



Executive Summary

In 2018, PTTEP continued to operate for sustainable growth through the strategy focusing on the investment in strategic areas where the Company has full range expertise, namely “Coming-Home Strategy” including Thailand and South East Asia which reflects through winning of Bongkot and Erawan bidding in December 2018 that will materially improve petroleum reserves to PTTEP. Other success included acquisition of 22.2222 % of participating interest in Bongkot gas field with additional sale volume and immediate cash flow at mid of 2018. PTTEP also rationalized investment portfolio in non-core areas proven with Montara Field divestment in Australia completed in the third quarter. To support long term growth, PTTEP continued to accelerate on FID of Pre-Development projects mainly the Mozambique Rovuma Offshore Area 1 Project which progressively stepped forwards in finalizing and signing of long term LNG Sale and Purchase Agreements (SPAs) with potential buyers while expected the FID in first half of 2019. Moreover, the Company has strengthened exploration activities in Myanmar and Malaysia that would increase long term petroleum reserves. Besides, PTTEP remains focusing on M&A opportunity within the region and other prolific areas e.g. Middle East with strategic partners.

To be agile amid challenges and disruption of industry landscape, PTTEP strongly believes that collaboration among stakeholders is more important than only competition as it brings shared value and mutual benefits. As a result, PTTEP’s new vision, “Energy Partner of Choice”, is not only defined as common business partner but this new vision also means to create shared value and mutual benefits to all stakeholders. Likewise, PTTEP has re-organized its structure, business operations as well as staffs to improve its agility and efficiency coupled with adoption of new appropriate technology e.g. AI and robotics in order to support the growth of E&P business and capture new business opportunity to sustain the Company’s long term growth.

For 2018, PTTEP reported net income of 1,120 MMUSD with more than 89% higher comparing to the previous year. The net income from normal operation increased to 1,215 MMUSD comparing to previous year at 836 MMUSD, mainly driven by higher average selling price (ASP) and increased sales volume. The company’s unit cost of 2018 is slightly higher at 31.7 USD per Barrel of Oil Equivalent (BOE), according to increased royalty expenses aligning with higher ASP and higher DD&A expenses due to Bongkot acquisition. Additionally, PTTEP’s financial structure remains strong and ready to accommodate new investment opportunities reflected by positive cash flow generated from operation of 3,276 MMUSD with healthy EBITDA margin at 73%. As of yearend 2018, the Company maintained its robust financial position, with total assets amounting to 19,571 MMUSD, of which 4,001 MMUSD was cash and short-term investments; while total liabilities were reported at 7,551 MMUSD in which interest-bearing debt accounted for 1,946 MMUSD; and total shareholders’ equity ended at 12,020 MMUSD.

Table of key financial results

(Unit: Million US Dollar)	2018	2017	% Inc. (Dec.) YTD	Q3 2018	Q4 2018	Q4 2017	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Total Revenue	5,459	4,523	21	1,398	1,557	1,271	11	23
Sales Revenue	5,203	4,281	22	1,338	1,411	1,202	5	17
EBITDA	3,860	3,063	26	992	1,024	825	3	24
Profit(loss) for the period	1,120	594	89	315	269	289	(15)	(7)
Basic earnings(loss) per share (Unit: US Dollar)	0.27	0.13	>100	0.07	0.07	0.07	0	0
Profit(loss) from normal operation	1,215	836	45	292	283	240	(3)	18
Profit(loss) from non-recurring items	(95)	(242)	61	23	(14)	49	>(100)	>(100)



Economic Outlook in 2018

Crude Oil Prices

Crude oil prices are among the key determinants of the Company's performance. In 2018, Dubai crude oil price averaged at 69.65 USD per barrel (Source: Platts). Although the price improved from 2017 average at 53.14 USD per barrel, crude oil prices remained volatile. During the first half of 2018, Dubai crude oil price moved higher due to the production cut from OPEC and Non-OPEC producers, whose compliances were above the target. As a result, the global crude inventory decreased and approached to the average level last 5 years (2013-2017). In addition, there were other key bullish drivers of crude oil prices such the concerns on global supply disruption due to the geopolitical issues in major producer countries e.g. sanctions on Iran and Venezuela imposed by US. Global economy also recovered and this positive growth outlook pointed to a continuously risen in crude oil demand. In October 2018, prior to the due of US sanction on Iran, Dubai crude oil price spiked to the peak of the year 2018 at 84.40 USD per barrel. However, crude oil prices dramatically dropped since arising of concerns over the global economic recession that mainly pressured by tensions on US-China trade war, economic slowdown in emerging countries such Turkey, Argentina and Indonesia. In the meanwhile, on the supply side, global crude market became over supply from the US granting waive to majors Iranian oil importers, higher US shale oil production, the slight increase of production of OPEC and Non-OPEC such as Saudi Arabia and Russia . These led to a sharp drop and the price at the end of 2018 closed at 52.84 USD per barrel or 37% decrease within the fourth quarter of 2018.

Liquefied Natural Gas (LNG)

For LNG Market in 2018, the average Asian spot price increased to 9.76 USD per MMBTU (Source: Platts) mainly driven by higher demand from China and India coupled with supports from the rally of global oil prices that moved to the highest level during last 3 years. However, the LNG market remained oversupply due to incremental volumes from new projects, mainly from LNG projects in Australia, Russia and the U.S. with total capacity of 315 million ton, while LNG's demand stayed at 312 million ton.

Thailand's Energy Demand

Thailand's energy demand from January to November of 2018 was reported at 2.15 million BOED, or 1.1% increased comparing to the same period last year (Source: EPPO, The Ministry of Energy), driven by Thailand's economic expansion. During 2018, energy consumption from crude oil, coal and imported hydropower increased while demand of natural gas and lignite slightly decreased. Domestic power generation has increased from hydro as a result of heavy raining along the year whereas LNG was imported at the level equivalent to last year.

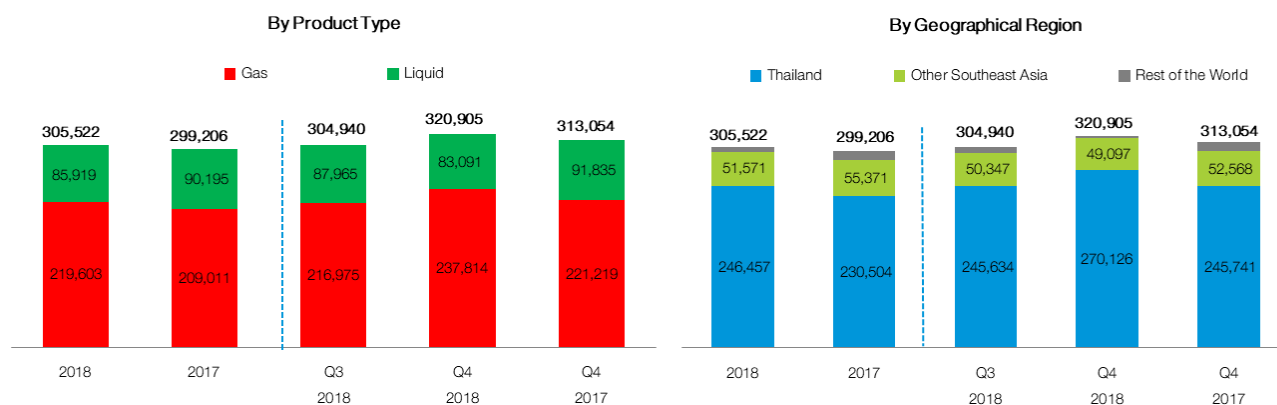
Exchange Rates (Thai Baht against US Dollar)

PTTEP's functional currency is US Dollar (USD) whereas the tax filing currency is Thai Baht (THB), thus USD/THB exchange rate is another factor affecting the Company's financial performance. For 2018, USD/THB continued to fluctuate and became strengthening through the first quarter of 2018 as a result of uncertainty of US trade and fiscal policies coupled with recovery of overall Thai economy. In the second quarter of 2018 USD/THB depreciated since foreign fund was flown back to the US market where the interest rate gradually hiked. In the second half of the year 2018, despite the global financial market and foreign fund flow remained fluctuated due to concerns over US-China trade war, Strong Thai economy supported the strength of THB mainly driven by higher Bank of Thailand (BOT) policy rate and recovery of domestic economy. At the end of 2018, USD/THB slightly appreciated to 32.45 THB/USD from 32.68 THB/USD at the end of 2017, leading to tax saving related to foreign exchange gains for PTTEP.

Financial Performance

Average Sales Volume and Selling Price

Unit: Barrels of Oil Equivalent per Day



Average selling price and Dubai crude oil price (Unit : US Dollar)	2018	2017	% Inc. (Dec.) YTD	Q3 2018	Q4 2018	Q4 2017	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
Average selling price (/BOE)	46.66	39.20	19	47.67	47.79	41.74	0	15
Liquid price (/BOE)	67.40	52.26	29	69.92	66.01	59.20	(6)	12
Gas price (/MMBTU)	6.42	5.59	15	6.44	6.90	5.75	7	20
Average Dubai crude oil price (/BBL)	69.65	53.14	31	74.22	68.30	59.31	(8)	15

For the year ended 2018 compared with the year ended 2017

For 2018, average sales volume of PTTEP and its subsidiaries (the “Group”) increased to 305,522 barrels of oil equivalent per day (BOED) when compared with the year ended 2017 (In 2017: 299,206 BOED). The increase was primarily from the Bongkot Project, due to the acquisition of the additional participating interests, although there was a lower nomination from buyer, and from the Contract 4 Project, due to higher nomination from buyer. The average selling price increased to 46.66 USD/BOE (In 2017: 39.2 USD/BOE).

For Fourth quarter of 2018 compared with Third quarter of 2018

In Q4/2018, the Group had an average sales volume of 320,905 BOED. An increase from Q3/2018 of 304,940 BOED was primarily due to higher nomination from buyer of the Bongkot Project and the Sinphuhorm Project. The average selling price in Q4/2018 also increased to 47.79 USD/BOE (Q3/2018: 47.67 USD/BOE).

For Fourth quarter of 2018 compared with Fourth quarter of 2017

When compared the average sales volume for Q4/2018 to Q4/2017 of 313,054 BOED, the average sale volume increased primarily due to the acquisition of the additional participating interests of the Bongkot Project, although there was a shutdown for maintenance activities in Q4/2018. The average selling price increased to 47.79 USD/BOE (Q4/2017: 41.74 USD/BOE).

Overall Operating Results

For the year ended 2018 compared with the year ended 2017

For 2018, the Group had a net profit of 1,120 MMUSD, an increase of 526 MMUSD or 89% from a net profit in 2017 of 594 MMUSD. The increase in profit can be separated as the profit from normal operation of 1,215 MMUSD and loss from non-recurring items of 95 MMUSD.

The profit from normal operation for the year ended 2018 was 1,215 MMUSD, an increase of 379 MMUSD when compared with a profit for the year ended 2017 of 836 MMUSD. The reason was primarily due to an increase in sales revenue of 922 MMUSD mainly from an increase in the average selling price, while income tax expense increased 227 MMUSD mainly from an increase in petroleum profit due to an increase in sales revenues. There was an increase in depreciation, depletion and amortization expenses of 198 MMUSD mainly due to the acquisition of additional participating interests of the Bongkot Project as well as an increase in the number of development wells and wellhead platforms in the Contract 4 Project and the S1 Project. In addition, the petroleum royalties and remuneration expenses increased by 102 MMUSD.

With the consideration of the loss from non-recurring items of 2018, the Group reported a loss of 95 MMUSD, a decrease in loss of 147 MMUSD when compared with 2017 which reported a loss of 242 MMUSD. The reason was primarily due to a recognition of an impairment loss on assets of the Mariana Oil Sand Project of 558 MMUSD. However, Thai Baht against US Dollar in 2018 was less appreciated than in 2017, resulting in an increase of 272 MMUSD in income tax expense relating to changes in foreign exchange rate and a recognition of loss on foreign exchange rate amounting to 19 MMUSD in 2018 while recognised gain on foreign exchange rate in 2017 of 51 MMUSD. In addition, there was a loss on the Montara field divestment of 58 MMUSD.

For Fourth quarter of 2018 compared with Third quarter of 2018

For Q4/2018, the Group reported a net profit of 269 MMUSD, a decrease of 46 MMUSD or 15% from a net profit in Q3/2018 of 315 MMUSD. The increase in profit can be separated as the profit from normal operation of 283 MMUSD and loss from non-recurring items of 14 MMUSD.

The profit from normal operation for Q4/2018 was 283 MMUSD, a decrease of 9 MMUSD when compared with the profit for Q3/2018 of 292 MMUSD. The reason was primarily due to an increase in the income tax expenses of 59 MMUSD, while there was an increase in sales revenue of 73 MMUSD mainly from increases in average selling price and sales volume.

With the consideration of the loss from non-recurring items of Q4/2018, the Group reported a loss of 14 MMUSD, a decrease of 37 MMUSD when compared with Q3/2018 which reported a profit of 23 MMUSD. The reason was primarily due to an increase in income tax expense relating to changes in foreign exchange rate of 76 MMUSD from the depreciation of Thai Baht against US Dollar in Q4/2018, as well as, the derecognition of deferred tax assets from group of companies in Australia of 54 MMUSD due to no future benefit to be utilized. However, there was an increase in gain on financial derivatives mainly from oil price hedging of 77 MMUSD which recognized a gain on oil price hedging of 68 MMUSD in Q4/2018, while a loss on such transaction of 9 MMUSD in Q3/2018.

For Fourth quarter of 2018 compared with Fourth quarter of 2017

When compared a net profit for Q4/2018 with the same period last year which reported a net profit of 289 MMUSD, the Group had a decrease in profit of 20 MMUSD or 7%, which can be separated to the following.

The net profit for Q4/2018 mainly consisted of the profit from normal operation which was 283 MMUSD, an increase of 43 MMUSD when compared with the profit for Q4/2017 of 240 MMUSD. The reason was primarily due to an increase in sales revenue of 209 MMUSD mainly from an increase in the average selling price. However, there was an increase in total expense mainly from an increase in income tax expense of 108 MMUSD, as well as an increase in depreciation, depletion and amortization expenses of 48 MMUSD mainly due to the acquisition of additional participating interests of the Bongkot Project.

With the consideration of the loss from non-recurring items for Q4/2018, the Group reported a loss of 14 MMUSD, a decrease of 63 MMUSD when compared with Q4/2017 which reported a profit of 49 MMUSD. The reason was primarily due to an increase in income tax expense relating to changes in foreign exchange rate of 68 MMUSD from the depreciation of Thai Baht against US Dollar in Q4/2018, as well as, the derecognition of deferred tax assets from group of companies in Australia of 54 MMUSD due to no future benefit to be utilized, and assets divestment (Montara field) which resulting to loss on divestment of 21 MMUSD. However, there was an increase in gain on financial derivatives mainly from oil price hedging of 74 MMUSD which recognized a gain on oil price hedging of 68 MMUSD in Q4/2018, while a loss on such transaction of 6 MMUSD in Q4/2017.

Operating Results by Segments

Net Profit (loss)	2018	2017	% Inc. (Dec.) YTD	Q3 2018	Q4 2018	Q4 2017	% Inc. (Dec.) QoQ	% Inc. (Dec.) YoY
(Unit: Million US Dollar)								
Exploration and production	954	254	>100	205	229	250	12	(8)
Thailand	1,073	826	30	266	303	264	14	15
Overseas	(119)	(572)	79	(61)	(74)	(14)	(21)	>(100)
- Other Southeast Asia	59	40	48	14	18	(4)	29	>100
- Australia	(151)	(46)	>(100)	(60)	(89)	(8)	(48)	>(100)
- America	(27)	(563)	95	(17)	(5)	(3)	71	(67)
- Africa	(0.2)	(3)	93	2	2	1	0	100
Pipeline transportation	230	238	(3)	82	7	63	(91)	(89)
Head office and others	(64)	102	>(100)	28	33	(24)	18	>100
Total	1,120	594	89	315	269	289	(15)	(7)

For the year ended 2018 compared with the year ended 2017

For 2018, the Group reported a net profit of 1,120 MMUSD, an increase of 526 MMUSD or 89% when compared with a net profit in 2017 of 594 MMUSD, primarily due to an increase of Exploration and Production segment in America of 536 MMUSD and Thailand of 247 MMUSD, while there was a decrease of Head Office and Others segment of 166 MMUSD and Exploration and Production segment in Australia of 105 MMUSD.

Exploration and Production segment

- America

For 2018, America segment reported net loss of 27 MMUSD, a decrease of 536 MMUSD or 95% from net loss of 563 MMUSD in 2017, primarily due to the recognition of impairment loss on assets of the Mariana Oil Sand Project.

- Thailand

For 2018, Thailand segment reported a net profit of 1,073 MMUSD, an increase of 247 MMUSD or 30% from net profit of 826 MMUSD in 2017. The increase was primarily due to an increase in sales revenue mainly from an increase in average selling price, while there was an increase in depreciation, depletion and amortization expenses which mainly derived from the acquisition of additional participating interests of the Bongkot Project and increase in income tax expense.

- Australia

For 2018, Australia segment reported net loss of 151 MMUSD, an increase of 105 MMUSD or more than 100% from net loss of 46 MMUSD in 2017, primarily due to assets divestment (the Montara Field) which resulting to loss on divestment and the derecognition of deferred tax assets from group of companies in Australia due to no future benefit to be utilized.

Head Office and Others segment

For 2018, the Head Office and Others segment reported net loss of 64 MMUSD, a decrease of 166 MMUSD or more than 100% when compared with net profit of 102 MMUSD, primarily due to less appreciated Thai Baht against US Dollar in 2018 than in 2017, resulting in an increase in income tax expense.

For the Fourth quarter of 2018 compared with Third quarter of 2018

In Q4/2018, the Group reported a net profit of 269 MMUSD, a decrease of 46 MMUSD or 15% when compared with a net profit in Q3/2018 of 315 MMUSD, primarily due to a decrease of the Pipeline Transportation segment of 75 MMUSD, while there was an increase of the Exploration and Production segment in Thailand of 37 MMUSD.

Pipeline Transportation segment

In Q4/2018, the Pipeline Transportation segment reported a net profit of 7 MMUSD, a decrease of 75 MMUSD or 91% when compared with a net profit in Q3/2018 of 82 MMUSD, primarily due to the recognition of deferred tax expense from the Zawtika Gas Pipeline Investment Project.

Exploration and Production segment

- Thailand

In Q4/2018, Thailand segment reported a net profit of 303 MMUSD, an increase of 37 MMUSD or 14% from net profit of 266 MMUSD in Q3/2018. The increase was primarily due to an increase in sales revenue mainly from an increase in average sales volume, while there were increases in income tax expense and operating expense.

For the Fourth quarter of 2018 compared with Fourth quarter of 2017

In Q4/2018, the Group reported a net profit of 269 MMUSD, a decrease of 20 MMUSD or 7% when compared with a net profit in Q4/2017 of 289 MMUSD, primarily due to a decrease of the Exploration and Production segment in Australia of 81 MMUSD and the Pipeline Transportation segment of 56 MMUSD, while there was an increase of Head Office and Others segment of 57 MMUSD and the Exploration and Production segment in Thailand of 39 MMUSD.

Exploration and Production segment

- Australia

In Q4/2018, Australia segment reported a net loss of 89 MMUSD, an increase in loss of 81 MMUSD or more than 100% from net loss of 8 MMUSD in Q4/2017, primarily due to the derecognition of deferred tax assets from group of companies in Australia due to no future benefit to be utilized.

- Thailand

In Q4/2018, Thailand segment reported a net profit of 303 MMUSD, an increase of 39 MMUSD or 15% from net profit of 264 MMUSD in Q4/2017. The increase was primarily due to an increase in sales revenue mainly from an increase in average selling price, while there was an increase in depreciation, depletion and amortization expenses which mainly derived from the acquisition of additional participating interests of the Bongkot Project. In addition, there were increases in income tax expense and operating expense.

Pipeline Transportation segment

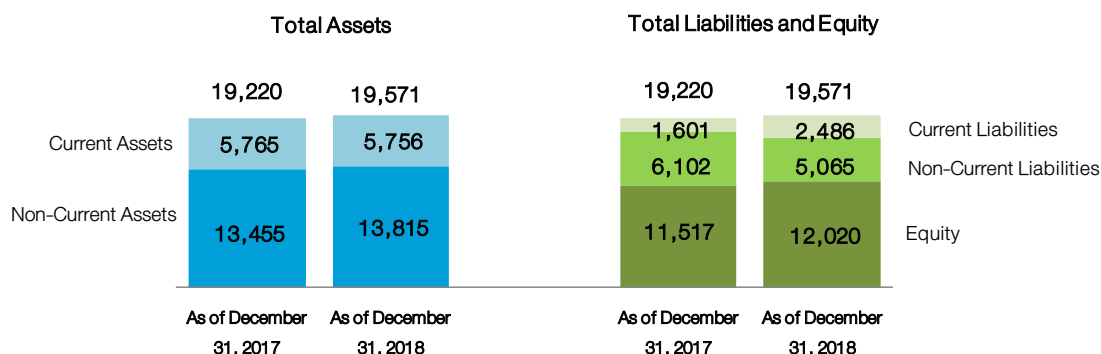
In Q4/2018, the Pipeline Transportation segment reported a net profit of 7 MMUSD, a decrease of 56 MMUSD or 89% when compared with a net profit in Q4/2017 of 63 MMUSD, primarily due to the recognition of deferred tax expense from the Zawtika Gas Pipeline Investment Project.

Head Office and Others segment

In Q4/2018, the Head Office and Others segment reported net profit of 33 MMUSD, an increase of 57 MMUSD or more than 100% when compared with net loss of 24 MMUSD in Q4/2017, primarily due to an increase in financial derivatives (recognised gain in Q4/2018 while recognised loss in Q4/2017) mainly from oil price hedging. However, there was an increase in income tax expense and a recognition of loss on foreign exchange due to the depreciation of Thai Baht against US Dollar in Q4/2018

Financial Position

Unit: Million US Dollar



Assets

As at December 31, 2018, the Group had total assets in the amount of 19,571 MMUSD, an increase of 351 MMUSD from the total assets as of December 31, 2017 of 19,220 MMUSD, primarily due to;

- (1) Current assets, which were primarily comprised of cash and cash equivalents, short-term investments, account receivable – parent company, and other receivables, reduction of 9 MMUSD mainly due to a decrease of 467 MMUSD in cash and cash equivalents including short-term investments, while there was an increase of 393 MMUSD in other receivables and 71 MMUSD in account receivable – parent company.
- (2) Non-current assets, which were primarily comprised of exploration and production assets in joint venture projects being recognized as part of the property, plant and equipment, exploration and evaluation assets and goodwill, an increase of 360 MMUSD was mainly due to an increase in the property, plant and equipment, and goodwill of 245 MMUSD, primarily due to the acquisition of additional participating interests of the Bongkot Project.

Liabilities

As at December 31, 2018, the Group had total liabilities of 7,551 MMUSD, a decrease of 152 MMUSD from total liabilities as at December 31, 2017 of 7,703 MMUSD, primarily due to;

- (1) Current liabilities, which were primarily comprised of income tax payable, accrued expenses, deferred considerations acquired through business acquisition, and current portion of long term financial liabilities, increased 885 MMUSD mainly due to an increase in deferred considerations acquired through business acquisition of 466 MMUSD, primarily due to the acquisition of additional participating interests of the Bongkot Project, an increase in income tax payable of 272 MMUSD, an increase in accrued expense of 106 MMUSD, and an increase in current portion of long term financial liabilities of 7 MMUSD which was the net result of a reclassification of some portion of debentures due within one year and a settlement of unsecured and unsubordinated debentures on the maturity date.
- (2) Non-current liabilities, which were primarily comprised of provision for decommissioning costs, debentures and deferred tax liabilities, decreased 1,037 MMUSD mainly due to settlement of long-term loans of 575 MMUSD and a reclassification of some portion of debentures due within one year to current liabilities of 404 MMUSD (debentures 13,200 MMTHB).

Capital Structure

As at December 31, 2018, the capital structure comprised of shareholders' equity in the amount of 12,020 MMUSD and total liabilities of 7,551 MMUSD, including the interest-bearing debts of 1,946 MMUSD with a weighted average cost of debt of 5.32% and the average maturity of 8.67 years. All interest-bearing debts are fixed interest and denominated in US Dollar currency.

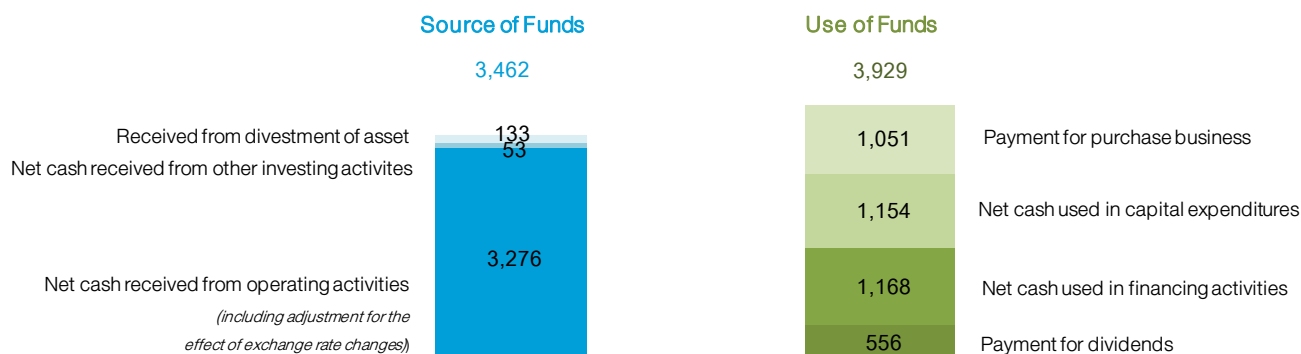
In Q1/2018, the Group redeemed the unsecured and unsubordinated debentures on the maturity date for 2,500 MMTHB.

In Q2/2018, the Group paid the unsecured and unsubordinated loans before the payment schedule for 575 MMUSD.

In Q3/2018, the Group redeemed the unsecured and unsubordinated debentures on the maturity date for 323 MMUSD.

Cash Flows

Unit: Million US Dollar



For twelve months in 2018

As at December 31, 2018, the Group had cash and cash equivalents, including short-term investment in the form of bank fixed deposit with a maturity of more than three months, but within twelve months of 4,001 MMUSD, a decrease of 467 MMUSD from cash and cash equivalents including short-term investment as at December 31, 2017 of 4,468 MMUSD.

Sources of funds in the amount of 3,462 MMUSD primarily came from Net cash received from operating activities as a result of the positive net cash flows from sales revenues, offset with cash payments for expenditures and income tax expense.

Uses of funds in the amount of 3,929 MMUSD primarily came from Net cash used in additional investment activities for exploration and production assets, primarily for investment in the S1 Project and the Zawtika Project and the acquisition of additional participating interests of the Bongkot Project. For the Net cash used in financing activities, there were mainly the payment of loans and debentures, and the payment of dividend for the second half of 2017 and the first half of 2018.

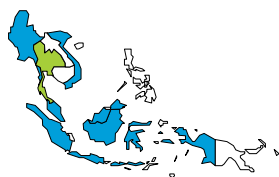
Key Financial Ratios

	2018	2017	Q3 2018	Q4 2018	Q4 2017
Profitability Ratio (%)					
EBITDA to revenue from sales	72.68	70.26	72.55	71.08	67.35
Return on equity	9.51	5.18	9.91	9.51	5.18
Net profit margin	20.51	13.12	21.71	20.51	13.12
Leverage Ratio (Times)					
Debt to equity	0.16	0.25	0.17	0.16	0.25
Debt to EBITDA	0.63	0.95	0.66	0.63	0.95

Remark:

EBITDA to revenue from sales	=	Profit before deduction of interest, tax and depreciation to revenue from sales including revenue from pipeline transportation
Return on equity	=	Net profit for the past 12 months to average shareholders' equity
Net profit margin	=	Net profit to total revenue (for the past 12 months)
Debt to equity	=	Interest Bearing Debt to shareholders' equity
Debt to EBITDA	=	Average Interest Bearing Debt to profit before deduction of interest, tax and depreciation for the past 12 months

Operational Highlights



Thailand and Southeast Asia



America



Australia



Africa

At the end of 2018, PTTEP's domestic and international operations altogether sum to 40 projects in 11 countries, with total proved reserves of 677 million barrels of oil equivalent (MMBOE) and probable reserves of 351 MMBOE. The followings are key project highlights.

Projects in Thailand

PTTEP currently has 16 projects in Thailand, the majority of which are projects in the *production phase*, and are located in the Gulf of Thailand and onshore. Average sales volume from projects in Thailand amounted to 246,457 BOED in 2018, which accounted for 81% of PTTEP's total sales volume. The key activities of producing projects include; the **Bongkot Project** maintained the production plateau as planned and successfully completed the acquisition of additional 22.2222% stake, as a result, the current working interest is 66.6667%. In December 2018, PTTEP was awarded the rights of petroleum exploration and production and as the operator of Bongkot and Erawan fields, the concessions are expiring in 2022-2023. The **S1 Project** has continuously drilled additional production wells to maintain production levels. Apart from the producing projects, **Ubon Field of the Contract 4 Project** is in the process of pre-development with expected first production by 2023 at planned capacity of 25,000 BPD for crude oil and 50 MMSCFD (approximately 8,300 BOED) for natural gas.

Projects in Southeast Asia

PTTEP has 15 projects in this region which are located in the Republic of the Union of Myanmar (Myanmar), the Socialist Republic of Vietnam (Vietnam), Malaysia and the Republic of Indonesia (Indonesia). In 2018, the average sales volume from projects in this region amounted to 51,571 BOED, which accounted for 17% of PTTEP's total sales volume.

The highlights of key projects in the *production phase* within this region can be summarized as follows. The **Zawtika Project**, located in the Gulf of Moattama, Myanmar, completed production drilling in Phase 1C with 4 production platforms and has continuously drilled additional wells to maintain production plateau. In 2018, the natural gas sales volume averaged 298 MMSCFD (approximately 47,569 BOED) The **Vietnam 16-1 Project**, located offshore in the southeast of Vietnam, started producing from 2 production platforms and is currently drilling an additional production well to maintain production plateau. In 2018, crude oil and natural gas sales volume averaged 17,238 BPD and 6 MMSCFD (approximately 1,353 BOED) respectively.

The *exploration phase* projects in this region are mainly located in onshore and offshore of Myanmar. The major highlights include the **Myanmar M3 Project**, is awaiting approval for the Field Development Plan that was proposed in Q4/2018, from the Government of Myanmar. The **Myanmar MD-7 Project**, is in preparation for drilling plan for an exploration well in 2019. The **Myanmar M11 Project**, is also in preparation for drilling plan of an exploration well in 2019 and is seeking partner to manage the project's risk. The **Myanmar MOGE 3 Project**, has drilled an exploration well in December 2018 and is under drilling preparation of 3 exploration wells in 2019. The **Sarawak SK410B Project** in Malaysia, is currently assessing the fields' resource potential and under drilling preparation of an exploration well in 2019. The **Sarawak SK417 Project**, is currently evaluating the petroleum potential. The **Sarawak SK438 Projects**, is now under drilling preparation of 2 exploration wells in 2019. The **Vietnam B & 48/95 Project** and the **Vietnam 52/97 Project** are located offshore of Vietnam. The projects have been granted approval for the Field Development Plan and are currently in the negotiation process on commercial terms in order to push forward the Final Investment Decision (FID) with the first production target at the end of 2022 and ramping up capacity to 490 MMSCFD.

Projects in the Americas

PTTEP has 5 projects in this region located in Canada, the Federative Republic of Brazil (Brazil) and United Mexican States (Mexico). All projects are in the *exploration phase*.

The **Mariana Oil Sands Project**, located in Alberta, Canada, was granted the approval for the development Thornbury Phase 1 field in May 2018 and is under the evaluation of appropriate project development plan.

PTTEP has 2 projects in Brazil. The **Barreirinhas AP1 Project** is located in the Barreirinhas Basin, offshore to the northeast of Brazil, and the **Brazil BM-ES-23 Project** is located offshore in the Espirito Santo basin, east of Brazil. Both projects are currently evaluating the petroleum potential.

PTTEP has 2 projects in Mexico: **The Mexico block 12 (2.4) Project**, located in the Mexican Ridges, western Gulf of Mexico and; the **Mexico block 29 (2.4) Project**, located in the Campeche, southern Gulf of Mexico. The projects submitted the exploration plan to the National Hydrocarbons Commission in Mexico in Q4/2018, expecting the approval within Q1/2019.

Projects in Australia

PTTEP has 1 project in this region, **PTTEP Australasia Project**, which is located in the Commonwealth of Australia (Australia), comprising of 8 permits.

The **Montara Field** is in the *production phase*, with average sales volume in 2018 of 5,368 BPD. The divestment of the field was completed on 28 September 2018. However, the operatorship transfer is awaiting for approval from the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) which is expected to be within 2019.

The **Cash Maple Field** is in the *exploration phase*. The field has completed the Pre-FEED study and is under the evaluation of appropriated development plan. The **AC/P54 Field**, is under drilling preparation of an exploration well in Q1/2019.

Projects in Africa

PTTEP has 3 projects in this region, located in the People's Democratic Republic of Algeria (Algeria) and the Republic of Mozambique (Mozambique).

The **Algeria 433a and 416b Project**, which is in the *production phase* and is located onshore in the eastern part of Algeria. In 2018, the project has average production volumes of 17,350 BPD.

The **Algeria Hassi Bir Rekaiz Project** is located onshore in the eastern part of Algeria. The project's development plan has been approved by the Algerian government in April 2018 and is divided into 2 phases. The first phase capacity of around 10,000-13,000 BPD is expected to start production within 2020 with a plan for the second phase production capacity ramping up to around 50,000-60,000 BPD in 2024.

The **Mozambique Rovuma Offshore Area 1 Project**, which is in the *exploration phase*, is a large LNG project located in offshore Mozambique, the project has made a significant progress in 2018 which includes; the government approval of Plan of Development (POD) in Golfinho-Atum area in February; negotiation on construction agreement of onshore LNG liquefaction plant; the completion of contractor selection for offshore installation. In addition, the project is now under the finalization and signing of long term LNG Sale and Purchase Agreements (SPAs) with potential buyers and, in parallel, the project is negotiating for project finance with financial institutions in order to support the Final Investment Decision (FID) in the 1H2019, with the planned first phase of production at 12 MTPA starting in 2024.



Company Strategy

Portfolio Management

During 2018, PTTEP continues to operate according to the 3R strategy “RESET REFOCUS RENEW” in order to enhance the company competitive advantage and sustainable growth amid challenges of new industry landscape.

(1) **RESET: Increase value and sale volume of legacy assets and maintain competitive advantage**

- Increase production and sale volume from legacy assets
- Maintain cost competitiveness among peers
- Improve petroleum reserves through acceleration on FID of Pre-Development projects including the Mozambique Rovuma Offshore Area 1 Project, the Algeria Hassi Bir Rekaiz Project, the Vietnam B & 48/95 Project and the Vietnam 52/97 Project as well as the Contract 4 (Ubon Field)
- Reposition in non-core assets

(2) **REFOCUS: Expand core E&P business to strategic investment areas**

- **Coming-Home Strategy:** PTTEP focus on investments in Thailand and South East Asia where the Company targets as strategic investment areas. The evidences of Renew strategy are reflected through acquisition of additional participating interest in Bongkot, winning in the bidding of both expiring concessions, Bongkot and Erawan gas fields. As the current operator of Bongkot, PTTEP is able to carry out investment as plan to ensure continuity of gas supply. Similar to Erawan, PTTEP also puts forward clear work plan, together with the upcoming Facility Access Agreement, Staff and Job Handover Agreement, Detailed Facility and Infrastructure Assessment as well as Common Use of production Facility Agreement to ensure smooth transition of operatorship. In addition, PTTEP propels the activity in exploration projects located in Myanmar and Malaysia to improve petroleum reserves. Moreover, PTTEP also looks to expand business opportunities such as Gas Value Chain business in Myanmar in term of Gas-to-Power.
- **Strategic Alliance:** PTTEP captures new investment opportunity in other petroleum prolific areas with strategic alliances by mainly focusing on the Middle-East where considered as low cost barrel region.

(3) **RENEW: Enhance capability in technology and capture new business opportunity to maintain long term sustainability**

The Company has transformed its organization and invested in new business focusing on technology and innovation as well as R&D capability to support core E&P business and future investment opportunity related to energy industry. In 2018, PTTEP has re-organized its structure and business operations to improve its agility and efficiency to be line with our growth strategy. The new organization structure was effective since January 2019.

Capital Management

PTTEP focuses on ensuring effective financial management by maintaining a robust capital structure. As of the end of 2018, the Company maintained a strong liquidity position with cash on hand of approximately USD 4.0 billion and debt-to-equity ratio of 0.16 which is in line with the Company financial policies and also provides adequate liquidity in order to fund capital expenditure to maintain production, develop future projects in the pipeline, and carry out exploration activities as well as to support new investment opportunities through Merger and Acquisitions (M&A).

Moreover, the Company has prepared to undertake transactions of cross-border payment via Blockchain which could enhance the efficiency of PTTEP's cross-border remittance for our partners and service providers with faster and lower cost of operation.

Sustainable Development

PTTEP's Sustainable Development is aligned with global indices and UN principles. In 2018, PTTEP was selected, for the fifth consecutive year, as a member of Dow Jones Sustainability Index (DJSI) in the Oil and Gas Upstream & Integrated Industry sector and for the third consecutive year, elected as a constituent of the FTSE4Good Index Series, in the category of FTSE4Good Emerging Index 2018. In addition, PTTEP received the Thailand Sustainability Investment Award 2018 and the outstanding award on SET Sustainability Awards 2018 from the Stock Exchange of Thailand.

This recognition underlines our ongoing commitment to sustainability as a leading sustainable organization. Key activities in 2018 covering business, society, and environment, are as follows:

Business PTTEP encourages all staff on Research & Development (R&D), creation of new technology and innovation in order to support our core business by allocating approximately 3% of net income each year as a budget for research and technology development. During 2018, the key projects in progress are as follows

- **Increase Exploration Success** i.e. Electromagnetic for subsurface fluid movement monitoring to enhance petroleum exploration and production efficiency
- **Green Practice** i.e. CO₂ emission reduction and re-utilization.
- **Petroleum Related Technology** i.e. Autonomous Underwater Vehicle (AUV) and In-pipe Inspection Robot

PTTEP also received several awards in 2018 e.g. The Asset Best Initiative in Innovation 2018, from The Asset Magazine, that awarded to the PTTEP's initiative to enhance petroleum production planning and efficiency. Moreover PTTEP has submitted for intellectual properties of 13 innovation projects which reflect PTTEP's commitment and support in Research and Development.

Social PTTEP is committed to carrying out its business operations in a socially responsible manner, and is focused on four development areas: fundamental needs, education, environment, culture and sports. In 2018 PTTEP continuously focused on the fundamental needs related projects and expanded its success to others target communities e.g. expansion of Crab Hatchery Learning Project into Songkhla and Pattani provinces as well as the establishment of others Services for Children (SIOLA) project in western Sulawesi, Indonesia. According to those activities, in 2018 PTTEP has been recognized from more than 10 international CSR awards.

Safety, Security, Health and Environment PTTEP has an environmental management system which encompasses a project's entire life cycle, and is a subset of PTTEP's Safety, Security, Health and Environment Management System (SSHE MS). In 2018 PTTEP had a Lost Time Injury Frequency (LTIF) score of 0.07 and a Total Recordable Incident Rate (TRIR) score of 0.75. The Company's performance on both safety indicators is in line with the average of the members in the International Association of Oil and Gas Producers (IOGP). Moreover, PTTEP aims to become a Low Carbon Footprint organization, and has revised a goal to reduce its greenhouse gas (GHG) emissions by a minimum 25% by the year 2030 versus its 2012 base year figure.



Future Business Outlook

Energy Outlook

Current global energy consumption still primarily relies on Fossil fuels including crude oil, natural gas and coal which together contribute around 81% of global consumption and expected to maintain its dominant proportion up to 73% of energy consumption during the next 30 years (Source: IHS). Although consumption from renewable energy is expected to gradually grow to 22% of the future consumption including 5% growth from nuclear. Natural gas demand including LNG remains robust aligning with the global economic expansion especially in power generation sector and national energy policy of various countries e.g. China which is transforming to clean energy consumption from natural gas. Crude oil consumption seems to grow in decelerated rate while the expansion of petrochemical industry and heavy-duty transport sector are the key boosters. In contrast, crude oil consumption in passenger car is expected to reduce from higher efficiency development of oil consumption in passenger car and growing use of electric vehicle. In addition, demand in renewable energy tends to enlarge in many countries particularly in solar and wind. Thanks to rising support from governments as well as advanced technology of power generation, renewable energy will become cheaper with economy of scale.

For Thailand, the Government is finalizing the Power Development Plan (PDP), in order to reflect current circumstances and the change in electricity consumption pattern. Nonetheless, Thailand power generation is still expected to heavily rely on fossil fuels, mainly natural gas. Renewable energy seems to gradually grow whereas coal consumption is likely to decrease.

To handle above situations, PTTEP continues to strategically pursue gas value chain business. This ultimate goal is in-line with the global demand outlook where natural gas remains dominant source of supply. As the Company endeavors to ensure readiness of Bongkot and Erawan production transition plan since PTTEP has won the bidding of both expiring gas fields in December 2018 and to accelerate development of large natural gas projects in the portfolio especially Mozambique Rovuma Offshore Area 1 Project. Moreover PTTEP seeks for investment opportunities of gas value chain business in prolific area as seen a jointly invested subsidiary with PTT namely PTT GL that would expand business opportunity in integrated LNG projects globally with the key objectives to enhance competitiveness and strengthen energy security of Thailand.

In addition, PTTEP realizes the changes and challenges of new industry landscape, consequently PTTEP strategically focuses on expanding into new business. In 2018, PTTEP has established a subsidiary named AI and Robotics Ventures Company Limited" (ARV) in order to support future investments in Artificially Intelligence (AI) and Robotics. More over the Company aims to enhance value of E&P business, also focuses investment in gas value chain and alternative energy particularly solar and wind to maintain our competitiveness and support long term growth with sustainability amid coming challenges.

Oil Price Outlook

For 2019, average Dubai crude prices is expected to range between 55-65 USD per barrel following to slightly shrunk global demand outlook comparing to 2018 mainly driven by Chinese economic slowdown and inconclusive path of US and China trade war.

Currently, crude oil prices remains pressured by the glut of global supply which primarily caused by rapid growth of US shale production despite the infrastructure bottleneck. The US shale oil flooding to global crude market likely occurs after the completion of the pipeline project to the gulf. Other factors contributing to oversupply include lower than expectation of crude supply cut from Russia and Iraq as well as minimal Iranian crude supply shortage due to partially US sanction waived on major importers.

Notwithstanding, the key bullish factors for global crude price in 2019 that should keep in focus are; higher crude demand following to softening or reaching to consensus agreement of US-China trade war, full effect of Iran nuclear sanction imposed by US

which can disrupt Iranian supply to global market between 1.2-1.8 MMBPD, the compliance of production cut from OPEC and Non-OPEC producers as agreed in the meeting on last December 2018 and whether a new production cut target from those majors producers can be a driver for crude oil price recovery.

LNG Market

The oversupply situation of Global LNG market is expected to prolong towards 2019 with total capacity of existing and upcoming LNG projects growing by 12% to 355 million ton, while demand side is anticipated to stabilize at 342 million ton. In addition lower crude oil prices put pressure on 2019 global LNG price that is expected to decrease comparing to 2018. Average Asian Spot LNG price is expected to range between 5.89-8.45 USD/MMBTU. However, the global LNG price remains fluctuated caused by number of bearish factors e.g. increasing LNG supply from new projects sanction during 2019-2020 and bullish factors e.g. higher LNG demand in Asian Market especially from China and India, supply disruption from existing LNG projects coupled with national energy policy from various countries. Nonetheless, demand-supply of global LNG market is expected to rebalance following to 2022-2023.

Thai Economy and Foreign Exchange Outlook

The Bank of Thailand has forecasted growth of Thai economy in 2019 at 4.0%. The main drivers consist of the anticipated expansion of domestic consumption and investment of private sector, increase of employment rate, spending from government projects as well as growth of export sector and tourism industry. For exchange rate, USD/THB exchange rate remains volatile as a result of uncertainty of monetary and fiscal policies from industrialized countries e.g. unclear direction of Brexit, slow hike of US policy rate led to depreciation of USD in 2019. In addition, US trade barrier policy and other geopolitical issues are the key factors of USD fluctuation comparing to other currencies.

PTTEP's financial performance will be affected by USD/THB exchange rate fluctuations mainly through income tax. The effect arises since the Company's functional currency is the US Dollar whereas tax filing currency is the Thai Baht. However, the implication of this difference would not create impact to the Company's cash flows. Moreover, an increasing interest rate outlook would not impact to the Company's financial performance as its current interest-bearing debt are in fixed-rate.

Other important factors that affect the Company's operations

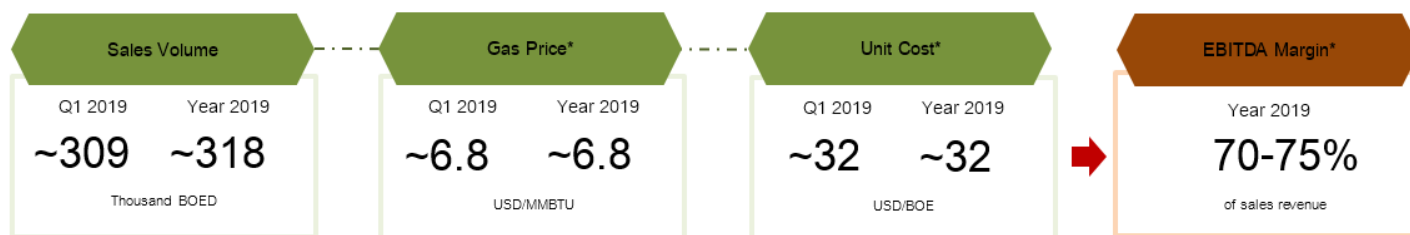
IMO 2020 Regulations. the International Maritime Organization (IMO) agreed to limit Sulphur content in all marine fuels to 0.5% (from current 3.5%) effective on January 1, 2020 onwards. As the result, demand of High Sulphur Fuel Oil (HSFO) is expected to decrease significantly and will likely lead to lower HSFO's price. According to PTTEP gas sale agreement especially in the Gulf of Thailand, HSFO is a factor accounted in the gas pricing formula which led to a risk of lower selling price. However PTTEP has realized in the impact of this issue while expecting minimal impacts thanks to lagging of fuel price linked to gas sale formula varied from 6-12 months. In the meantime PTTEP is actively negotiating with buyers and started to hedge against volatility of HSFO. In addition, from 2022 onwards, PTTEP expects material decrease of the impacts according to gas selling price of Bongkot and Erawan under the new production sharing contracts linked to Dubai crude price.

Enactment of Laws and Regulations that affect the Company's operations: In 2018, enactment of Laws and Regulations that affect to PTTEP are Laws related to Production Sharing Contract, Decommission, Budget, Finance and Accounting. PTTEP also closely monitors the proposed enactment of amendments to the Revenue Code Act and the Petroleum Income Tax Act, which will allow tax filing in non-THB functional currencies. This will subsequently decrease the impact of FX volatility.

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

PTTEP's performance outlook for 2018

PTTEP's performance depends on three major factors including Sales volumes, Gas price and Unit cost with the guidance summary as follows;



*Based on average Dubai price assumption of 60 USD/BBL for 2019

Sales volume:

PTTEP focuses on maintaining the production level in Thailand with the estimated sales volume for Q1/2019 and full-year 2019 of approximately 309 KBOED and 318 KBOED, respectively. The target sales volume is supported by the additional participating interests in the Bongkot Project since mid of 2018.

Sales price:

- PTTEP's liquid prices will fluctuate relative with global crude prices.
- PTTEP's gas prices are linked via a price formula with 6-12 months lag-time to referenced global oil prices indices. Average gas price for Q1/2019 and full-year 2019 are estimated at approximately 6.8 USD/MMBTU, reflecting the upturn in oil price environment. (Based on average Dubai price assumption of 60 USD/BBL for full-year 2019)
- Outstanding volume of oil price hedging as of year-end 2018 is approximately 5 MM barrel; the Company, however, consistently monitors crude oil price movements and has the flexibility to adjust the hedging plan as appropriate.

Unit Cost:

In Q1/2019 and for the full-year 2019, PTTEP endeavors to uphold its competitive unit cost at around 32 USD/BOE in line with planned investment and activities.