141.37	2.50
	PTTEPI	100	62.25	0.84	65.49	0.83	40.18	0.71
	PTTEPS	100	875.35	11.75	676.00	8.61	367.76	6.49
	Orange	53.9496	203.07	2.73	182.64	2.32	87.69	1.55
	B8/32 Partners	25.0009	78.17	1.05	76.20	0.97	35.04	0.62
	PTTEP HV	100	57.17	0.77	50.42	0.64	22.34	0.39
	PTTEP AP	100	110.22	1.48	677.11	8.62	334.62	5.91
	PTTEP HL	100	498.25	6.69	339.73	4.32	162.18	2.86
	Natuna 2	50	0.27	0.00	3.04	0.04	2.05	0.04
	PTTEP AG	100	-	-	-	-	2.88	0.05
Natural Gas	PTTEP	-	2,288.95	30.72	2,209.84	28.13	1,899.45	33.54
	PTTEPI	100	859.40	11.53	1,019.95	12.98	1,218.06	21.51
	PTTEPS	100	53.05	0.71	59.33	0.76	45.42	0.80
	Orange	53.9496	42.22	0.57	34.82	0.44	28.66	0.51
	B8/32 Partners	25.0009	18.11	0.24	14.48	0.18	11.02	0.19
	PTTEP HV	100	1.52	0.02	1.77	0.02	1.54	0.03
	PTTEP OM	100	13.13	0.18	14.29	0.18	16.71	0.30
	PTTEP HL	100	5.16	0.07	6.05	0.08	2.52	0.04
	Natuna 2	50	7.46	0.10	105.21	1.34	64.64	1.14
	PTTEP SP	100	-	-	192.68	2.45	211.27	3.73
LPG	PTTEP	-	7.44	0.10	7.14	0.09	9.33	0.16
	PTTEPS	100	22.31	0.30	21.41	0.27	27.99	0.49

Product	Operated by	% of interest	2013		2014 (Restated)		2015	
			Revenue (Million USD)	%	Revenue (Million USD)	%	Revenue (Million USD)	%
Condensate	PTTEP	-	1,113.06	14.94	997.90	12.70	480.31	8.48
	PTTEPI	100	136.97	1.84	92.92	1.18	48.08	0.85
	PTTEPS	100	2.17	0.03	2.23	0.03	1.32	0.02
	PTTEP OM	100	98.01	1.32	71.11	0.91	22.53	0.40
	PTTEP SP	100	-	-	66.24	0.84	40.96	0.72
Diluted Bitumen	PTTEP CA	100	275.80	3.70	67.52	0.86	-	-
Total Sales			7,171.90	96.25	7,319.19	93.17	5,325.92	94.05
<u>Revenue from Pipeline Transportation</u>								
Gas Pipeline Transportation	MGTC	25.50	91.72	1.23	75.05	0.96	53.16	0.94
	TPC	19.31784	58.95	0.79	41.59	0.53	19.80	0.35
	ATL	80	-	-	21.28	0.27	45.53	0.80
Total Revenue from Pipeline Transportation			150.67	2.02	137.92	1.76	118.49	2.09
<u>Other Income</u>								
Interest Income			33.07	0.44	22.93	0.29	31.92	0.56
Gain On Financial Derivatives			-	-	197.02	2.51	132.16	2.33
Other Income			89.26	1.20	156.64	1.99	45.20	0.80
Total Other Income			122.33	1.64	376.59	4.79	209.28	3.70
Share of Gain of Associates and Joint Ventures			6.16	0.08	21.94	0.28	9.03	0.16
Grand Total			7,451.06	100.00	7,855.64	100.00	5,662.72	100.00

For 2015, total revenues for PTTEP and our subsidiaries was USD 5,663 million (equivalent to THB 193,579 million), a decrease of USD 2,193 million or 28% when compared with the revenues in 2014 which was USD 7,856 million (equivalent to THB 255,027 million). The decrease was primarily due to a decrease in sales revenue from a reduction in the average selling price to 45.29 USD/BOE (2014 : 63.71 USD/BOE), even though sales volume increased to 322,167 BOED (2014 : 312,569 BOED). The increase in the sales volume was mainly derived from the Zawtika Project, which commenced its gas sales in Myanmar in March 2014 and reached its full production capacity in August 2014.

2.2 Products Features

2.2.1 Petroleum

Petroleum means crude oil, natural gas, condensate, related products, and other hydrocarbon products which are free in nature.

Crude oil means crude mineral oil and bitumen of all kinds, which is liquid in nature and obtained from oil wells and through gas separation equipment, yet to be refined or purified.

Bitumen is another form of crude oil. It is sticky, black, opaque, and highly viscous (low API).

Natural gas is hydrocarbon which is gas or vapor at the 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 to surface where temperature and pressure are lower than in the reservoir.

Liquefied Petroleum Gas (LPG) is a petroleum product which is obtained from crude oil refinery or natural gas separation processes. It primarily consists of butane and propane.

Crude oil, condensate, LPG, and bitumen are measured in barrel, while natural gas is measured in cubic foot at the standard conditions (1 atmosphere or atm and 60 degree Fahrenheit). All petroleum products can be converted into 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 1 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 interests 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 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, and those of other offshore oil and gas operating companies such as PTT, Chevron Thailand Exploration and Production Limited, Carigali-PTTEPI Operating Company Sdn Bhd (CPOC), MP G11 (Thailand) Limited, KrisEnergy G10 (Thailand) Ltd. 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, PTTEP's support base operates from two branches, namely, Songkhla and Ranong provinces.

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 operationally ready 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 equipped with storage facilities and operated with a high standard of offshore supply base for material handling equipment. In addition, the support base has fully operated under the international management system for Safety, Security, Health and Environment and strictly followed 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 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.

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 is operated through Ranong multi-purpose port 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. 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.

In order to ensure that service performance of both support base branches are met with international standards and top safety level, the audit is continuously conducted by addressing 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 puts awareness and gets involved in the Corporate Social and Responsibility with the social and community in the operating areas. The Company also holds several certificates which are accredited by the International Environment Control Program (ISO 14001 certification), and the Occupational Health Control Program (OHSAS 18001 certification). In addition, the Company has prepared the Emergency Response Plan under the ISO 22301 standard to handle unexpected emergency cases and invariably exercised our response plan to ensure that our support base is capable of effectively response to emergency situations as well as using new technologies and methods for continuity of the business.

2.2.4 PTT ICT Solution Company Limited (PTT ICT)

PTT ICT Solutions Company Limited, an affiliate owned 20% by PTTEP, has signed an agreement with PTTEP to provide the Company with all information technology and communication services according to PTTEP's Board of Director's resolution number 10/2549/254 dated 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 4.5-year renewal contract has been in effect since July 1, 2011.

2.2.5 Energy Complex Company Limited (Energy Complex)

PTT and PTTEP have jointly established energy complex to construct and manage the Energy Complex Investment Project, which is the energy business center of the country, where the Ministry of Energy, subsidiaries and associate companies of PTT Group, and some private energy companies are situated.

2.2.6 PTTEP Services Limited (PTTEP Services)

The concept that eventually became PTTEP Services was originated from PTTEP's Board Meeting No. 12/2003/216. The stated objective of the services is to supply manpower for both local and overseas subsidiaries belonging to the Company with a larger number of adequately capable staff and those of the caliber primarily required to support the Company's extensive and rapid growth.

To fulfill these requirements, PTTEP Services has recruited and hired staff to serve PTTEP since July 1, 2004. Since it has continuously developed, improved, and implemented compensation and benefits policies and practices as well as staff development program to ensure that standardized welfare benefits, including requisite training, are provided.

To enhance the Company's staff competency to enable effective support for our operations, PTTEP Services has managed its training activities to focus on functional training at advice of the line management. PTTEP Services meanwhile has also provided foundation training to support soft skills, computer skills, and other needed skills.

2.3 Permission to Operate, Concession or Business Promote

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, i.e., Production Sharing Contract, Concession Agreement, and Services Agreement. Inside the Kingdom of Thailand, the Company must comply with the Petroleum Act B.E. 2514 which sets out major details and procedures, for instance, application process, process for awarding petroleum concessions, and period of production. The act also sets out various forms of benefits to the government who is the owner of petroleum resources such as royalty, petroleum income tax, and other benefits. Important 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, is the responsible agency which delineates exploration blocks and then 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 by the Cabinet has the power to award and sign the concessions. The government, on the other hand, is the authority to consider 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 benefits offered to the country.

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 associated with relatively higher risk, it is common for companies to join together in 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 each of the companies. 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 carefully consider its 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, then 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; generally this means that the petroleum field is considered to have commercial viability, and a further investment onto development phase is therefore justified. The operator shall 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 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 will normally identify buyers of the petroleum in advance, whereas a long-term sales agreement for the petroleum to be produced shall be signed. At the present, 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. In this regard, 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 well-head, while sale of natural gas from foreign areas is made at the Thai borders. PTT is currently responsible for installation of most of the gas pipelines sufficiently for the production amount specified in the gas sale agreement. Sales of the crude oil is made at the buyer's refinery, while sales of the condensate is made at the Floating Storage Unit (FSU) near the well-head.

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 amendment. 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

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.

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
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, the Republic of Kenya, and Brazil. The target markets are both domestic and overseas where we have invested in. PTTEP's petroleum products include natural gas, crude oil, condensate, and LPG.

In 2015, total sales by PTTEP and our subsidiaries averaged 322,167 BOED which was approximately the same as the previous year's sales. The total sales ratio of natural gas to liquid was 70%:30% by volume and 66%:34% by revenue, as shown below.

Product	Volume	Value (million USD)
Natural Gas	505,841 MMSCF or 81.05 MMBOE	3,499.29
Condensate	12.11 MMBBL	593.20
Crude Oil	23.63 MMBBL	1,196.11
LPG	96,529 metric tons or 0.80 MMBOE	37.32

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 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 contract. 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. However, the delivery point of the gas sold from the Republic of the Union of Myanmar to Thailand is 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 oil and several key economic indices, 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 each agreement (Shortfall).

2) Condensate and Crude Oil

Condensate and crude oil prices are determined by its property and benchmarking with other benchmark crude prices, meaning those predominantly sold in the region, which is the industry's common practice. Contracts are either short-term or long-term, and some are sold in spot 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 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 percent of the produced natural gas from Zawtika and Yadana projects is primarily sold to Thailand through PTT, while the remaining 20 percent 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 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 by 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 commenced the production with its first commercial sales of crude oil in December 2015. The crude oil is sold and marketed by PTT as the marketing agent in the spot markets.

For **MTJDA Project in Malaysia-Thailand Joint Development Area**, the produced natural gas is sold to PTT for the consumption in Thailand. Starting in April 2015, the gas will also be sold to Malaysia according to the Gas Balancing Agreement between PTT and Petroleum Nasional Berhad (PETRONAS). The condensate output will be 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 oligopoly market since it is a high investment with advance technology characteristic. However, due to high demand especially natural gas and the GSAs are predominantly long-term contract, with take-or-pay clauses to guarantee its market. This is to attract investment in the business.

Regarding the approximate domestic production in 2015, PTTEP's petroleum production accounts for 31% of total production in 2015, making the Company the leader among the domestic producers.

Producers	% Domestic Production Volume
PTTEP	31
Chevron	26
Total	10
MOECO	7
Hess Exploration	4
Others	22

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 is creating opportunities and incentives for moving lower-cost natural gas into higher-value global markets via LNG exports. At the current low oil price, natural gas customers are seeking to diversify their supply at the lower cost and LNG can compete on price with conventional gas. It is possible that LNG can capture more market share from natural gas.

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: In this stage, 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 run 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 scalability to be produced by that of 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, 2015, the total amount of Proved Reserves of PTTEP Group's projects was 180 million stock-tank barrels (MMSTB) of crude oil and condensate^{*}, and 3,591 billion standard cubic feet (BSCF) of natural gas or 558 million barrels of oil equivalent (MMBOE). The total amount of Proved Reserves in terms of oil equivalent in consolidation was therefore 738 MMBOE. Details of the Company's Proved Reserves are shown in the following table.

^{*} LPG included

PTT Exploration and Production Public Company Limited

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

As of December 31, 2015

	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 December 31, 2014	113	74	187	2,119	1,695	3,814	461	316	777
1) Revision of previous estimates	14	9	23	336	53	389	70	17	87
2) Improved recovery	4	1	5	2	1	3	4	2	6
3) Extensions and discoveries	4	-	4	(27)	30	3	(1)	5	4
4) Purchases/Sales of petroleum in place	-	-	-	-	-	-	-	-	-
5) Production	(27)	(12)	(39)	(409)	(209)	(618)	(94)	(42)	(136)
Proved Reserves as of December 31, 2015	108	72	180	2,021	1,570	3,591	440	298	738

(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 2015, the total production of PTTEP Group was 136 MMBOE, consisting of 39 MMSTB of crude oil and condensate* and 618 BSCF or 97 MMBOE of natural gas. This was equivalent to a production rate of approximately 373,888 barrels of oil equivalent per day (BOED) which was approximately 14,628 BOED or 4.07% increase from the previous year. The increase was mainly due to Zawtika Project which, for the first time, had produced at its full capacity for the entire year since the start in 2014.

2.5.4 Environmental Impact Mitigation and Management

In 2015, an effective and standardized environmental management system of PTTEP was developed and implemented in our operations to minimize waste and ensure that the following potential environmental impacts are mitigated and controlled.

- Water and soil contamination from discharges of drilling fluids and drilled cuttings as per Environmental Impact Assessment (EIA) approval conditions
- Air pollution from hydrocarbon releases and atmospheric emissions from gas flaring, venting, fugitive and fuel combustion during production activities
- 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 as it is legally required to ensure that the environmental mitigation and monitoring programs are in place in order 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 organizations to conduct environmental impact assessments prior to the commencement of exploration drilling and production projects.

* LPG included

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

(1) Implementation of a sustainable development philosophy and framework of the way we conduct our business and daily operations in order to satisfy our current corporate vision and mission, and therefore creating sustainable value for all stakeholders

Our sustainable development framework focuses on three dimensions of business, namely, social, environmental, and economic. In line with the PTTEP's Sustainability 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 ISO 14001 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 Company's performance. PTTEP, as a result, has become the first petroleum exploration and production company in Thailand and in the Southeast Asian region to achieve the ISO 14001 Certification from AJA Registrars Limited.

(3) Development of EIA mitigation and monitoring program to prevent, correct, monitor and reduce impacts to the environment resulting from our operations, both domestically and internationally

(4) Establishment of short-term and long-term greenhouse gas emissions reduction and offsetting targets

PTTEP's 2015 annual reduction and offsetting target for greenhouse gas is at 3.5%, while the Company's long-term figure is set to be 20% by 2020, from 2012. In addition to the above targets, the Company managed to reduce and offset, and achieved 4.7% of GHG emissions in 2015. Our performance regarding Greenhouse Gas Emission Management is shown in the table below. More details of PTTEP's greenhouse gas performance are disclosed in our 2015 Sustainability Report.

Greenhouse Gas Emissions (GHGs)	Unit	2012	2013	2014	2015
Direct Total GHGs	Tonnes CO ₂ equivalent	4,431,144	4,459,039	4,399,529	4,163,609
Indirect Total GHGs	Tonnes CO ₂ equivalent	1,649	1,830	3,520	2,073
Other Relevant Indirect GHG Emission	Tonnes CO ₂ equivalent	12,817	12,470	33,622	23,318
GHG Intensity	Tonnes CO ₂ equivalent/Thousand Tonnes Production	337	310	308	291

* Domestic assets only (Arthit Project, Bongkot Project, S1 Project and PTTEP 1 Project)

(5) Implementation of the ISO 14064-1:2006 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)

Climate risk assessment was also conducted to prepare PTTEP for Climate Change Adaptation. Improvements were also made to improve direct measurement to quantify, account, report, and monitor GHG emissions more accurately.

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

The Roadmap includes plans for reduction of ecological footprint, for examples, carbon footprint to reduce greenhouse gas emissions from our operations and other initiatives through Clean Development Mechanism (CDM), water footprint, while increasing biodiversity through environmental 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 at the operational areas, mitigation of environmental impacts in the operational areas, waste management, minimization, reuse and recycling, green supply chain initiatives for our supply chain to become more eco-friendly. More details on PTTEP’s Green Practices Roadmap as well as the projects and initiatives are disclosed in our 2015 Sustainability Report.

(7) Since 2008, 100% re-injection of produced water into subsurface reservoirs to ensure no overboard discharging which could affect the environment at Bongkot Project, Arthit Project, S1 Project, and PTTEP 1 Project

(8) Controlling and monitoring of synthetic drilling fluid on cutting in order to reduce drilling wastes to comply with the standards as suggested in the Environmental Impact Assessment Report and also conducting new technology studies to reduce waste volume and improve waste quality from drilling activity

(9) Monitoring of discharged wastewater quality from production process as well as of seawater quality, sediment quality, benthos, and demersal fish around the operation platform to ensure limited exposure to environmental hazards

In addition, the annual Environmental Monitoring Reports of the above must be submitted to local regulators such as the Department of Mineral Fuels (DMF) 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.

(10) Implementation of the oil spill response plan, oil spill equipment, trainings and exercises are provided to ensure environmentally sound operations from Tier 1 oil spill incidents. PTTEP is also registered as a member in the Oil Industrial Environmental Safety Group Association (IESG) for Tier 2 oil spill response incidents. As for Tier 3 oil spill response, the Company is a registered member of the Oil Spill Response Limited (OSRL), cooperating with PTT Group in the mitigation of environmental impacts. In 2015, the Company's representatives participated in the Crisis Management Exercise (C-MEX-15) to familiarize themselves 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, e.g., mercury contaminated waste, oil contaminated wastes, chemical wastes, and other wastes from production process for environmental impact abatement

PTTEP also complies with the Basel Convention for the transportation and disposal of mercury contaminated wastes as well as mercury wastes, in addition to local legislations and requirements concerning waste management, to ensure that waste generated by our operations was controlled and disposed in compliance with the required legislations or standards.

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

(13) SSHE performance reporting in PTTEP's Sustainability Report has been assured by a third party since 2012 to 2015 and rated at the highest level of the Global Reporting Initiative (GRI) for four consecutive years.

(14) PTTEP has achieved a member status from the 2015 Dow Jones Sustainability Index (DJSI) World in Oil and Gas Industry for the second consecutive year (2014 – 2015).

(15) PTTEP has been rated by the Carbon Disclosure Project (CDP), a well-known organization which compiles and evaluates information regarding environmental governance, and shortlisted into the Carbon Disclosure Leader Index (CDLI) as one of the top companies in the Southeast Asia plus Hong Kong in disclosure of information of greenhouse gas emission as well as doing the most to combat climate change for two consecutive years since 2014. In 2015, PTTEP was also enlisted in the CDP Climate A List, which consists of 113 companies worldwide to receive this recognition for outstanding climate change leadership, and the first and only company from the Southeast Asia.

2.5.5 Implementation Results over the Past Three Years

During the past three years (2013 – 2015), PTTEP has strictly complied with both Thai and International legislations, and the other regulations and requirements concerning the area of Safety, Security, Health and Environment (SSHE) in our operations.

(1) Regularly conduct Environmental Impact Assessment Studies prior to the commencement of all exploration and production development projects as required by local regulations

In addition, EIA Audit Reports and Environmental Monitoring Reports are also conducted and submitted to local authorities and regulators periodically as required.

(2) Strictly comply with waste management regulations required by the Department of Mineral Fuels and other regulatory bodies

(3) Submission of SSHE performance reports to the local regulator, specifically, the Department of Mineral Fuels on a monthly and annual basis, and be audited by the regulator regarding SSHE implementation at operating areas

(4) PTTEP received and maintained the OHSAS 18001:2007 (Occupational Health and Safety Standard) which specifies requirements for a company to feature the occupational health and safety management system that enables the organization to control its occupational health and safety risks and improve its performance. The Company received the certification for the following projects, namely, S1, PTTEP 1, PTTEP Petroleum Development Support Base (PSB), Arthit, and Bongkot (for both North & South fields). The Company also plans to expand coverage of the OHSAS to Sinphuhorm Project and other international projects in 2016.

(5) PTTEP is constantly improving and developing our Environmental Management System Standard to comply with the revised edition of the international standards ISO 14001 (ISO14001:2004), and be audited and certified from AJA Registrars Limited under accreditation of the United Kingdom Accreditation Service (UKAS). By adopting the ISO 14001, the Company has improved the efficiency of our environmental management system by continuously upgrading the environmental practices in maintaining, developing, and reducing environmental impacts with details as listed below.

(5.1) Greater Bongkot North and South fields of the Bongkot Project – with the scope of “exploration and production of natural gas and condensate”

(5.2) Arthit Project – with the scope of “exploration and production of natural gas and condensate”

(5.3) S1 Project – with the scope of “exploration and production of petroleum”

(5.4) PTTEP 1 Project – with the scope of “exploration and production of petroleum”

(5.5) PTTEP Petroleum Development Support Base (Songkhla and Ranong) – with the scope of “provision of logistic services to offshore oil and gas operations”

(5.6) 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 of company document”

(5.7) Montara Field, Darwin base and Perth office of PTTEP Australasia (Ashmore Cartier) Pty Ltd in Australia – with the scope of “exploration and production”

PTTEP is also improving and developing our Environmental Management System Standard at Sinphuhorm Project and the other international operating units in order to bring these units into compliance with the ISO 14001 standard in the near future.

Regarding the spill incidents in years 2013, 2014, and 2015, the spills accounted for 2.92, 0.09 and 0.90 tonnes per one million ton of the production respectively. The total figures from these spills clearly indicate that the level of spillage in the year 2015 remains within the estimated target which is approximately 2.26 tonnes per one million ton of the production. This is lower than the average spill rate of IOGP in 2014, which was reported to be at an average spill rate of 4.25 tonnes per one million ton of the production. An improvement was resulted from the Company's intensive incident campaign for drilling and transportation activities as, despite an increase in these activities, the incident rate was better than target.

PTTEP is firmly committed to our SSHE policy, focusing on minimizing negative impacts on personnel and properties of both of the Company's as well as our contractors' with numerous indicators such as Lost Time Injury Frequency (LTIF) rate and Total Recordable Injury Rate (TRIR). In 2015, LTIF and TRIR were determined at 0.13 and 1.11 respectively, with a well-defined declining trend. Notably, this declining trend is lower than the average LTIF rate and TRIR of the IOGP of year 2014, which meanwhile were held at 0.36 and 1.54 respectively.

To align with PTTEP's sustainable growth, proactive reinforcement of the SSHE Management System is carried out throughout the Company's business life cycle in both domestic and international units. SSHE awareness training has been conducted to all staff in order to encourage the use of identical standard practices throughout.

2.5.6 Disputes or Lawsuits Regarding the Environment and Solutions

No legal dispute regarding the environment currently exists.

2.5.7 Safety, Security, Occupational Health and Environment Management

PTTEP emphasizes Safety, Security, Health and Environment in all the areas in which the company operates, first-prioritizing the surrounding communities and social responsibility. The Company has meanwhile been putting in a great effort to become a "Target Zero" incident organization, while trying to achieve our sustainable growth. The SSHE Management System (SSHE MS), on the other hand, ensures that all of the Company's activities are in compliance with all applicable laws and regulations.

PTTEP strictly adheres to the Process Safety Management and continuously improves our Personal Safety Management in order to control, prevent and reduce causes and impacts of serious injuries and incidents. Loss of Primary Containment (LOPC), which is an indicator used to analyze process safety performance, once compared with the 2014 average of the International Association of Oil and Gas Producer (IOGP), turned out that PTTEP LOPC Tier 1 and Tier 2 in 2015 were lower by 79% and 66% respectively.

PTTEP believes that SSHE Culture is very important in developing Safety, Security, Health and Environment Performance. The Company has continuously improved and launched the SSHE Culture campaign for motivation and creation of awareness among the Company's and our contractors' staffs through communication and BBS training, whereas the "Target Zero" and SSHE excellence within and around the organization are dutifully expected.

3. Risk Factors

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

3.1 Internal Risk Factors

3.1.1 New Investment Risks

Although oil price and world economic market are not favorable, PTTEP still needs to expand our investment to support long term growth together with creating values of existing assets in order to maintain the balance between business growth and sustainable income. Focusing on continuation of Bongkot concession, which will be expired in 2023 - 2024, and acquisition or farming in remaining potential areas in Thailand as well as expansion in the Company's growth platform, there are some associated risks, e.g., unclear on decommissioning decree, political changes, profit split in fiscal regime. In this regards, PTTEP has mitigated those risks which may have potentially impacts on our operation and investment growth in various ways, including promoting understanding of petroleum exploration and production (E&P) business to stakeholders, proactively conducting public relations, coordinating, monitoring and providing opinions for appropriate decommissioning in terms of technic, regulatory requirements, economic feasibility as well as studying of environment and social impacts from related activities.

In addition, in considering new investment, PTTEP also concerns about climate change risks which are assessed and analyzed regularly. The Company has a "Low Carbon Footprint Reduction" roadmap, targets and action plans in place to manage impacts of those risks such as potential carbon tax in the countries we operate, including Thailand and Australia, as well as other targeted investment countries, and physical damage to our asset structures from 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 fiscal regime, geographical conditions,

related law 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, merger and acquisition as well as withdrawal 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 corporate investment direction and policy and that it is economically and technologically, whether conventional or unconventional resources are involved, feasible, before proposing to the Risk Management Committee endorsement prior to final approval from the Board of Directors.

3.1.2 Exploration Risks

In E&P business, exploration activities are essential to ensure that additional new petroleum reserves are found to replace those which have been turned to production. Therefore, PTTEP has always aimed 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 for commercial development. The risk in exploration activities is related to finding a source for petroleum and a trap to contain it (Geological Risks) and the uncertainty of finding a petroleum field of commercial size (Resources Uncertainty).

Another major risk associated with petroleum exploration is the investment in exploration activities such as drilling of exploration and appraisal wells, including investment during the phase of geological and geophysical studies before drilling. The criteria for exploration decisions are based on assessment of the chance of success or geological risk assessment, resource estimation, an assessment of the size of petroleum resource, expenditure during 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 government's take according to conditions of the contract.

PTTEP establishes the 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 be in line with changing of the environment, outcome of exploration activities, and corporate targets.

Moreover, PTTEP also nominates a special advisory team, consisting of experts, to review and ensure quality and completeness of the investigation and that they are in compliance with the Company's standard and guideline of studies and evaluation before decision making.

3.1.3 Project Development Risks

Due to low oil price situation, PTTEP has postponed key development projects such as Mariana Oil Sands Project and Cash/Maple Field in PTTEP Australasia Project. Meanwhile, for new projects in which there are potential of 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, budgetary, and schedules for project completion, the Company focuses on developing our project team's skill which helps the Company to better prepare for and protect ourselves from the increased competition in the employment market of those with extensive skills and experience. Information and experience sharing of previous projects is also encouraged as part of the project team skills development, while the Company's Project Realization Process (PREP) continues to find new approaches to fine-tune operations so that targets are achieved.

3) Commercial contract: To ensure maximum efficiency in order to minimize the risks associated to non-contractual compliance and disputes while working with our contractors, the Company focuses on contract drafting, terms and condition identification and contract administration. The risks can however be controlled by negotiations based on comprehensive competency, knowledge, and concerted effort from various departments such as

construction, engineering, procurement, finance, accounting, and legal. Prudent contract management also lessens the risks and possible damages potentially resulting from delays which could adversely affect a given project as well as 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 sales such as well potential, production design flaws, damaged equipment, aging facilities, operation errors, and poor product quality, all of which can directly impact corporate goal, and production and sales targets.

Mitigation of production risks focuses on the areas of process planning and platform design, production control system, 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 improve equipment efficiency through preventive maintenance and inspection, with the goal to attain the 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 to 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 decreased 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, Oman 44 Project, and PTTEP Australasia Project in order to diversify the risks 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 GSAs generally lasts 25-30 years. To

mitigate market risks which can result in refusals from buyers to purchase contracted volumes of natural gas, GSAs stipulate buyer and seller obligations for committed annual minimum volume. Buyers must pay for the committed volume of gas, whether or not the full amount is taken (Take-or-Pay).

To effectively cope with the dynamics of Thailand energy market, 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 which can be developed as a Liquefied Natural Gas (LNG) project. This project, for example, fits with PTT's plan to import LNG as well as contributes well to the enhancement of energy security of Thailand.

3.1.6 Organization Capability Risks

The abilities of an organization are a key component towards the efficient realization of the company's targets, inevitably including human resources to support the company's growth and business process efficiency and effectiveness. 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 to be in line with the Company's growth strategy. The Capability and Technology Development Roadmap was created as well as research on technology to support business growth in five areas which are focused to increase exploration success, enhance more production, develop green practice, develop deep water, and operate unconventional.

2) System, procedures, and organization structure are developed according to 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 financial and accounting management capability is aimed for being the World Class Finance level such

as setting up Treasury Center, increasing efficiency of managerial accounting data analysis for decision making in M&A, establishment of 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 staffs in targeted countries, developing staff capability and leadership in response to requirements as well as enhancing employee engagement program with target to be Thailand Top Quartile by 2020. In addition, Human Resource process improvement and PTTEP's Values and Culture embedding are also key foundations for development and growth of the Company in the same direction with the PTT Group's.

3.1.7 Safety, Security, Health and Environmental Risks

As PTTEP and subsidiaries operate in the E&P business, the Company inherently encounters Safety, Security, Health and Environmental (SSHE) risks caused by internal and external factors which may have various degrees of severity.

PTTEP established a clear SSHE policy and constantly improves our SSHE performance to reinforce safety, security and environmental controls and efficiency. The Company has put in place the SSHE Management System (SSHE MS), a reflection of the Company's vision and mission, which is essential for the effective operation of all SSHE and SSHE-related activities.

SSHE MS standards and procedures define minimum requirements to be applied across the organization to ensure that relevant SSHE risks to personal safety and process safety are effectively and consistently managed, aiming to achieve the operational excellence. Management's commitment and employee's engagement are crucial in strengthening SSHE MS, leading up to a strong and sustained SSHE culture within the Company. In addition, the Company always communicates SSHE issues which may affect the Company operations such as natural disaster, epidemics, social and political unrest in an open and transparent manner in order to pave the way for us to be a leading E&P company with safe operations and sustainable development. The Company's SSHE MS is periodically reviewed to ensure performance excellence and maintain our public trust for safety and determination for future sustainability, in addition to building a SSHE culture where all of the members can contribute.

In 2015, PTTEP has been listed in the Climate A List of the Carbon Disclosure Project (CDP), an international non-profit organization in climate change area, making the Company the first and only company from the Southeast Asia among the 113 companies selected, from thousands of annual worldwide applicants, with such recognition.

This is a guarantee that PTTEP has standardized systems in place for both domestic and international projects, further demonstrating our effective changes in environmental management and commitment towards conducting the business with responsibility to the environment, and yet remaining able to achieve the objectives of sustainable development in every area where we operate.

Due to our strong commitment to sustainable development, social responsibility and quality of life, long term resources utilization and environment conservation along with response to country's energy demand, in 2015 PTTEP was listed once again for the second consecutive year in the Dow Jones Sustainability Index (DJSI) under the World Index of Oil and Gas Industry. This worldwide recognition reflects the Company's determination to conduct the business and sustain our growth without compromising our social and environmental well-being.

3.1.8 Financial Risks

Financial risks mainly consist of counterparty risk, and cash and liquidity risk. To manage the counterparty risk, it is a policy that PTTEP Group conducts businesses only with reputable and credit worthy counterparties. The financial stability and creditability of each counterparty must be analyzed and reviewed regularly. Currently the majority of PTTEP Group's products are sold to PTT which is the 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 the 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.

3.1.9 Shareholding Risks

Although PTT currently holds 65.29% of PTTEP's registered and paid-up capital, the Company is also listed in the Stock Exchange of Thailand and required to comply with related law and regulations especially the disclosure of information and connected

transaction, and other rules that safeguard all potential conflicts of interests. In addition, as the majority shareholder of PTT is the Ministry of Finance who is a government agency, the Company is also obliged to follow the rules and regulation of State Enterprise Policy Office. Appointing and removing of directors, and voting in subsidiary company, for example, must be in line with the decision of PTT's Board and its business policy.

PTTEP has constructed various measures which are designed to protect the rights of our minority shareholders. These measures include, as necessitated by the laws, disclosure of business transactions between PTTEP and our parent company and, when the transactions are of significance, requirement of approval from PTTEP's Board or shareholders (as the case may be). The minority shareholders have opportunities to make inquiries and agenda proposals as well as nominate qualified candidates for director elections during the shareholders' meetings where minutes are officially recorded. Meanwhile, communication between the Company and our shareholders is introduced in various venues such as quarterly meeting with the Investor Relations Section, investor site visit, PTTEP Newsletters, and other activities which are intended to provide the shareholders and investors with up-to-date and necessary information for their investment in the Company.

PTTEP and PTT are both listed companies and are governed by a stringent set of rules and regulations as set forth by the Stock Exchange of Thailand. For this and the aforementioned measures to minimize the shareholding risks, PTT's holding of majority of the Company's shares does not result in any material impacts on PTTEP's minor shareholders.

3.2 External Risks Factors

3.2.1 Political Risk in Investment Countries

Due to PTTEP's foreign investment policy to secure resources to meet the expanding domestic energy market and ensure the sustainable growth of the Company in the long term, the Company continues our growth strategy by expanding our business in countries that are susceptible to geopolitical risks. International expansion can be categorized into four main regions: Southeast Asia, Australasia, Americas, Africa and the Middle East. As a part of the policy, the Company has 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.

In 2015, PTTEP analyzed and evaluated a number of geopolitical risk factors, including political stability, macro-economics, legal and regulatory, and security risks across

the range of investment countries and found that the high risk area was in Africa and the Middle East mainly as a result of ISIS terrorism. Comprehensive assessment of the risks would immediately be conducted, and prompt responses from the Company especially when significant incidents happen would immediately be made. The Company, in such cases, has a process of evaluating risks and scenario formulation which assists our management and relevant departments in evaluating risks relating to investments as well as safety and security of the Company's staffs stationed overseas.

Analysis is also conducted to formulate geopolitical risk's rating scores which will be used as a 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 the invested countries to ensure that the Company's business operations are well-supported by them and align with their respective national energy policy.

3.2.2 Compliance Risk

Generally, these risks can be resulted 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, resulting in 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 is a significant amendment on the Organic Act on Counter Corruption (No. 3) B.E. 2558 which extends the punishment to legal entity that is related to government official bribery. PTTEP has recognized the importance and impact from the latest amendment of the Act and therefore included anti-corruption risk into the Corporate Risk Profile to closely monitor as well as improve internal control measures to effectively prevent all possible forms of corruption.

3.2.3 Price Risks

PTTEP's product prices vary with the world's oil market which is affected by a number of uncontrollable factors such as the market demand and supply, political and economic stability of various countries, OPEC's production policy, oil reserves of each country, and seasonal climate conditions.

Changes in the oil market have an immediate and direct impact on prices of PTTEP's crude oil and condensate. Prices of natural gas which is the Company's main product, on the other hand, change at a slower rate as the natural gas price formula has a built-in natural hedge mechanism against volatility of oil prices. The Company's prices of natural gas are periodically adjusted, for example, every six or twelve months as stipulated by each of the projects' price formula.

In an effort to minimize price risks, the risk management plans are formulated based on PTTEP's annual analysis and evaluation of the impact of different price levels on the Company's revenue and profits. These plans must be approved by the Risk Management Committee and acknowledged by the Board prior to the implementation.

In 2015 the overall oil market is predominantly driven by bearish factors. The global oversupply is mainly a result of OPEC's embarking on the strategy to protect its market share from Shale Oil. Strong U.S. Dollar and poor global demand in many regions, particularly China, have put an additional pressure on the oil price meanwhile.

PTTEP has implemented an oil price hedging program, approved by the Company's Risk Management Committee, which had helped to significantly protect our 2015 financial performance from the oil price's downward trend.

3.2.4 Exchange Rate Risks

PTTEP Group uses U.S. Dollar (USD) as the functional currency according to the International Financial Reporting Standards (IFRS) since 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 exchange rate risk from Thai Baht (THB) movement against USD as most of the Company's revenue is in THB which is linked to USD. For example, revenue from USD-linked crude oil sold to a customer who 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 USD/THB volatility therefore inevitably impose foreign exchange risks to the Company's cash flows. Under this circumstance, the Company has minimized foreign exchange risk by using available financial derivatives instruments in the market such as forward and option contracts to hedge the exposure relating to the foreign exchange rate as determined in the sales agreements by, for example, matching the Company's USD revenue with USD investments and operating expenditures.

With USD as the functional currency and 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 THB assets and THB liabilities as well as enter cross currency swaps on our THB-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 the future cash flows and fair value of the financial instruments employed. PTTEP Group eliminates and minimizes the risk by maintaining an appropriate debt portfolio optimization (ratio of fixed rate liabilities and floating rate liabilities) and using financial derivatives such as interest rate swap. Interest rate risk management is conducted dynamically, appropriately, and correspondingly to nature of the business, the market conditions, and the Company's acceptable cost and risk limits.

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, 2015, 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 (E 5-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	25.50
Bongkot (G12/48)	44.4445
Contract 4 (G7/50)	45
MTJDA	50
L28/48 ²	70
Arthit (G8/50)	80

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

² On November 24, 2015, PTTEP International Limited (PTTEPI), an operator of the exploration Block L28/48 had submitted the notification letter to return the whole participating interests in exploration Block L28/48 after the fulfillment of the exploration requirement. The return will be effective after the official approval from the Department of Mineral Fuels.

PTTEP1	100
G9/43	100
L22/43	100
Myanmar M3	80
Myanmar M11 ³	100
Zawtika	80
L53/43 & L54/43	100
<u>PTTEPO's joint venture</u>	<u>Company's interest (%)</u>
B8/32 & 9A ⁴	25.0010
<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	8.50
<u>PTTEP HL's joint venture</u>	<u>Company's interest (%)</u>
Vietnam 16-1	28.50
<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	100
<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

³ On December 9, 2015, PTTEP International Limited (PTTEPI) had received the official approval from the Government of Republic of the Union of Myanmar for the transfer of the participating interests in the Myanmar M11 Project from the other joint venture. As a result, PTTEPI's participating interests in the project increased from 52.9412% to 100% with an effective date on October 23, 2014.

⁴ PTTEP Offshore Investment Company Limited (PTTEPO) has shareholding in Orange Energy Limited and B8/32 Partners Limited, which hold the project's concession.

⁵ On November 28, 2014, another joint venture 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 approval from the Department of Mineral Fuels.

⁶ On November 7, 2014, PTTEP Semai II Limited (PTTEP SM) and its joint ventures 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 Indonesia.

<u>PTTEP SA's joint venture</u>	<u>Company's interest (%)</u>
Myanmar PSC G & EP 2 ⁷	70
Myanmar MD-7 & MD-8	100
Myanmar MOGE 3 ⁸	75
<u>PTTEP SMD's joint venture</u>	<u>Company's interest (%)</u>
Indonesia South Mandar ⁹	50.7463
<u>PTTEP ML's joint venture</u>	<u>Company's interest (%)</u>
Indonesia Malunda ¹⁰	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 ¹¹ and AC/P54	100
● AC/L1, AC/L2 and AC/L3	89.6875
● AC/RL10	90
● AC/RL4 (Tenacious)	100
● AC/RL6 (Audacious), AC/RL6 (exclusive Audacious)	50
● AC/RL4(exclusive of Tenacious), AC/RL5 ¹²	100
● WA-396-P and WA-397-P	20

⁷ On August 27, 2015, PTTEP South Asia Limited (PTTEP SA) received the official approval from the Government of Republic of the Union of Myanmar for the transfer of the participating interests in the Myanmar PSC G and EP 2 Projects to the other joint venture. As a result, PTTEP SA's participating interests in the projects decreased from 90% to 70%. PTTEP SA continues to be an operator of these projects.

⁸ On November 16, 2015, PTTEP South Asia Limited (PTTEP SA) received the official approval from the Government of Republic of the Union of Myanmar for the transfer of the participating interests in the Myanmar Oil and Gas Enterprise (MOGE) to the other joint venture. As a result, PTTEP SA's participating interests in the projects decreased from 85 to 75%. PTTEP SA continues to be an operator of these projects.

⁹ On July 24, 2015, PTTEP South Mandar Limited (PTTEP SMD) received the official approval from the Government of Indonesia for the transfer of the participating interests in the Indonesia South Mandar Project from the other joint venture. As a result, PTTEP SMD's participating interests in the project increased from 34% to 50.7463%. PTTEP SMD continues to be an operator of this project. During the year 2015, PTTEP SMD had submitted a request to terminate and return the exploration block of Indonesia South Mandar 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 Indonesia.

¹⁰ On May 8, 2015, PTTEP Malunda Limited (PTTEP ML) 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 Indonesia.

¹¹ Change the exploration Block name from AC/P33 to AC/RL12.

¹² On November 25, 2015, PTTEP Australia Timor Sea Pty Ltd had received the official approval from the Government of Commonwealth of Australia for the transfer of the participating interests in the exploration Block AC/RL4 and AC/RL5 from the other joint venture. As a result, its participating interests increased from 50% to 100%.

<u>Cove Energy Group</u>	<u>Company's interest (%)</u>
Mozambique Rovuma Offshore Area 1	8.5
Mozambique Rovuma Onshore ¹³	10
Kenya L5, L7, L11A, L11B & L12	10
<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

As at December 31, 2015, 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	24,444.50	(14,363.84)	(1,212.68)	8,867.98
Exploration and Evaluation Assets	4,727.44	-	(1,134.82)	3,592.62
Goodwill	1,134.08	-	(119.70)	1,014.38
Pipeline and Others	1,161.27	(277.97)	(0.33)	882.97
Total	31,467.29	(14,641.81)	(2,467.53)	14,357.95

¹³ On July 20, 2015, Cove Energy Mozambique Rovuma Onshore Limited (CEMROL) submitted a request to terminate its 10% participating interests in Mozambique Rovuma Onshore. The termination will be effective after receiving the official approval from the Government of Republic of Mozambique.

4.2 Investments

PTTEP has details of subsidiaries, associates and controlled entities presented as follows:

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2015	2014
<u>Subsidiary Companies</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) ¹	Thailand	Treasury center for the Group's business	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)	Cayman Islands	Petroleum	100	100
PTTEP Algeria Company Limited (PTTEP AG)	Cayman Islands	Petroleum	100	100
PTTEP Iran Company Limited (PTTEP IR)	Cayman Islands	Petroleum	100	100
PTTEP Holding Company Limited (PTTEPH)	Cayman Islands	Petroleum	100	100
PTTEP Indonesia Company Limited (PTTEP ID)	Cayman Islands	Petroleum	100	100
PTTEP Andaman Limited (PTTEPA)	Thailand	Petroleum	-	-
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
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) ⁴	Cayman Islands	Petroleum	100	100
PTTEP Semai II Limited (PTTEP SM)	Cayman Islands	Petroleum	100	100

¹ On May 27, 2015, the Group had established PTTEP Treasury Center Company Limited. The information is disclosed in Note 18.6 "Significant Transactions During the Year".

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

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

⁴ On October 21, 2015, the Company approved for the registration for the dissolution of PTTEP New Zealand Limited (PTTEP NZ). The information is disclosed in Note 18.6 "Significant Transactions During the Year".

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2015	2014
<u>Subsidiary Companies (continued)</u>				
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)	Commonwealth of Australia	Investment funding for the Group's business	100	100
PTTEP Australasia Pty Limited (PTTEP AA)	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)	Commonwealth of Australia	Petroleum	100	100
PTTEP Australasia (Petroleum) Pty Limited (PTTEP AAP)	Commonwealth of Australia	Petroleum	100	100
Tullian Pty Limited (PTTEP AAT)	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
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) ⁵	Cayman Islands	Petroleum	100	100
PTTEP Netherland Holding Limited (PTTEP NL)	Cayman Islands	Petroleum	100	100
JV Marine Limited (JV Marine)	Cayman Islands	Petroleum	100	100
PTTEP South Mandar Limited (PTTEP SMD)	Cayman Islands	Petroleum	100	100
PTTEP South Sageri Limited (PTTEP SS)	Cayman Islands	Petroleum	100	100
PTTEP Sadang Limited (PTTEP SD)	Cayman Islands	Petroleum	100	100
PTTEP Malunda Limted (PTTEP ML)	Cayman Islands	Petroleum	100	100
PTTEP Netherlands Coöperatie U.A. (PTTEP NC)	Netherlands	Petroleum	100	100

⁵ On September 24, 2015, the Company approved for the registration for the dissolution of JV Shore Base Limited. The information is disclosed in Note 18.6 "Significant Transactions During the Year".

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2015	2014
<u>Subsidiary Companies (continued)</u>				
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) ⁶	Republic of Cyprus	Petroleum	100	100
Cove Mozambique Terra Limitada (CMTL)	Mozambique	Petroleum	100	100
Cove Mozambique Energia Limitada (CMEL)	Mozambique	Petroleum	100	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
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 Investment Limited (PTTEP HKI) ^{7, 8}	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

⁶ Change name from Cove Energy Mozambique Rovuma Offshore Limited (CEMROFL) to PTTEP Mozambique Area 1 Limited (PTTEP MZA1).

⁷ On August 18, 2015, the Group had established PTTEP HK Investment Limited (PTTEP HKI). The information is disclosed in Note 18.6 "Significant Transactions During the Year".

⁸ On February 2, 2016, PTTEP HK Investment Limited (PTTEP HKI) changed the name to PTTEP HK Offshore Limited (PTTEP HKO).

Company name	Registered country	Type of business	Percentage of interest (including indirect holding)	
			2015	2014
<u>Associated Companies (continued)</u>				
PTTEP AP Group's Associates ⁹	Commonwealth of Australia	Air base	50	50
UAQ Petroleum Limited (UAQ)	Hong Kong	Petroleum	30	30
<u>Jointly Controlled Entities</u>				
Carigali – PTTEPI Operating Company Sdn Bhd. (CPOC)	Malaysia	Petroleum	50	50
Moattama Gas Transportation Company (MGTC)	Bermuda	Gas pipeline transportation	25.50	25.50
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
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) ¹⁰	Hong Kong	Produce and sale of petroleum product	50	50
Erawan 2 FSO Bahamas Limited (Erawan 2) ¹¹	Bahamas	FSO rental services	13.11	13.11
NST Supply Base Company Limited (NST) ¹²	Thailand	Petroleum supply base, port and warehouse	-	15.67

4.3 Net Book Value

As at December 31, 2015, PTTEP's net book value amounted to USD 11,328 million (equivalent to THB 408,811 million) or USD 2.85 per share (equivalent to THB 102.98 per share).

⁹ PTTEP AP's group associates are Mungalalu Truscott Airbase Pty Ltd. and Troughton Island Pty Ltd.

¹⁰ On December 26, 2014, the Board of Directors of PTTEP FLNG Limited (PTT FLNG) approved the dissolution of this company. It is currently in the process of the dissolution.

¹¹ Erawan 2 has a 100% shareholding in Asia Pacific Marine Services (EF) B.V.

¹² On September 2, 2015, NST Supply Base Company Limited (NST) completed its liquidation process. The information is disclosed in Note 18.6 "Significant Transaction During the Year".

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, 6th and 19th– 36th 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, 2015

6.2 Subsidiaries' Information

As of December 31, 2015, there were 63 subsidiaries. All of them had the same contact address, telephone and facsimile as those of PTTEP (see item 6.1). Details of directors 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	6,413,471	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	JV Shore Base Limited	JV Shore Base	50,000	USD 1	Ordinary Share	PTTEP IH 100%
8	PTTEP Africa Investment Limited	PTTEP AI	50,000	USD 1	Ordinary Share	PTTEPH 100%
9	PTTEP Holding Company Limited	PTTEPH	50,000	USD 1	Ordinary Share	PTTEPO 100%
10	PTTEP Hoang-Long Company Limited	PTTEP HL	50,000	USD 1	Ordinary Share	PTTEPO 100%
11	PTTEP Hoan-Vu Company Limited	PTTEP HV	50,000	USD 1	Ordinary Share	PTTEPO 100%

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
12	PTTEP Indonesia Company Limited	PTTEP ID	50,000	USD 1	Ordinary Share	PTTEPH 100%
13	PTTEP International Holding Company Limited	PTTEP IH	50,000	USD 1	Ordinary Share	PTTEPH 100%
14	PTTEP Iran Company Limited	PTTEP IR	50,000	USD 1	Ordinary Share	PTTEP OM 100%
15	PTTEP Kim Long Vietnam Company Limited	PTTEP KV	50,000	USD 1	Ordinary Share	PTTEPO 100%
16	PTTEP Malunda Limited	PTTEP ML	50,000	USD 1	Ordinary Share	PTTEP ID 100%
17	PTTEP South Asia Limited	PTTEP SA	50,000	USD 1	Ordinary Share	PTTEPH 100%
18	PTTEP Netherland Holding Limited	PTTEP NL	50,000	USD 1	Ordinary Share	PTTEP IH 100%
19	PTTEP New Zealand Limited	PTTEP NZ	50,000	USD 1	Ordinary Share	PTTEPH 100%
20	PTTEP Offshore Investment Company Limited	PTTEPO	6,667	USD 1	Ordinary Share	PTTEP 75% PTTEPI 25%
21	PTTEP Oman Company Limited	PTTEP OM	50,000	USD 1	Ordinary Share	PTTEPO 100%
22	PTTEP Rommana Company Limited	PTTEPR	50,000	USD 1	Ordinary Share	PTTEP AI 100%
23	PTTEP Sadang Limited	PTTEP SD	50,000	USD 1	Ordinary Share	PTTEP ID 100%
24	PTTEP Semai II Limited	PTTEP SM	50,000	USD 1	Ordinary Share	PTTEP ID 100%
25	PTTEP South Mandar Limited	PTTEP SMD	50,000	USD 1	Ordinary Share	PTTEP ID 100%
26	PTTEP South Sageri Limited	PTTEP SS	50,000	USD 1	Ordinary Share	PTTEP ID 100%
27	PTTEP Southwest Vietnam Company Limited	PTTEP SV	50,000	USD 1	Ordinary Share	PTTEPO 100%
28	PTTEP MEA Limited	PTTEP MEA	50,000	USD 1	Ordinary Share	PTTEP 100%

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
29	Sinphuhorm Holdings Limited	SHL	50,000	USD 0.01	Ordinary Share	PTTEPO 100%
30	PTTEP Australia Pty Ltd	PTTEP AU	50,000	AUD 1	Ordinary Share	PTTEPH 100%
31	PTTEP Australia Offshore Pty Ltd	PTTEP AO	50,000	AUD 1	Ordinary Share	PTTEP AU 100%
32	PTTEP Australia Perth Pty Ltd	PTTEP AP	50,000	AUD 1	Ordinary Share	PTTEPH 100%
33	PTTEP Australia Browse Basin Pty Ltd	PTTEP AB	50,000	AUD 1	Ordinary Share	PTTEP AP 100%
34	PTTEP Australasia (Staff) Pty Ltd	PTTEP AAS	10	AUD 1	Ordinary Share	PTTEP AB 100%
35	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	
36	PTTEP Australasia (Petroleum) Pty Ltd	PTTEP AAP	10	AUD 1	Ordinary Share	PTTEP AA 100%
37	Tullian Pty Ltd	PTTEP AAT	1	AUD 1	Ordinary Share	PTTEP AAP 100%
38	PTTEP Australasia (Finance) Pty Ltd	PTTEP AAF	1	AUD 1	Ordinary Share	PTTEP AA 100%
39	PTTEP Australasia (Ashmore Cartier) Pty Ltd	PTTEP AAA	1,700,000	AUD 2	Ordinary Share	PTTEP AB 100%
40	PTTEP Australasia (Operations) Pty Ltd	PTTEP AAO	106,686,517	AUD 0.20	Ordinary Share	PTTEP AB 100%

¹ Total amount equals AUD 200,631,256.48 (plus AUD 19,826,452.31 for the preference shares and AUD 770,914.25 for the Class B shares = total AUD 221,288,623.04).

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

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
41	PTTEP Australia Timor Sea Pty Ltd	PTTEP AT	50	No Par Value (average AUD 827,048.78) ³	Ordinary Share	PTTEP AB 100%
42	PTTEP Netherlands Coöperatie U.A.	PTTEP NC	- ⁴	-	-	PTTEP IH 0.00005% PTTEP NL 99.99995%
43	PTTEP Netherlands Holding Coöperatie U.A.	PTTEP NH	- ⁵	-	-	PTTEP HK 75% PTTEPI 25%
44	PTTEP Brazil Investment B.V.	PTTEP BI	324,423,816.34	USD 1	Ordinary Share	PTTEP NH 100%
45	PTTEP Canada Limited	PTTEP CA	1,643,241,372.84	CAD 1	Ordinary Share	PTTEP NC 100%
46	PTTEP FLNG Holding Company Limited	PTTEP FH	10,000	HKD 1	Ordinary Share	PTTEP IH 100%
47	PTTEP HK Holding Limited	PTTEP HK	10,000	HKD 1	Ordinary Share	PTTEP 25% PTTEPI 75%
48	Cove Energy Limited	COVE	5,089,129.47	GBP 1	Ordinary Share	PTTEP AI 100%
49	Cove Energy East Africa Limited	CEEAL	1,000	EUR 1	Ordinary Share	COVE 100%
50	Cove Energy Mozambique Rovuma Onshore Limited	CEMROL	1,000	EUR 1	Ordinary Share	CEEAL 100%

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 1,517,050,000.00 from 2010 to 2015.

⁵ PTTEP NH had total amount of Member Contribution of USD 324,423,816.77 from 2013 to 2014 (no member contribution in 2015).

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
51	PTTEP Mozambique Area 1 Limited	PTTEP MZA1	1,000	EUR 1	Ordinary Share	CEEAL 100%
52	Cove Energy Kenya Limited	CEKL	1,000	KES 100	Ordinary Share	CEEAL 99.9% COVE 0.1%
53	Cove Mozambique Terra Limitada	CMTL	50,000	MZN 1	Ordinary Share	CEMROL 99% PTTEP MZA1 1%
54	Cove Mozambique Energia Limitada	CMEL	50,000	MZN 1	Ordinary Share	PTTEP MZA1 99% CEMROL 1%
55	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%
56	PTTEP SP Limited	PTTEP SP	2	GBP 2	Ordinary Share	SHL 100%
			95,279,585	USD 95,279,585	Ordinary Share	
57	PTTEP HK Investment Limited	PTTEP HKI	10,000	HKD 1	Ordinary Share	PTTEP HK 100%
Service Business						
58	PTTEP Services Limited (Personnel Services Support)	PTTEP Services	100,000	THB 10	Ordinary Share	PTTEP 25% PTTEPI 75%
59	Andaman Transportation Limited (Investments in gas pipeline projects in Myanmar)	ATL	62,500	USD 1	Ordinary Share	PTTEPO 80% MOGE 20%

No	Company Name	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
60	PTTEP Southwest Vietnam Pipeline Company Limited (Investments in gas pipeline projects in Vietnam)	PTTEP SVPC	50,000	USD 1	Ordinary Share	PTTEPH 100%
61	PTTEP Australia International Finance Pty Ltd (Raise Fund for PTTEP Business)	PTTEP AIF	50,000	AUD 1	Ordinary Share	PTTEP AP 100%
62	PTTEP Canada International Finance Limited (Raise Fund for PTTEP Business)	PTTEP CIF	50,000	CAD 1	Ordinary Share	PTTEP NC 100%
63	PTTEP Treasury Center Company Limited (Treasury Center for PTTEP and its subsidiaries)	PTTEP TC	10,000,000	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 BV	MOECO International B.V.

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

As of December 31, 2015, PTTEP had 17 associated companies. Details of the directors of 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, floor 4-5, Vibhavadi-Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900						
	Telephone: 66 (0) 2537- 3456						
	Facsimile: 66 (0) 2537- 2935						

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
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						
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						

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
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% • NOEL 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	B 8/32 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,						
	5th floor, Ratchadapisek Road,						
	Chatuchak, Bangkok, 10900						
	Telephone: 66 (0) 2545-5555						
	Facsimile: -						

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
7	Hoang Long Joint Operating Company	Petroleum Exploration and Production	HL JOC	- ⁶	-	-	<ul style="list-style-type: none"> • PTTEP HL 28.5% • PVEP 41% • SOCO 28.50% • OPECO 2.0%
	Head Office: Suite 2001, Me Linh Point Tower, 2 Ngo Duc Ke Street, District 1, Ho Chi Mihn City, S.R. Vietnam						
	Telephone: (848) 3829-9359						
	Facsimile: (848) 3822-6106						
8	Hoan-Vu Joint Operating Company	Petroleum Exploration and Production	HV JOC	- ⁷	-	-	<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: (848) 3823-9525						
	Facsimile: (848) 3823-9526						

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

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
9	Mungalalu Truscott Airbase Pty Ltd	Operation of Air Base	-	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)	-	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						

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
11	Groupement Bir Seba	Petroleum Exploration and Production	GBRS	- ⁸	-	-	<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						
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						

⁸ 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
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, Nassau, New Providence, Bahamas						
	Telephone: -						
	Facsimile: -						
14	Leismer Aerodrome Limited	Operation of Air Base	LAL	200	No Par Value	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						

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
15	Asia Pacific Marine Services (EF) B.V.	Lease of FSO (vessel)	Asia Pacific Marine Services	18,000	EUR 1	Ordinary Share	• Erawan 2 FSO 100%
	Head Office: Naritaweg 165, Telestone 8, 1043 BW Amsterdam, The Netherlands						
	Telephone: -						
	Facsimile: -						
16	UAQ Petroleum Inc.	Petroleum Exploration and Production	UAQ	10,000	HKD 1	Ordinary Share	<ul style="list-style-type: none"> • PTTEP FH 30% • Canemir 70%
	Head Office: Room 3105, Alexandra House 18 Chater Road Central, Hong Kong						
	Telephone: (852) 2234-9349						
	Facsimile: (852) 2234-9765						

No.	Company Name	Type of Business	Abbreviation	Number of Shares Sold	Par Value	Share Type	Shareholders
17	Natuna 2 B.V.	Petroleum	Natuna 2	90,000	EUR 1	Ordinary Share	<ul style="list-style-type: none"> • PTTEP NH 50% • PHE OG 50%
	Head Office: Teleportboulevard 140, 1043 EJ Amsterdam, The Netherlands	Exploration and Production					
	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.
Canemir	Canemir Petroleum (UAQ) Corp.
Chevron Global	Chevron Global Energy Inc.
Erawan 2 FSO	Erawan 2 FSO Bahamas Ltd.
FCCL	FCCL Partnership

Abbreviation	Name
KrisEnergy	KrisEnergy (Gulf of Thailand) Ltd.
MOGE	Myanmar Oil and Gas Enterprise
MOECO BV	MOECO International B.V.
MOECO	Mitsui Oil Exploration Co., Ltd.
NOEL	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 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

Name	Thailand Securities Depository Company Limited
Address	93, Rachadapisek 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, +66-2299-1321
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	3rd 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) Debentureholders' Representative

- 3.1) Debentureholders' 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 3rd 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 500 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 +65-6432-0351, +65-6432-0354, +65-6432-0120
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, Chompon, Chatuchak,
Bangkok 10900, Thailand
Telephone +66-2299-1536, +66-2299-1321
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 Equity

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	Krung Thai Bank Public Company Limited
	Division	Corporate Sales, Treasury
	Address	Building 1 (Nana Nua), 8th Floor, 35 Sukhumvit Road, Klongtoey Nua, Wattana, Bangkok 10110, Thailand
	Telephone	+66-2208-4649
	Facsimile	+66-2256-8398
10.2)	Name	Kasikornbank Public Company Limited
	Division	Capital Markets Business Division
	Address	400/22 Phahon Yothin Avenue, Samsen-Nai, Phayathai Bangkok 10400, Thailand
	Telephone	+66-2470-3006
	Facsimile	+66-2470-3065
10.3)	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
10.4)	Name	Siam Commercial Bank Public Company Limited
	Division	Corporate Banking Division 4, Wholesale Banking Group
	Address	12th Floor, Zone B, 9 Ratchadapisek Road, Chatuchak, Bangkok 10900, Thailand
	Telephone	+66-2544-5745
	Facsimile	+66-2937-7969

11) FX Contracts Counterparties

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

- 11.4) Name Citibank, N.A.
 Division Corporate Sales & Structuring Thailand
 Address Interchange 21 Building, 399 Sukhumvit Road,
 Klongtoey-Nue, Wattana, Bangkok 10110, Thailand
 Telephone +66-2788-2785
 Facsimile +66-2785-4825
- 11.5) Name CIMB Thai Bank Public Company Limited
 Division Global Sales Division
 Address 44 Langsuan Road, Lumpini, Pathumwan,
 Bangkok 10330, Thailand
 Telephone +66-2670-4658, +66-2670-4659
 Facsimile +66-2657-3281
- 11.6) Name TMB Bank Public Company Limited
 Division Capital Markets
 Address 3000 Phahon Yothin Road, Chatuchak,
 Bangkok 10900, Thailand
 Telephone +66-2676-8008
 Facsimile +66-2292-4690
- 11.7) Name Siam Commercial Bank Public Company Limited
 Division Financial Market Division
 Address 12th Floor, Zone B, 9 Ratchadapisek Road,
 Chatuchak, Bangkok 10900, Thailand
 Telephone +66-2544-5741
 Facsimile +66-2937-7969

- 11.8) Name BNP Paribas, Bangkok Branch
 Division Global Markets
 Address 990 Abdulrahim Place, 29th Floor, Rama IV Road, Silom
 Bangrak, Bangkok 10500, Thailand
 Telephone +66-2659-8991
 Facsimile +66-2636-1929
- 11.9) Name Bank of America, N.A., Bangkok Branch
 Division Fixed Income Currencies and Commodities
 Address 87/2 All Seasons Place, CRC Tower, 20th Floor,
 Wireless Road, Bangkok 10330, Thailand
 Telephone +66-2305-2985, +66-2305-2986
 Facsimile +66-2685-3224
- 11.10) 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 +66-2614-4847-53
 Facsimile -

12) Auditor

- 12.1) Name Office of the Auditor General of Thailand
 Address Soi Areesampan, Rama VI Road, Phayathai
 Bangkok 10400, Thailand
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13) Legal Advisors

- 13.1) Name Allens Linkslaters
Address Level 37 101 Collins Street
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- 13.2) Name Ashurst LLP
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Financial Centre Tower 3, Singapore 018982
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Facsimile +65-6221-5484
- 13.3) Name Baker Botts
Address One Shell Plaza 910 Louisiana Street, Houston,
Texas 77002-4995, U.S.A.
Telephone +1-713-229-1234
Facsimile +1-713-229-1522
- 13.4) Name Baker & McKenzie/ Trench, Rossi e Watanabe Advogados
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Address 1 Centro Empresarial Internacional Rio Av. Rio Branco, 1, 19º
andar, Setor B 20090-003 Rio de Janeiro, RJ - Brasil
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Bangkok 10500, Thailand

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13.5) Name Goodrich, Riquelme y Asociados

Address Paseo de la Reforma 265

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13.6) Name Herbert Smith Freehills LLP

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15 Queen's Road Central,

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13.9) Name Mattos Filho, Veiga Filho, Marrey Jr. e Quiroga Advogados
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Facsimile -

-
- 13.10) Name Mochtar Karuwin Komar
- Address 14th Floor, Wisma Metropolitan II, Jl. Jend.
Sudirman Kav. 31, Jakarta 12820 Indonesia
- Telephone +62-2-1571-1130
- Facsimile +62-2-1571-1162, +62-2-1570-1686
- 13.11) Name Pracha Tooppoltup Law Office
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- Telephone +66-2-530-3173
- Facsimile -
- 13.12) Name SAL & Caldeira Advogados, Lda.
- Address Julius Nyerere Av. 3412, Maputo, Mozambique - Cx – Postal 2830
- Telephone +25-8-2124-1400
- Facsimile +25-8-2149-4710
- 13.13) Name Siam Premier International Law Office Limited
- Address The Offices at CentralWorld, 26th Floor, 999/9 Rama 1 Road,
Pathumwan, Bangkok 10330, Thailand
- Telephone +66-2646-1888
- Facsimile -
- 13.14) Name Slaughter and May (Hong Kong)
- Address 47th Floor, Jardine House, One Connaught Place,
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- Facsimile +852-2845-2125
-

14) Advisors to the Board of Directors

- 14.1) Name Mr. Tongchat Hongladarom
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- Telephone +66-2258-4363
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- 14.2) Name Ms. Sukhon Kanchanalai⁹
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- Telephone +66-2589-5566
- Facsimile -

15) Advisor to the Risk Management Committee

- Name Mr. Nuttachat Charuchinda
- Address 52/48 Moo 2, Bangkhen, Nonthaburi 11000, Thailand
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6.5 Other Significant Information

- None -

⁹ Resigned from Advisor of the Board of Directors on January 1, 2016.