

# Q1 2019 Financial Results and Strategy Update

## Analyst Meeting

9 May 2019



## Key Highlights



## Industry Trends



## Strategy and Growth



## Financial Performance



# Q1 2019 Performance Highlights



Financial

**394** MMUSD of **Net Income**

**29.3** \$/BOE of **Unit Cost**



Operations

**319** KBOED of **Sales Volume**

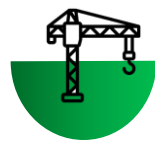
**0.00** of **LTIF\***



Exploration

Successful well drilling in

**AC/P54**



Development

**Start Development in Algeria**

*(1<sup>st</sup> phase of Algeria HBR)*

**9.5** MTPA of **Signed LNG SPAs**

*(MOZ Area 1)*



Bongkot/  
Erawan

**PSCs Signed** in

February 2019



Growth

**Acquisition of Murphy's business**

**4** Newly Awarded **Exploration Blocks**

*(in Malaysia and UAE)*

\*LTIF is Loss Time Injury Frequency



Key Highlights



Industry Trends



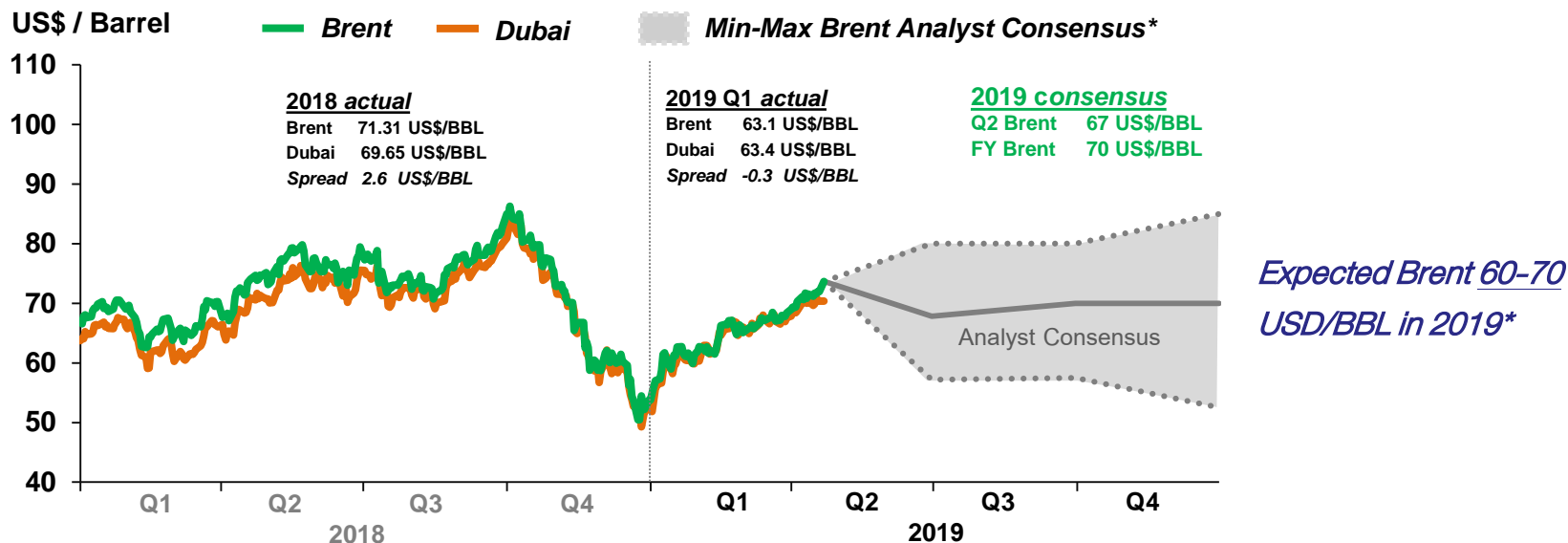
Strategy and Growth



Financial Performance

# Industry Trends: Oil Market Outlook

Price volatility driven by supply side



## Keys to watch:

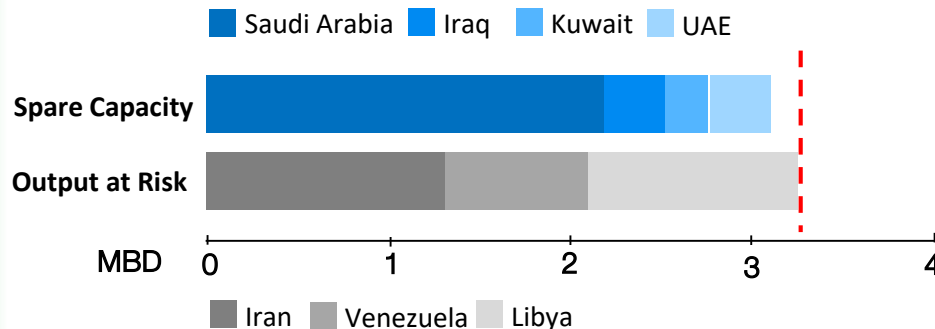


- US to end Iran oil waivers after May 2
- Confrontation between Iran and US
- US sanction on Venezuela
- Fighting in Libya



- Revise OPEC cut to serve disruption
- US pipeline debottlenecking
- Lower demand growth from US-China trade war

## Requiring Saudis' Output to Replace Disruption

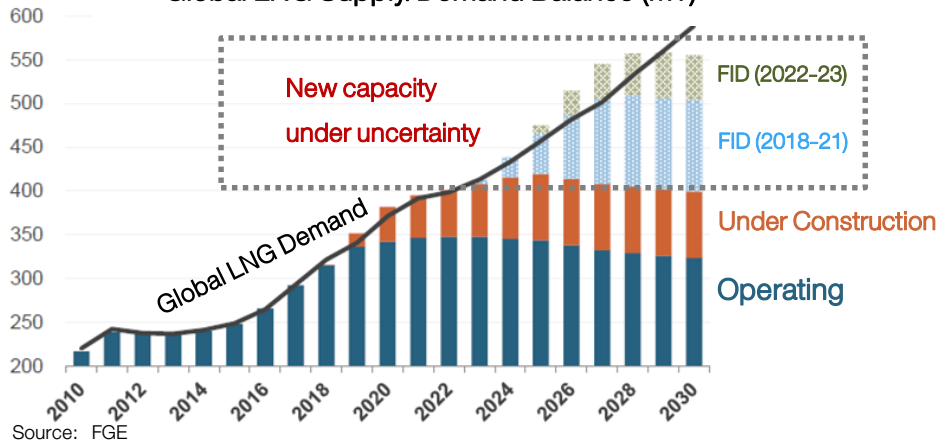


Remark: \* Bloomberg Analyst Consensus (CPFC) as of 22 April 2019

Source: Bloomberg Article published on 3 May 2019

## LNG Market Update

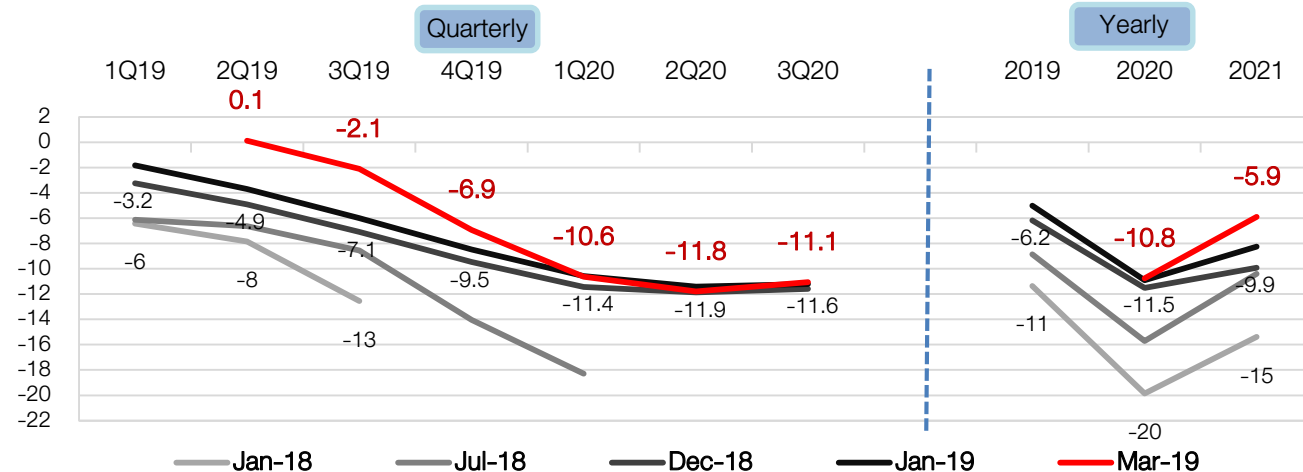
Global LNG Supply/Demand Balance (MT)



- Market expects Asian LNG spot price to be 5.7-8.2 US\$/MMBTU in 2019 due to oversupply situation
- Global LNG market will quickly turn, around 2022-23, due to the lack of FIDs over 2016-17
- However, if more projects expect to make FID post-2020, the market could be in surplus in 2025

## IMO Implication

Forward Prices for HSFO 3.5%S - Brent by Entry Period (US\$/bbl)



- Refinery has installed conversion unit to meet IMO regulation and electricity will demand more HSFO in 2020
- Market sees wider spread of HSFO and Brent in 2020 and expect to return normal range in 2021, with less concern on the regulation

## Key Highlights



## Industry Trends

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# “Expand” for sustainable growth

*Focus growth in strategic investment areas and diversify into energy related business*

## “Energy Partner of Choice”



## Expand

- Growth from ‘Coming Home to SEA’ and ‘Middle East JV’

Acquired Murphy Oil’s business in Malaysia

Awarded 2 exploration blocks in Malaysia

- Gas to Power in SEA

- LNG capability with PTT



Major projects by phase

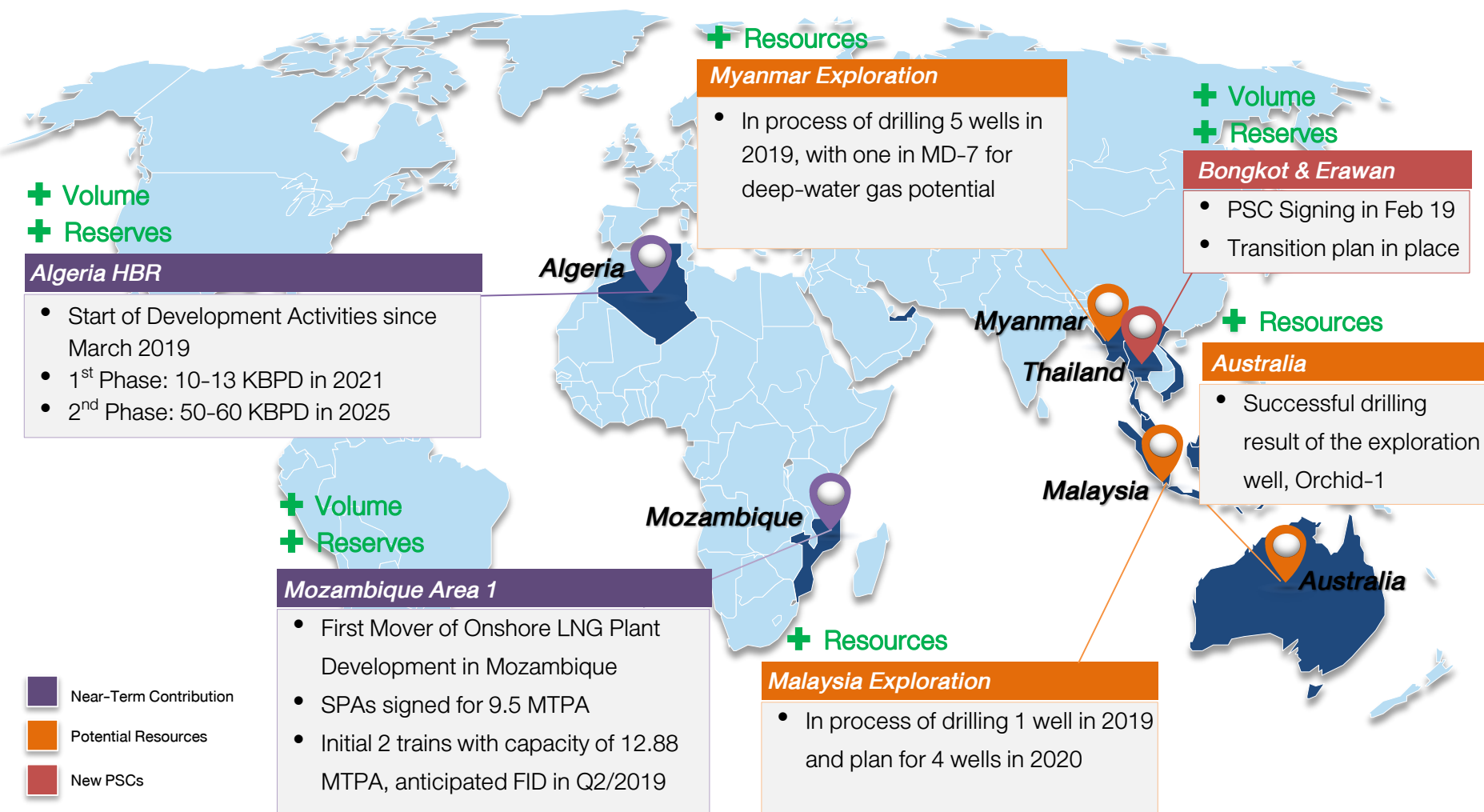




# “Execute” for long-term value creation

Accelerate FID projects and resources discovery

## “Energy Partner of Choice”



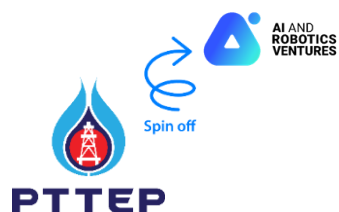
# PTTEP's High Priority Technology Programs

To support E&P business and future investment opportunities

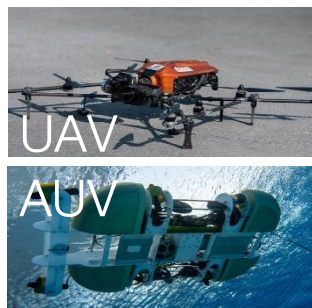


## New Business

### AI & Robotics



from UAV for Aerial inspection services and AUV for subsea inspection & surveillance



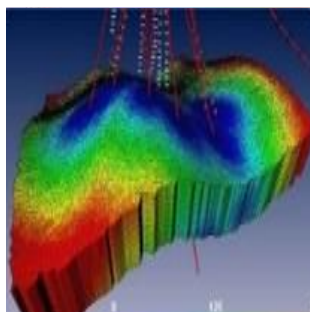
Remark: UAV is Unmanned Aerial Vehicle. AUV is Autonomous Underwater Vehicle.

## E&P Technology

### Advance Exploration Technology



Improve performance and speed of reservoir identification, image processing & interpretation



### S1 Enhanced Oil Recovery (EOR)



Extract more production from reservoir by advanced EOR tech.



### Unlock High-CO<sub>2</sub> Gas Production



Unlock hydrocarbon by advanced CO<sub>2</sub> removal tech.



### Green Technology



Carbon Capture Technologies to reduce CO<sub>2</sub> emission by 25% in 2030



# PTTEP's Aspired Portfolio in 2030

*Target for sustainable growth*

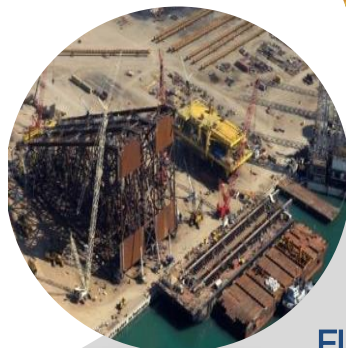
**5%** CAGR on Production Target

**≥7** years of R/P Ratio

**2030**



Bongkot & Erawan under New PSCs  
Acquisition of Murphy's business in Malaysia



FID Projects



Accelerating  
Exploration Activities



New Businesses  
and Other M&As



**Sustainable Development Framework**

## Key Highlights



## Industry Trends



## Strategy and Growth



## Financial Performance

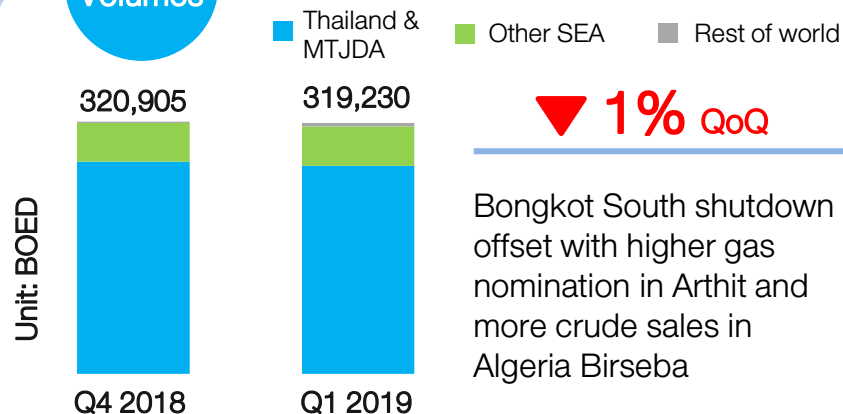




# Q1 2019 Key Financial Performance

Delivered healthy EBITDA margin supported by cost management

## Sale Volumes



## Average Selling Price

	Q4 2018	Q1 2019
Gas (\$/MMBTU)	6.90	6.92
Liquid (\$/BBL)	66.01	58.82
Weighted Avg. (\$/BOE)	47.79	46.21
Avg. Dubai (\$/BBL)	68.30	63.41
Avg. HSFO (\$/BBL) (High Sulphur Fuel Oil)	69.63	63.95
Volume Mix (Gas : Liquid)	74:26	73:27

▼ **3% QoQ**

Strong gas price amid lower liquid price led to slightly decreased ASP

## Unit Cost

First Quartile among Asian peers

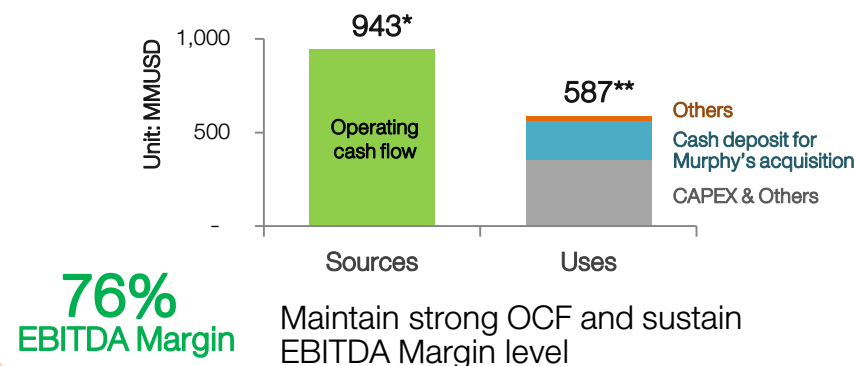
▼ **10% QoQ**

Unit: \$/BOE

	Q4 2018	Q1 2019
Cash cost	16.28	13.34
Non-Cash cost	16.41	15.99
Unit cost	32.69*	29.33*

Driven by lower G&A and operating expense from less maintenance activities

## Source & Used of fund







Note: \* Exclude costs related to new business, if include, unit cost for Q4 2018 and Q1 2019 are 32.77\$/BOE and 29.48 \$/BOE

Remark: \* Net of adjustment for the effect of exchange rate changes on cash and cash equivalents  
\*\* Excludes cash flows for short-term investments fixed deposit > 3 months)

# Outlook & Takeaways

*Solid fundamental with significant shareholders value creation*

## 2019 Guidance\*

	Q2 2019	FY 2019
 Average Sales Volume	~ 330	~ 321
 Average Gas Price**	~ 6.9	~ 6.9
 Unit Cost**	~ 32	~ 31
 EBITDA Margin**	FY 2019 70-75 %	

Note: \* Excluded Murphy's acquisition

\*\* Based on FY2019 average Dubai oil price at 66 \$/BBL

## Key Takeaways

### Industry

- Price volatility driven by supply side
- Potential oversupply from new LNG projects
- Less concern on IMO regulation

### Strategy

- 'Expand' and 'Execute' for sustainable growth and long-term value creation
- Aspired portfolio in 2030 of 5% CAGR on production target and  $\geq 7$  years of R/P ratio

### Finance

- Healthy and ready for new opportunities

You can reach the Investor Relations team for more information and inquiry through the following channels:



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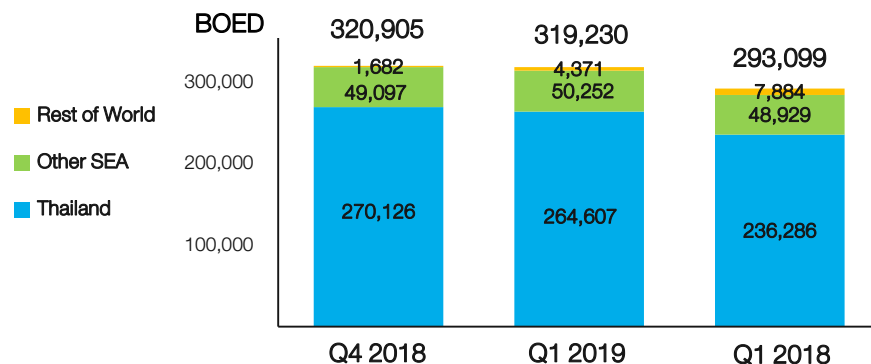
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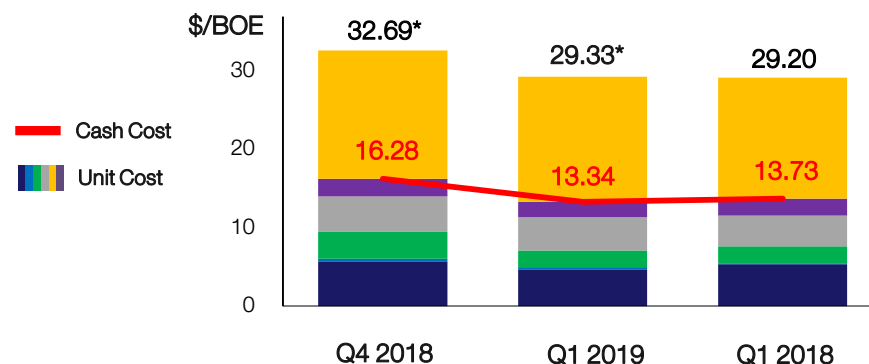
# Sales Volume & Unit Cost

Strong volume with competitive cost

## Sales Volume and Price



## Unit Cost



Gas (\$/MMBTU)	6.90	<b>6.92</b>	6.07
Liquid (\$/BBL)	66.01	<b>58.82</b>	63.12
Weighted Avg. (\$/BOE)	47.79	<b>46.21</b>	44.01
Avg. Dubai (\$/BBL)	68.30	<b>63.41</b>	63.96
Avg. HSFO (\$/BBL) (High Sulphur Fuel Oil)	69.63	<b>63.95</b>	57.64
Volume Mix (Gas : Liquid)	74 : 26	<b>73 : 27</b>	72 : 28
Revenue Mix (Gas : Liquid)	64 : 36	<b>65 : 35</b>	59 : 41

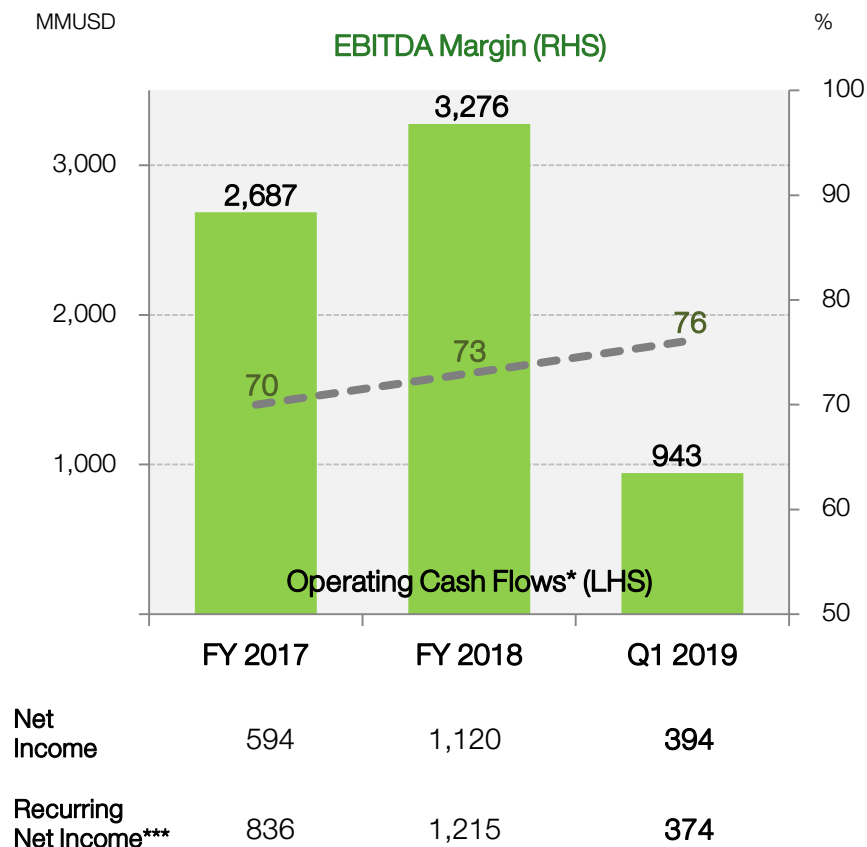
DD&A	16.41	<b>15.99</b>	15.47
Finance Cost	2.26	<b>1.99</b>	2.16
Royalties	4.53	<b>4.25</b>	3.94
G&A	3.46	<b>2.11</b>	2.18
Exploration Expenses	0.31	<b>0.29</b>	0.10
Operating Expenses	5.72	<b>4.70</b>	5.35
Lifting Cost	4.18	<b>3.53</b>	4.04

Note: \* Exclude costs related to new business, If include unit cost for Q4/18 and Q1,19 are 32.77 \$/BOE and 29.48 \$/BOE respectively  
The formulas for calculating ratios are provided in the supplementary section for your reference

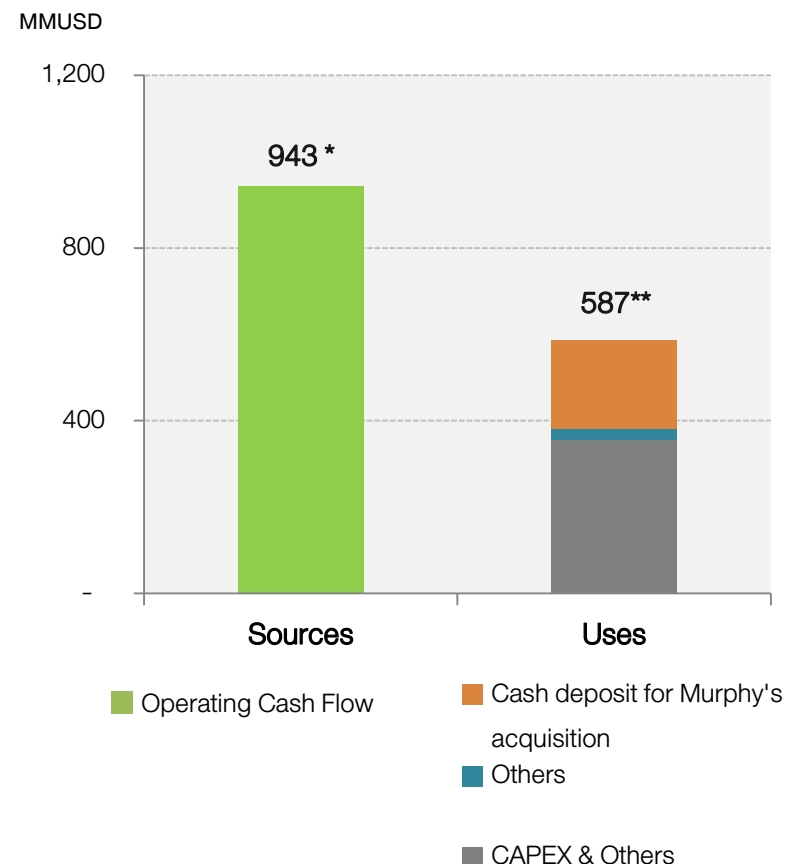
# Cash Flow Performance

Robust operating cash flow

## Cash Flow Performance



## Source & Use of Funds in Q1 2019



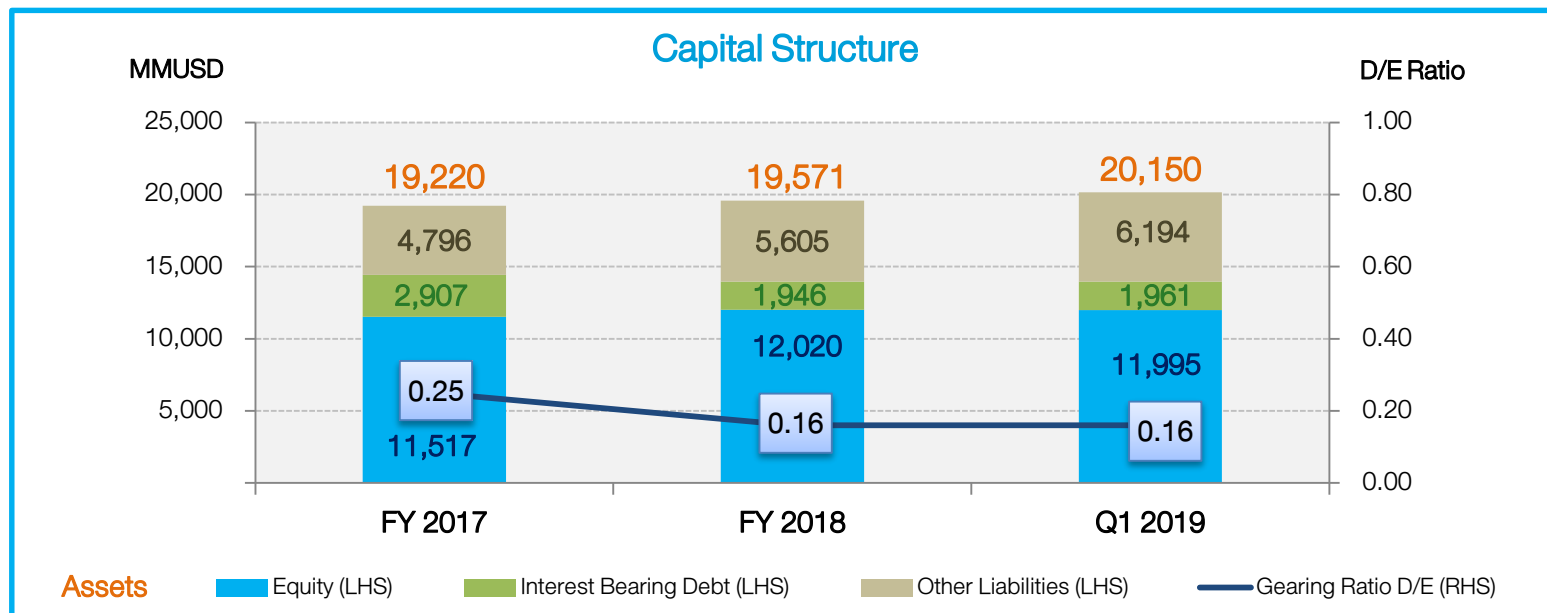
Remark: \* Net of adjustment for the effect of exchange rate changes on cash and cash equivalents

\*\* Excludes cash flows for investing in short-term investments (Fixed deposit > 3 months)

\*\*\* Excludes Gain/(Loss) on FX, Deferred tax from Functional currency, Current Tax from FX Revaluation, Gain/(Loss) from Financial Instruments, Impairment Loss on Assets, and etc.

# Financial Position

Healthy balance sheet with low gearing

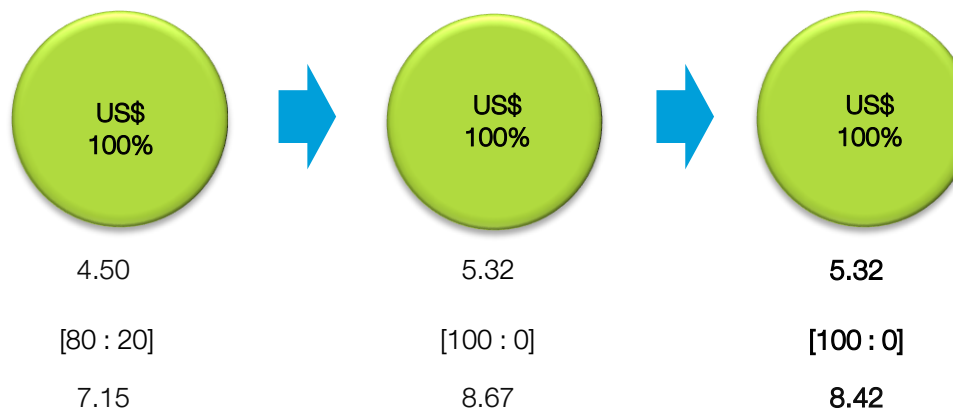


## Debt Profile\*\*

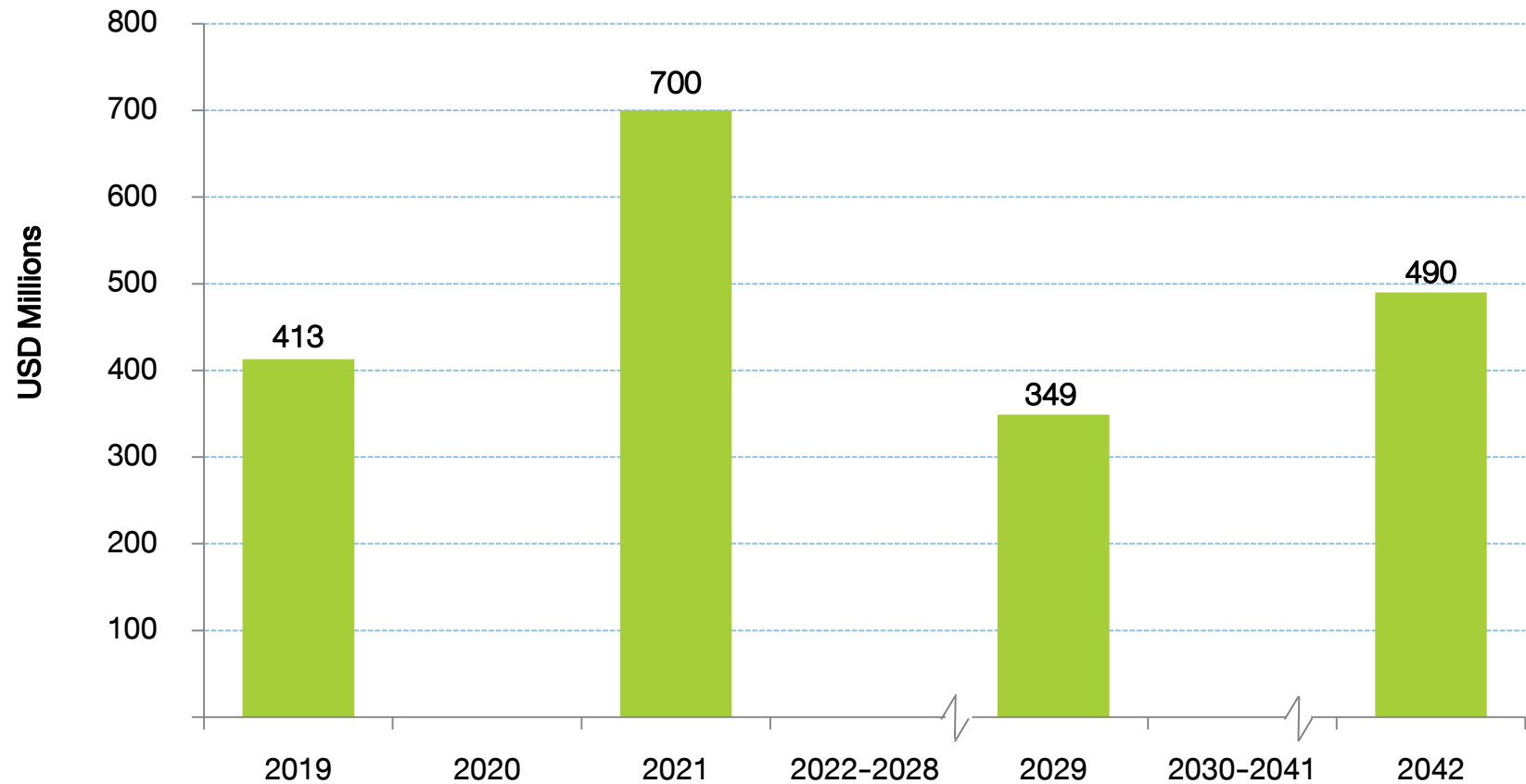
Weighted Average  
Cost of Debt\* (%)

[Fixed : Floating]

Average Loan Life\* (Years)



Remark: \* Excludes Hybrid bonds



Note: Excludes Hybrid bonds

Unit: USD Millions or equivalent after cross currency swap



# Sustainable development

Pursue long-term growth with social and environmental wellness



MEMBER OF

**Dow Jones  
Sustainability Indices**

In Collaboration with RobecoSAM

## 2018 DJSI Listed Company

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



## Proven business integrity

SET Sustainability Award 2018 – Outstanding Category

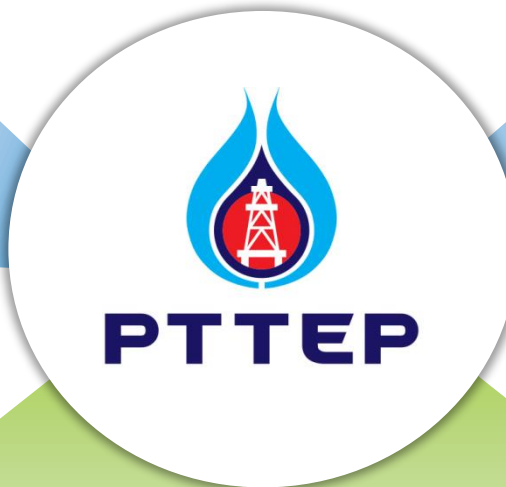
*The Stock Exchange of Thailand (SET)*

ASEAN Corporate Governance (CG) Awards

*ASEAN CG Scorecard*

Thailand's Strongest Adherence to Corporate Governance (ranked second)

*Alpha Southeast Asia Magazine 2018*



FTSE4Good

## FTSE4Good Emerging Index 2018

PTTEP becomes a constituent of the FTSE4Good Emerging Index 2018 for the third consecutive year



## Exemplary social contributor

Top Corporate Social Responsibility Advocates winner

*The Asia Corporate Excellence & Sustainability Awards 2018*

Health Promotion Category for PTTEP LKC Free Health Service Program (Free Clinic Project)

*The Asia Responsible Enterprise Awards 2018*

Thailand's Best Strategic Corporate Social Responsibility (ranked first)

*Alpha Southeast Asia Magazine 2018*

## Green driver to environment

Green Leadership Category for T.M.S. Underwater Learning Site Project

*The Asia Responsible Enterprise Awards 2018*

The Excellent Level (G-Gold) of the Green Office Award 2017

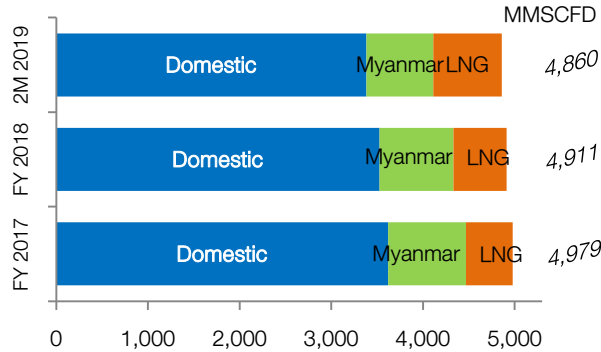
*The Ministry of Natural Resources and Environment*

Water A List Award

*Carbon Disclosure Project (CDP)*

### Thailand Energy Overview

#### Natural Gas Supply



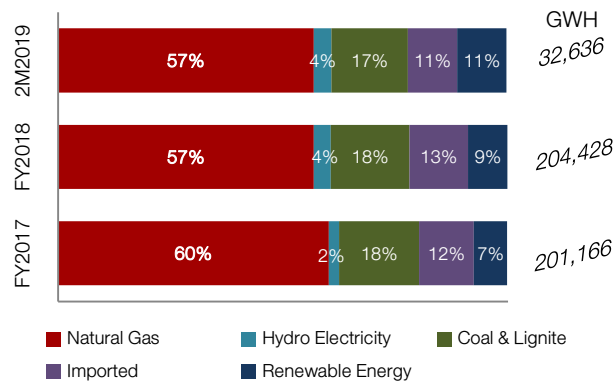
Slight decline in domestic production and Myanmar piped gas imports as a result of lower demands and growth in LNG import

#### Natural Gas Consumption



Source: EPPO

#### Electricity Generation



### Exchange Rate Movement (THB/USD)



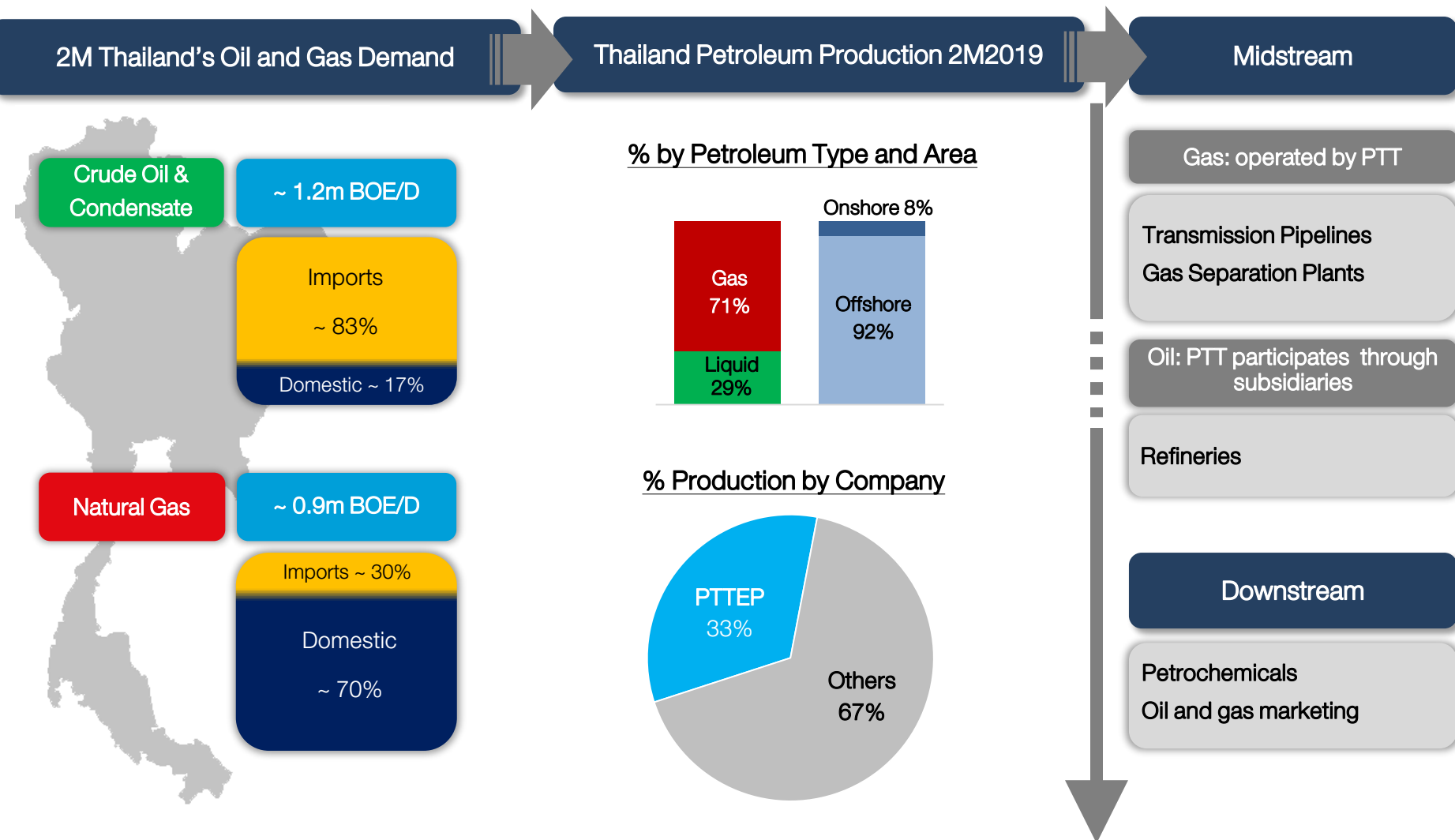
Consensus on the exchange rate mostly depends on

- Tendency on FED interest rate hike
- Trade war between the US and China
- Slowdown of the U.S and European Union economy
- Slow recovery in Tourism growth

Source: Bank of Thailand, Bloomberg  
Forecast based on Bloomberg Consensus as of 3 May 2019

# Thailand's Energy Value Chain

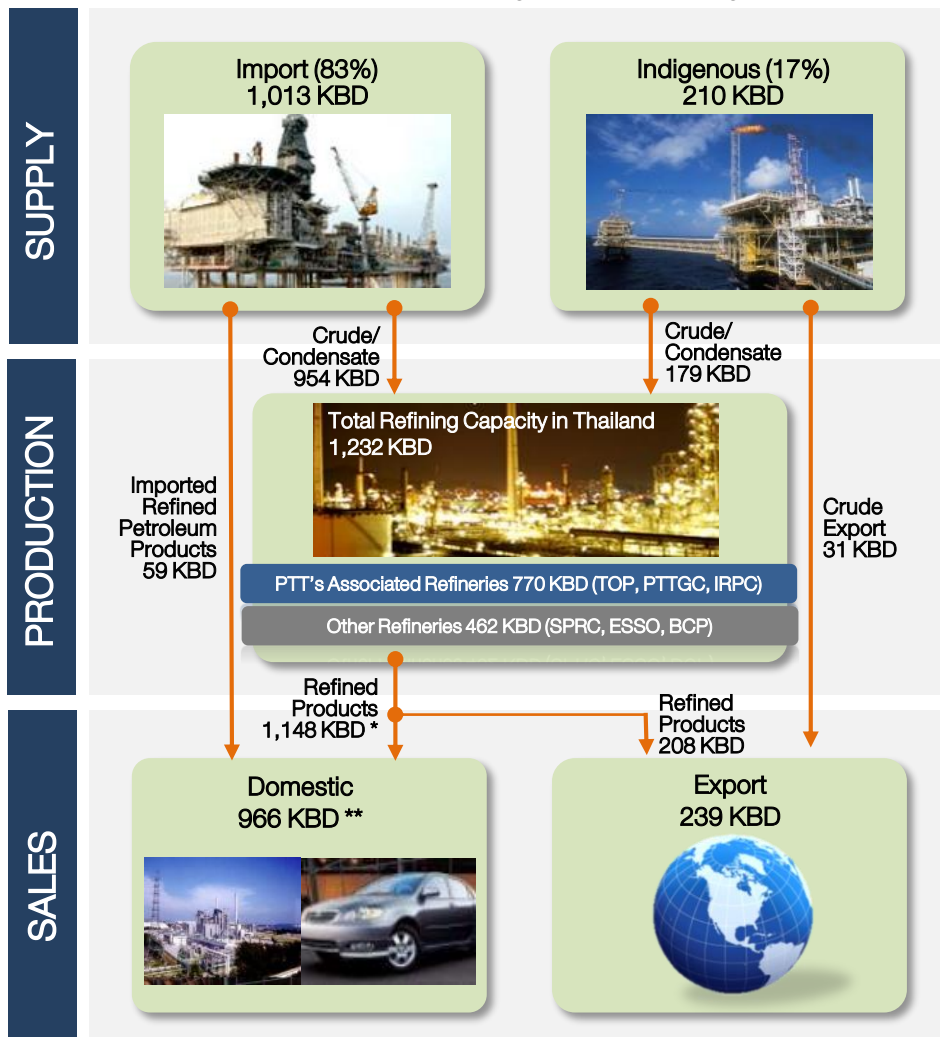
*PTTEP contributes almost 1/3 of Thailand's petroleum production*



Source: Energy Policy and Planning Office (EPPO) and Department of Mineral Fuels (DMF)

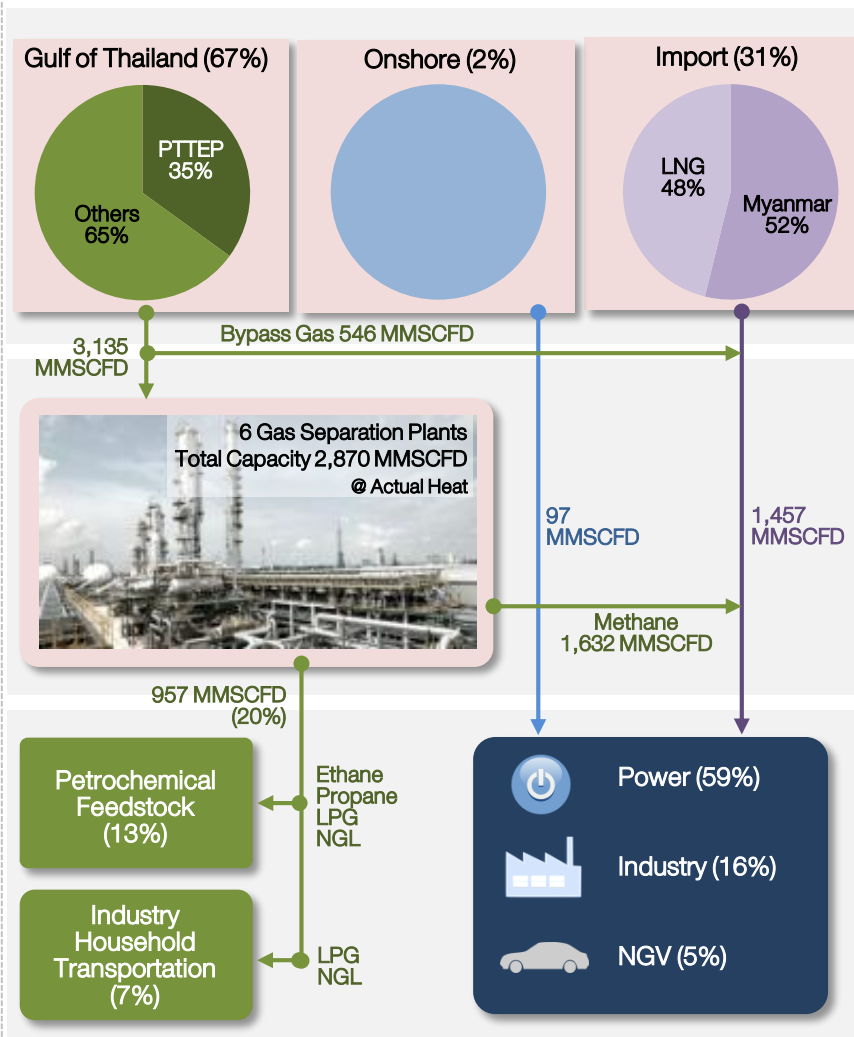
## Oil Balance\*\*\*

Maintains stability supply through adequate refining capacity



## Natural Gas Balance\*\*\*\*

Main driver of the Thailand economy



Source: PTT

Remark: \* Refined product from refineries = 1,034 KBD, including domestic supply of LPG from GSPs and Petrochemical Plants = 111 KBD

\*\* Not included Inventory

\*\*\* Information as of 11M18

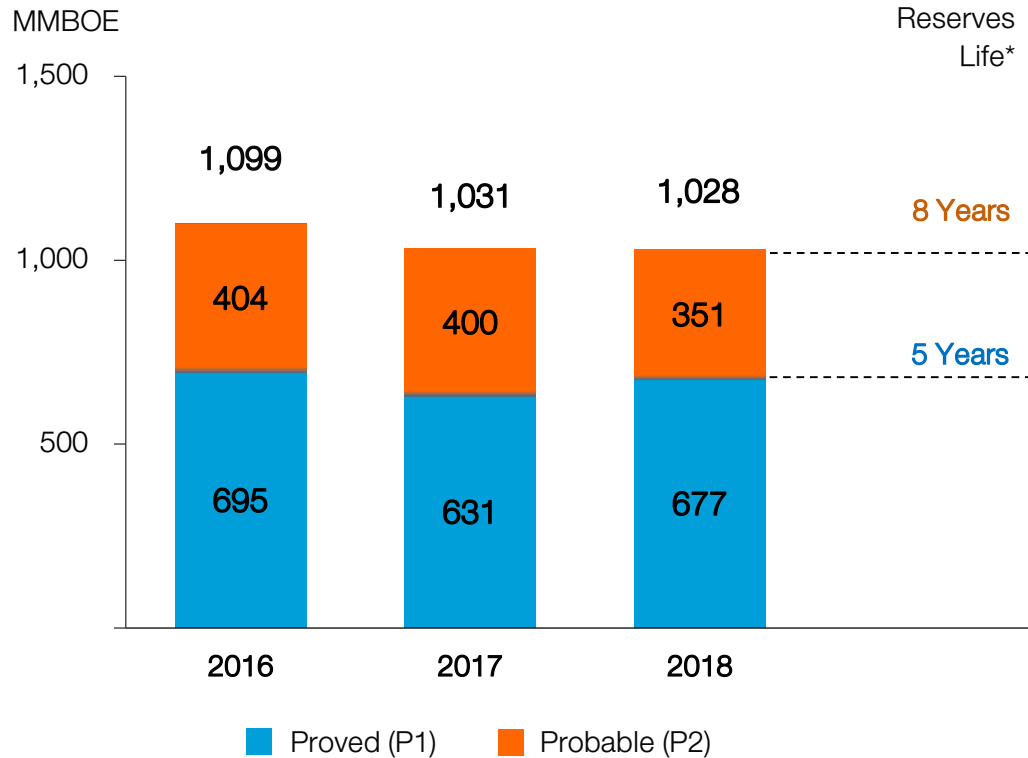
\*\*\*\* Information as of 3M19

MMSCFD @ Heating Value 1,000 Btu/ft<sup>3</sup>



# Reserves at the Year-end 2018

Maintained reserves life with majority of reserves base in SEA

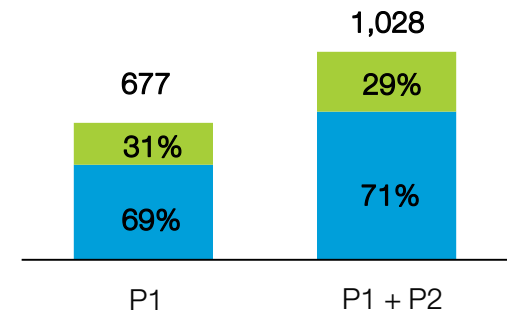


5-Year Average Proved Reserves Replacement Ratio (RRR)

2016	2017	2018
0.57x	0.58x	0.74x

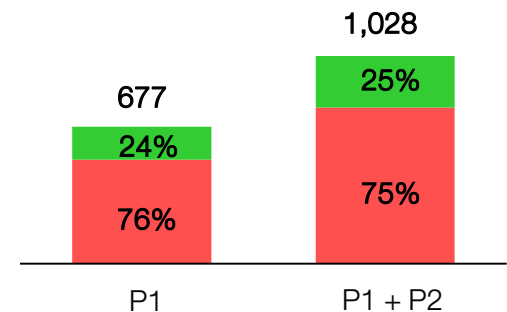
## 2018 by Geography

■ Domestic ■ International



## 2018 by Product Type

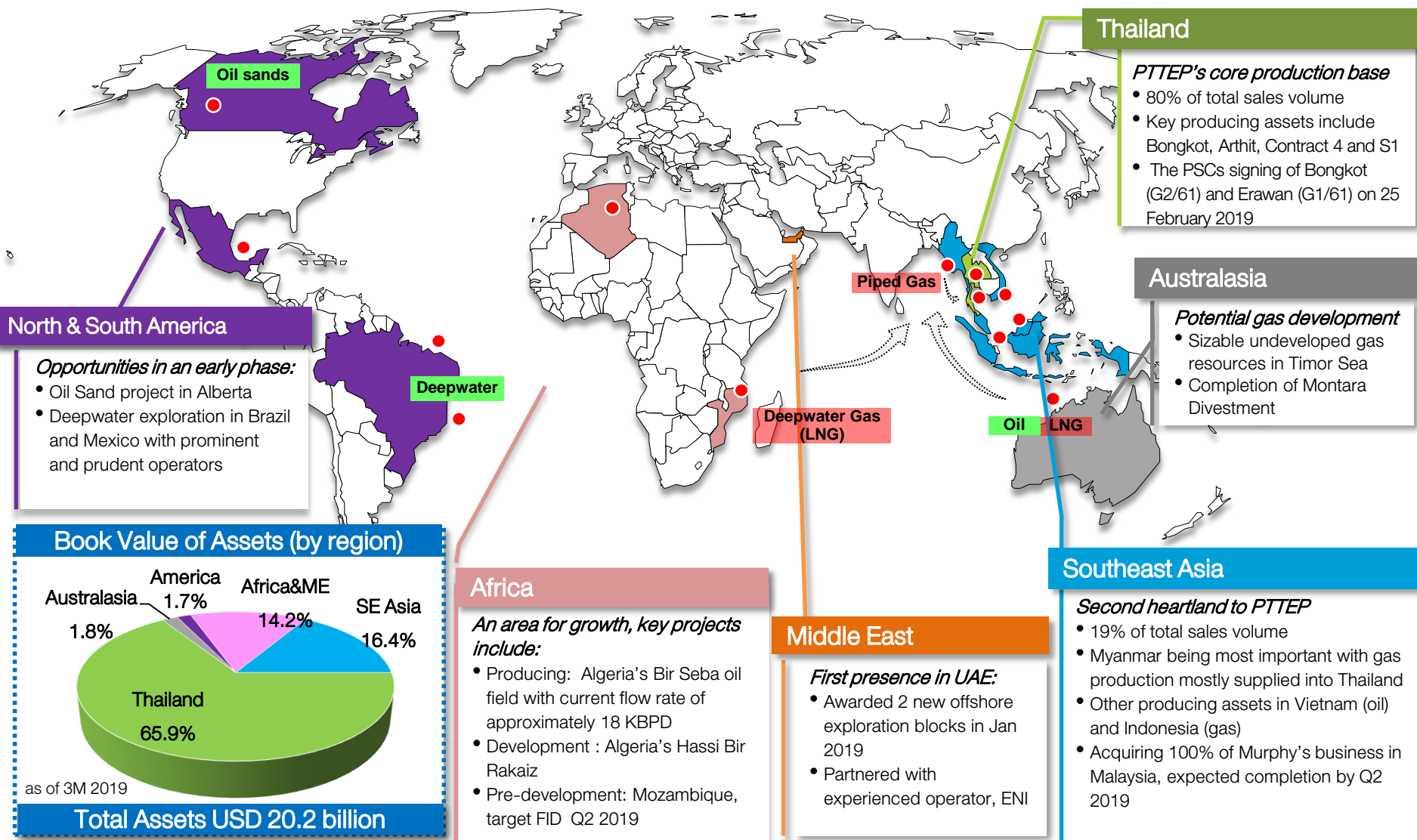
■ Gas ■ Liquid



\* Based on total production of natural gas, condensate, and crude oil (including LPG) of 359 KBOED for the year ended December 31, 2018

# Diversified international portfolio

Worldwide operations: 46 projects\* in 12 countries



\* Including G1/61 and G2/61 projects, which production starting in 2022/2023

# Thailand and other Southeast Asia

*Coming home to maintain strong foundation with full expertise*

## Thailand

### Bongkot (66.6667% WI)

- Average natural gas and condensate sales volume of 709 MMSCFD and 19 KBPD in 3M2019

### S1 (100% WI)

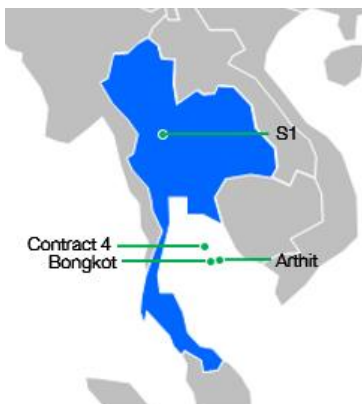
- The largest onshore crude oil production field in Thailand with 3M2019 average crude oil sales volume of 30 KBPD

### Arthit (80% WI)

- Average sales volume in 3M2019 was 242 MMSCFD of natural gas and 11 KBPD of condensates

### Contract 4 (60% WI)

- Average sales rate of 408 MMSCFD for natural gas and 18 KBPD for condensate in 3M2019



● Production / Ramp-up Projects

## Myanmar



- 3 producing gas fields supplying gas to both Thailand and Myanmar: Yadana, Yetagun, and Zawtika
- Operate Zawtika project, brought online in March 2014 with current gas supply of 290 MMSCFD in 3M2019
- Significant exploration acreage both onshore and offshore in the Moattama Basin

### Project Status

#### Producing

- Yadana (25.5% WI)
- Yetagun (19.3% WI)
- Zawtika (80% WI)

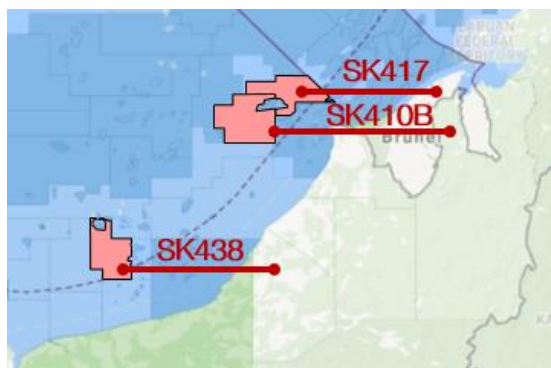
#### Appraisal

- M3 (80% WI)

#### Exploration

- MOGE 3 (75% WI)
- M11 (100% WI)
- MD-7 (50% WI)

## Sarawak Basin, Malaysia



**PTTEP's Block:** SK410B (42.5%), SK417 (80%) and SK438 (80%) with operatorship

**Location:** Sarawak Basin, Malaysia

**Characteristic:** Shallow-water with low operational risk

**Exploration Strategy:**

- Expect exploration drilling activities during 2019-2021
- "Cluster Model" synergy operations within basin to optimize costs
- In place production infrastructure in nearby area

Note. WI = working interest

# Summary of Terms from Bidding Result of Bongkot and Erawan and PSC Model

## Price Formula

Pricing Formula:  $Pr_{(y)} = P_c \times M_{(y)} \times \left( a \frac{PPI_{(y)}}{PPI} + \frac{I_{(y)}}{I} \left\{ b \frac{OM_{(y)}}{OM} + c \frac{DB_{(y)}}{DB} + d \right\} \right)$

$DB_{(y)} < 52$	$M = 0.91 + 0.11 \frac{DB_y}{52}$
$52 \leq DB_{(y)} < 100$	$M = 1.02 - 0.15 \frac{DB_y - 52}{48}$
$DB_{(y)} > 100$	$M = 0.22 + 6.44 \times \frac{1}{\sqrt{DB_y}}$

Whereas:

Pr : Gas Price  
Pc : Price Constant  
I : Exchange rate  
PPI : Producer Price Index  
OM: PPI for Oil Machinery and Tools  
DB: Dubai oil price

Base year numbers (2016): PPI = 101.4167 I = 35.3 THB/USD OM = 214.88 DB = 41.27\$/BBL

$Pr_{(y)} = 116 \times M_{(y)} \times \left( 0.25 \frac{PPI_{(y)}}{101.4167} + \frac{I_{(y)}}{35.3} \left\{ 0.3 \frac{OM_{(y)}}{214.88} + 0.4 \frac{DB_{(y)}}{41.27} + 0.05 \right\} \right)$

## Terms

	G2/61 (Bongkot)	G1/61 (Erawan)
Price Constant	116 THB per MMBTU	116 THB per MMBTU
Contractor's Profit Split	30%	32%
Bonuses	Signature Bonus* 1,050 MMTHB Production Bonus** 1,575 MMTHB Supporting Contribution 7 MMTHB Other benefits 685 MMTHB	Signature Bonus* 1,050 MMTHB Production Bonus** 1,575 MMTHB Supporting Contribution 7 MMTHB Other benefits 35 MMTHB
Thai Employee Ratio	99%	98%
Facility Bonus***	175 MMTHB	350 MMTHB

### Remark of payment terms:

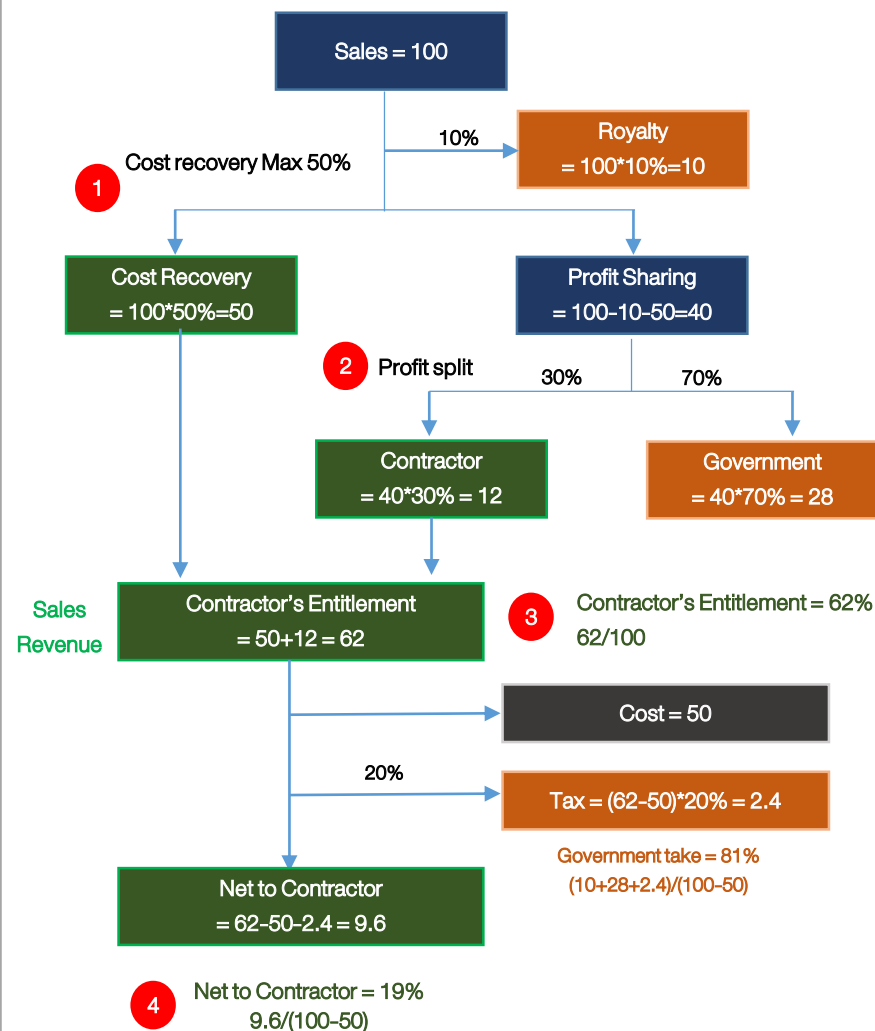
\* No later than 10 working days prior to the PSC signing date

\*\* Each time the cumulative production/sales reaches 100, 200 and 300 MMBOE

\*\*\* Equally separate into 3 payments by 24th April of every year from 2022

Source: Press release from Department of Mineral Fuels (13 December 2018) and TOR

## PSC Model

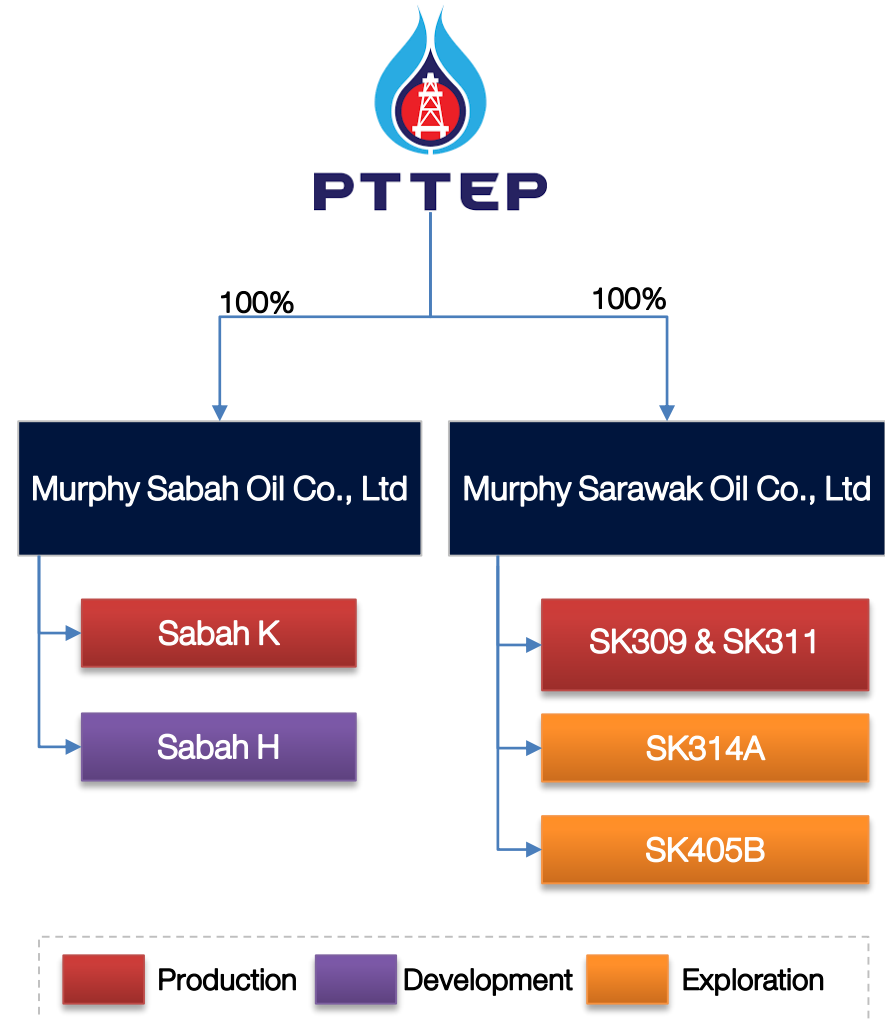


\*Assumption bases on field life, cost can be fully recovered

# Acquisition of Murphy's Business: Transaction Overview (1/3)

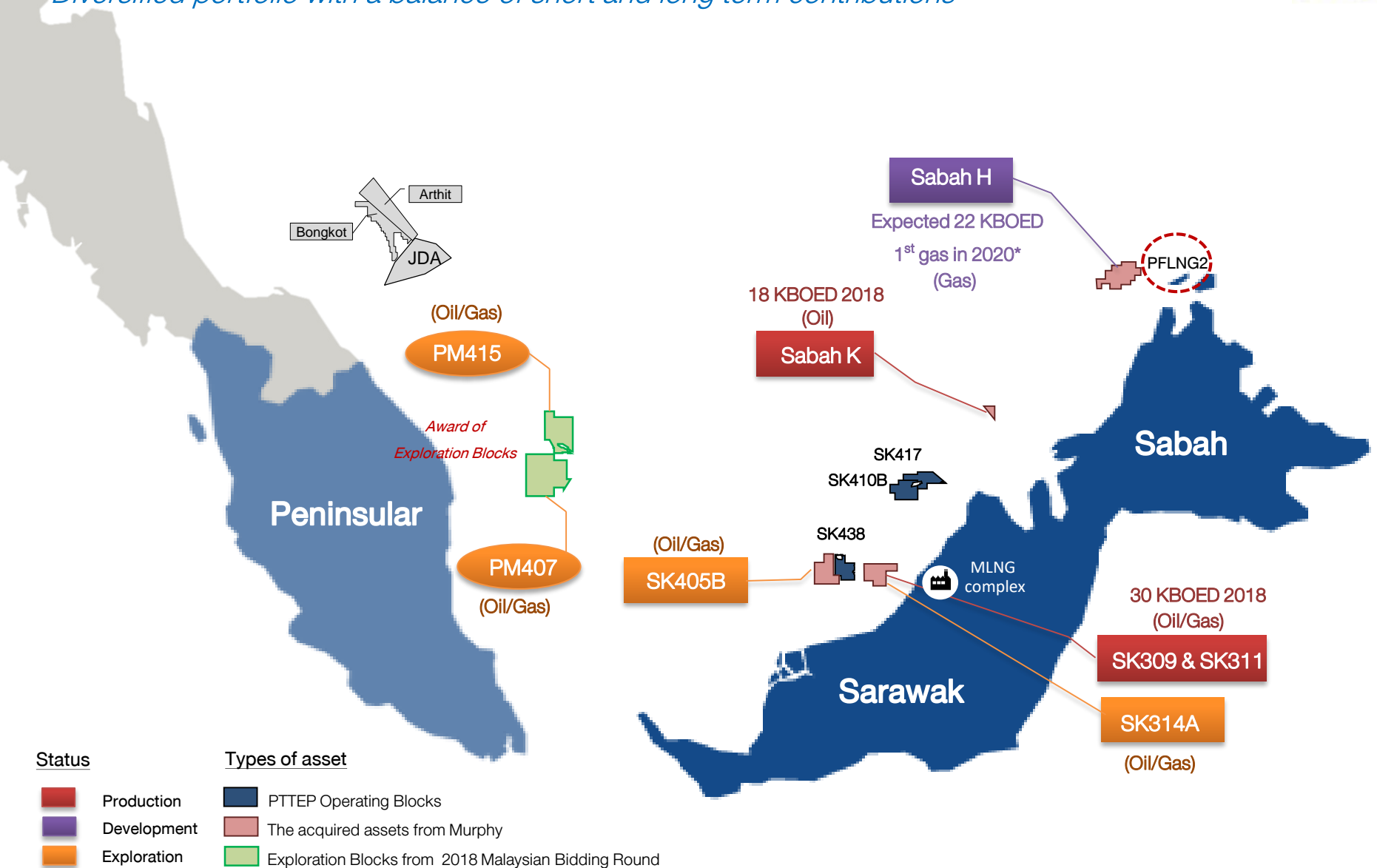
## *Acquiring 100% of Murphy's business in Malaysia*

- PTTEP to acquire 100% of the shares in Murphy Sabah Oil Co. Ltd and Murphy Sarawak Oil Co. Ltd from Murphy Oil Corporation's ("Murphy")
- Total consideration of US\$2,127 million, plus up to a USD 100 million contingent payment upon certain future exploratory drilling results
- After the completion, PTTEP will assume operatorship from Murphy with the same participating interest.
- Transaction is expected to complete by the end of 1H2019, subjected to customary consents and regulatory approvals



# Acquisition of Murphy's Business: Asset Profile (2/3)

*Diversified portfolio with a balance of short and long term contributions*



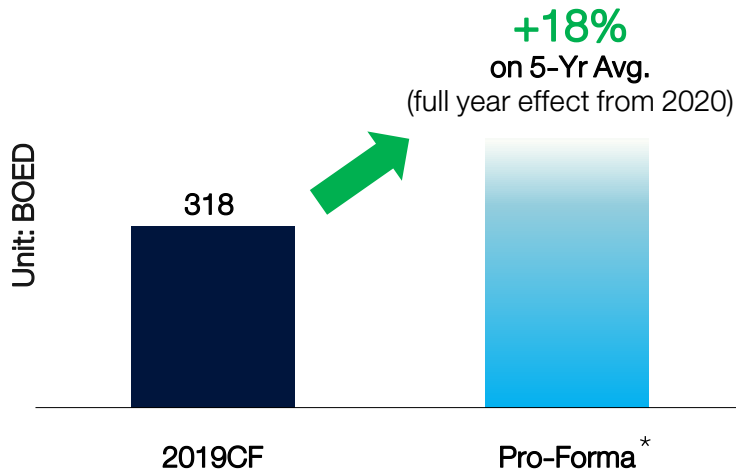
\* Volume stated represents net sale volume



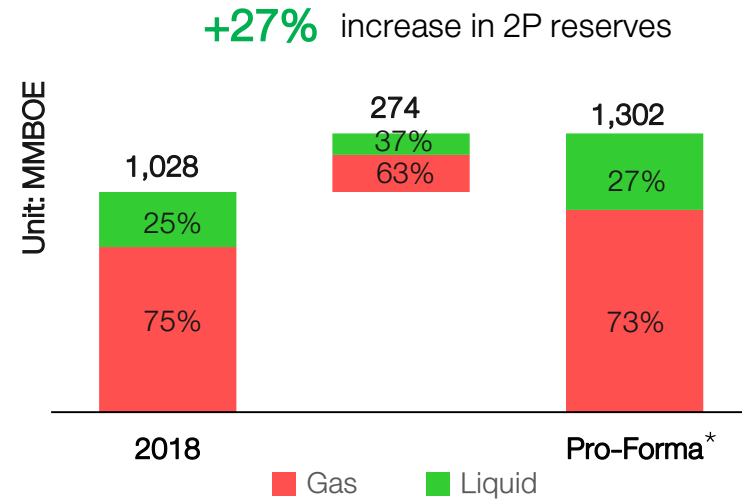
# Acquisition of Murphy's Business: Contributions to PTTEP's Portfolio (3/3)

*Boost financial performance with valuable human resources*

## Net Sales Volume



## Proved and Probable Reserves (2P)



Self funding from  
producing assets

Immediate cashflow  
and production

EBITDA margin remains  
strong at 70-75%

Valuable human resources  
with experiences and  
operational capabilities

\*Excluding G1/61 and G2/61 project.

# Other South East Asia

Expanding foothold in the region

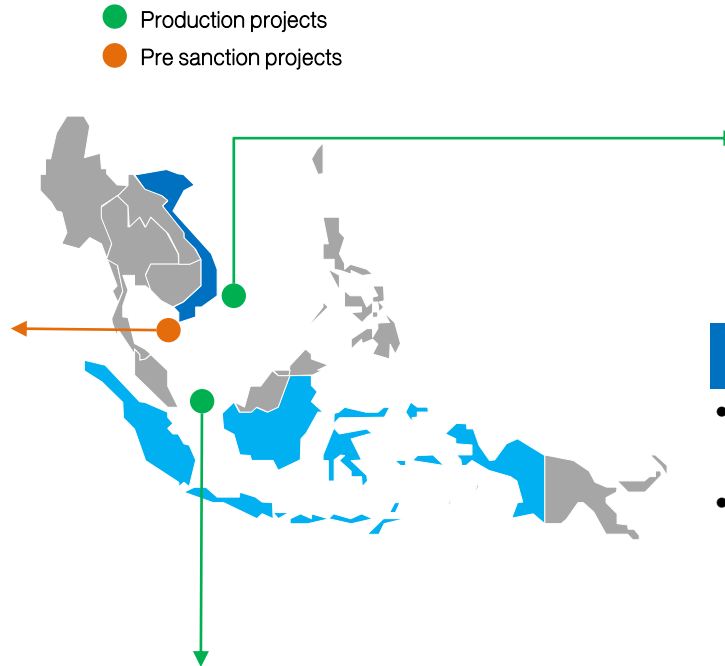
## Vietnam and Indonesia



### Southwest Vietnam

- Vietnam B & 48/95 (8.5% WI)
- Vietnam 52/97 (7% WI)

- Field Development Plan was approved by Government
- The project is currently in the negotiation process on commercial terms to put forward FID
- First production target by end of 2022, and ramp up to full capacity of 490 MMSCFD



### Vietnam 16-1 (28.5% WI)

- Average sales volume of crude oil was 17 KBPD in 3M2019
- The project is preparing further production drilling plan aiming to maintain production plateau.



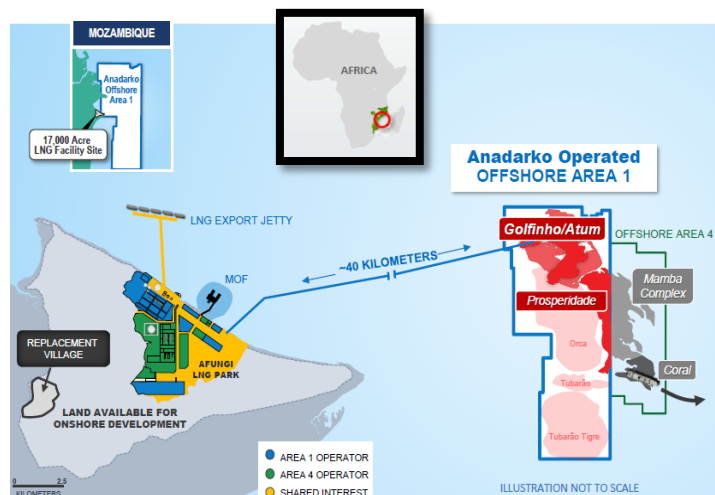
### Natuna Sea A (11.5% WI)

- Average sales volume of natural gas was 226 MMSCFD in 3M2019

# Mozambique Area 1

Potential to become one of the world's largest emerging LNG supply hubs

Substantial recoverable resources of approximately **75 tcf** with  
scalable offshore development  
expending up to **50 MTPA**



## Location and Cost Advantage

- Close proximity to shore
- High quality reservoirs  
*capable of flow up to 200 mmcf/d per well*
- Access to Asian and European markets

## Key Milestones to FID (initial phase of 12.88 MTPA) – Anticipated 1H2019

### SPAs ~9.6 MTPA\*

#### Executed

Pertamina	1.0
Bharat Gas	1.0
Tokyo Gas & Centrica	2.6
Shell	2.0
CNOOC	1.5
EDF	1.2
Tohoku	0.3

### Completed

- ☑ Legal & Contractual Framework
- ☑ Development plan approved
- ☑ Onshore and Offshore Contractors Selected

### In Progress

- ⌚ Onshore Site Preparation
- ⌚ Project Finance  
*(2/3 Project Financed)*

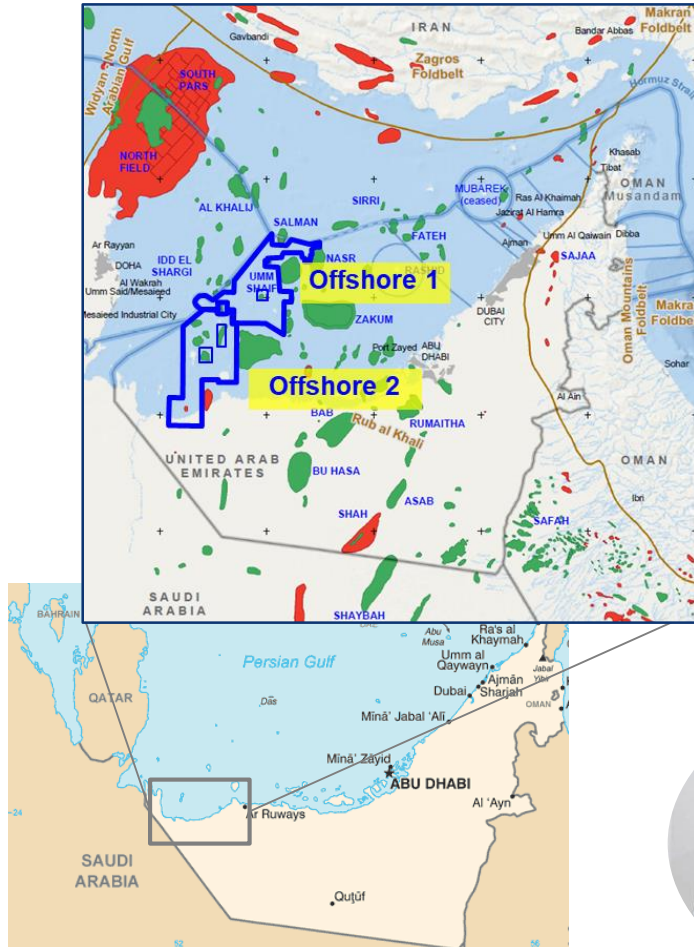
\* All volume numbers are approximate

\*\* Subject to execution

Source: Anadarko

# The Middle East : United Arab Emirates

*"Partnering" to JV with prudent operators in prolific low cost area*



## Project Overview

PTTEP's Block	Abu Dhabi Offshore 1	Abu Dhabi Offshore 2
Location	North-west of Abu Dhabi Emirates, United Arab Emirates	
Characteristics	Shallow water	
Partners (exploration phase)	ENI 70% (Operator) PTTEP 30%	
Exploration Strategy	<ul style="list-style-type: none"> <li>Joined hand with prudent operators</li> <li>UAE still has high potential prospective resources with significant sizeable discoveries</li> </ul>	



The award of Abu Dhabi Offshore Exploration Blocks 1 & 2 on 12<sup>th</sup> January 2019

# LNG Value Chain Investment : MLNG Train 9




*First step into midstream LNG business in strategic area of focus*

*10% Investment in MLNG Train 9 by PTT Global LNG....*

*....continue to look for more LNG opportunities globally*



## MLNG Train 9 – Overview

Location	Bintulu, Sarawak, Malaysia	
Asset	Liquefaction Train 9 Tank 7	
Phase	Commercial: Jan 2017	
Capacity	3.6MTPA	
Contract Life	20 years	
Partners (subject to closing)	Petronas 80% JX Nippon 10% PTT Global LNG 10%	  

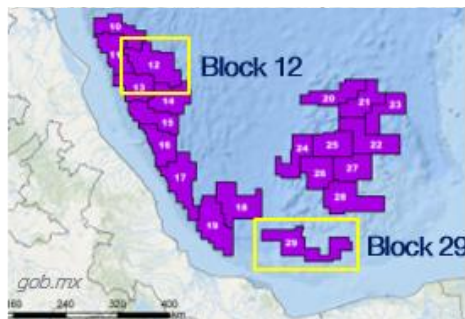
## Investment Rationales

- Capture opportunity from increasing LNG demand as a supplement to Thailand gas production
- Venture into midstream LNG as a mean to secure LNG supply and growth of PTT and PTTEP, as well as capture value added along with LNG value chain
- Low risk and highly market secured opportunity
  - Highly experienced operator
  - Already commenced commercial production with immediate revenue stream
- In vicinity of future upstream opportunities in focus area – offshore Sarawak



-- Entry into high potential petroleum province at exploration phase --

## Gulf of Mexico, Mexico



**PTTEP's Block:** Block 12 (20%) and Block 29 (16.67%), as non-operating partner

**Location:** Mexican Ridges Basin for Block 12 and Campeche Basin for Block 29

**Characteristic:** Deep-water with high petroleum potentials and attractive fiscal regime

### Exploration Strategy:

- Joined hand with prudent operators being Petronas and Repsol
- Mexico still has high potential prospective resources with significant sizeable discoveries

## Deep Water Brazil



### Barreirinhas AP1

- Farm-in 25% from BG Group in 2014
- Operated by Shell Brasil (65% interest)
- Four offshore exploration blocks: BAR-M-215, BAR-M-217, BAR-M-252 and BAR-M-254
- Completed 3D seismic activities and is in the process of assessing the petroleum potential

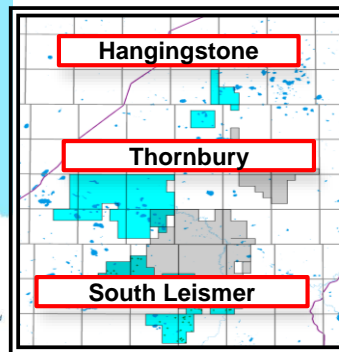
### BM-ES-23

- Acquired 20% interest from Shell in Q3 2014
- Partnered with Petrobras (65%, operator) and INPEX (15%)

## Canada Oil Sands



### Mariana Oil Sands Project



### Project Overview

- Operates 100% interest of the Thornbury, Hangingstone and South Leismer (THSL) areas (exploration and appraisal phase)
- Potential large resource base with over a billion barrel
- In Q3 2017, the Company revised the project's development plan which involves delaying the project's Final Investment Decision, to reflect results from the assessment of the industry and commercial feasibility studies

# Project information 1/4

## Production phase: Thailand and JDA

	Project	Status*	PTTEP's Share	Partners (as March 2019)	3M2019 Average Sales Volume **		2019 Key Activities
					Gas	Oil and Other	
Production Phase							
Thailand and JDA							
1	Arthit	OP	80%	Chevron MOECO 16% 4%	242 MMSCFD	Condensate: 11 k BPD	<ul style="list-style-type: none"><li>• Ensure gas deliverability level at DCQ***</li><li>• Install wellhead platforms</li><li>• Drill development wells</li></ul>
2	B6/27	OP	100%		-	-	
3	B8/32 & 9A		25%	Chevron MOECO 51.66% KrisEnergy 16.71% Palang Sophon 4.63% 2%	73 MMSCFD	Crude: 24 k BPD	<ul style="list-style-type: none"><li>• Drill development wells</li><li>• Perform waterflood activities</li></ul>
4	Bongkot	OP	66.6667%	TOTAL 33.3333%	709 MMSCFD	Condensate: 19 k BPD	<ul style="list-style-type: none"><li>• Maintained production level as planned</li><li>• Drill development wells</li><li>• Awarded as a sole operator under PSC (after concession-end in 2022/2023)</li></ul>
5	Contract 3 (Formerly Unocal III)		5%	Chevron MOECO 71.25% 23.75%	603 MMSCFD	Crude: 20 k BPD Condensate: 16 k BPD	<ul style="list-style-type: none"><li>• Drill development wells</li><li>• Prepare for decommissioning activities</li><li>• Awarded as a sole operator for Erawan field (Contract 1, 2 and 3) under PSC (after concession-end in 2022)</li></ul>
6	Contract 4 (Formerly Pailin)		60%	Chevron MOECO 35% 5%	408 MMSCFD	Condensate: 18 k BPD	<ul style="list-style-type: none"><li>• Ensure gas deliverability level at DCQ***</li><li>• Drill development wells</li><li>• In process of pre-development of Ubon field</li></ul>
7	E5		20%	ExxonMobil 80%	9 MMSCFD	-	<ul style="list-style-type: none"><li>• Ensure gas deliverability level at DCQ***</li></ul>
8	G4/43		21.375%	Chevron MOECO 51% Palang Sophon 21.25% 6.375%	1.5 MMSCFD	Crude: 2 k BPD	<ul style="list-style-type: none"><li>• Drill development wells</li><li>• Perform waterflood activities</li></ul>
9	G4/48		5%	Chevron MOECO 71.25% 23.75%	2 MMSCFD	Crude: 0.9 k BPD	<ul style="list-style-type: none"><li>• Drill development wells</li></ul>
10	L53/43 & L54/43	OP	100%		-	Crude: 1.5 k BPD	<ul style="list-style-type: none"><li>• Maintain production plateau</li><li>• Perform reservoir management and waterflood activities</li></ul>
11	PTTEP1	OP	100%		-	Crude: 240 BPD	<ul style="list-style-type: none"><li>• Maintain production plateau</li><li>• Perform reservoir management and waterflood activities</li></ul>
12	S1	OP	100%		9 MMSCFD	Crude: 30 k BPD LPG: 0.2 k MT/D	<ul style="list-style-type: none"><li>• Drill development wells</li><li>• Enhance oil recovery program includes waterflood, hydraulic fracturing and artificial lift</li></ul>

\* Status: OP = PTTEP operatorship / JOC = PTTEP joint operatorship

\*\* Sales volume stated at 100% basis.

\*\*\* DCQ = Daily Contractual Quantity

# Project information 2/4

## Production phase: Overseas



	Project	Status*	PTTEP's Share	Partners <i>(as of March 2019)</i>		3M2019 Average Sales Volume **		2019 Key Activities
						Gas	Oil and Other	
Production Phase								
13	Sinphuhorm	OP	55%	Apico**** ExxonMobil	35% 10%	95 MMSCFD	Condensate: 320 BPD	<ul style="list-style-type: none"><li>• Ensure gas deliverability</li><li>• Improve recovery from infill drilling</li></ul>
14	L22/43	OP	100%			-	-	<ul style="list-style-type: none"><li>• Maintain production operation</li></ul>
15	MTJDA	JOC	50%	Petronas-Carigali	50%	341 MMSCFD	Condensate: 10 k BPD	<ul style="list-style-type: none"><li>• Drill exploration and development wells</li></ul>
Overseas								
16	Vietnam 9-2	JOC	25%	PetroVietnam SOCO	50% 25%	13 MMSCFD	Crude: 2.8 k BPD	<ul style="list-style-type: none"><li>• Maintain production level</li><li>• Perform well intervention program</li></ul>
17	Vietnam 16-1	JOC	28.5%	PetroVietnam SOCO OPECO	41% 28.5% 2%	5.6 MMSCFD	Crude: 17 k BPD	<ul style="list-style-type: none"><li>• Maintain production level</li><li>• Drill development wells and water injection well</li><li>• Upgrade gas lift system</li></ul>
18	Natuna Sea A		11.5%	Premier Oil KUFPEC Petronas Pertamina	28.67% 33.33% 15% 11.5%	226 MMSCFD	Crude: 1.6 k BPD	<ul style="list-style-type: none"><li>• Well intervention program to secure Gas Deliverability</li><li>• Drill development wells</li></ul>
19	Yadana		25.5%	TOTAL Chevron MOGE	31.24% 28.26% 15%	798 MMSCFD	-	<ul style="list-style-type: none"><li>• Drill infill wells</li><li>• Perform 3D seismic activities</li><li>• Ensure gas deliverability level at DCQ***</li></ul>
20	Yetagun		19.3178%	Petronas-Carigali MOGE Nippon Oil PC Myanmar (Hong Kong)	30.00140% 20.4541% 19.3178% 10.90878%	126 MMSCFD	Condensate: 2.3 k BPD	<ul style="list-style-type: none"><li>• Maintain production level</li><li>• Drill exploration and development wells</li><li>• Perform 3D seismic activities</li></ul>
21	Zawtika (M9 & a part of M11)	OP	80%	Myanma Oil and Gas Enterprise (MOGE)	20%	290 MMSCFD	-	<ul style="list-style-type: none"><li>• Drill 3 exploration wells</li><li>• Drill development wells</li><li>• Perform 3D seismic activities</li><li>• Prepare to Install wellhead platforms</li></ul>
22	Algeria 433a & 416b (Bir Seba)	JOC	35%	PetroVietnam Sonatrach	40% 25%	-	Crude: 4.4 k BPD <i>(net entitlement)</i>	<ul style="list-style-type: none"><li>• Drill development wells</li><li>• Plan for BRS Phase 2 oil field development</li></ul>

\* Status: OP = PTTEP operatorship / JOC = PTTEP joint operatorship

\*\* Sales volume stated at 100% basis except for Algeria 433a & 416b

\*\*\* DCQ = Daily Contractual Quantity

\*\*\*\* PTTEP holds indirectly and directly 66.8% participating interest in Sinphuhorm Project. APICO also holds 100% participating interest in Block L15/43 and Block L27/43.

# Project information 3/4

## Exploration/Development phase



	Project	Status*	PTTEP's Share	Partners (as of March 2019)	2019 Key Activities
<b>Exploration/Development Phase</b>					
<b>Thailand and JDA</b>					
23	G9/43	OP	100%		-
24	G1/61 (Erawan)	OP	60%	MP G2 (Thailand) Limited 40%	• The PSC signing on 25 February 2019 (start production in 2022)
25	G2/61 (Bongkot)	OP	100%		• The PSC signing on 25 February 2019 (Start production in 2022 and 2023)
<b>Overseas</b>					
26	Myanmar M3	OP	80%	MOECO 20%	• Negotiate the commercial framework with the Myanmar government • Perform Front End Engineering Design (FEED study)
27	Myanmar M11	OP	100%		• Drill first exploration well to prove up recoverable resources
28	Myanmar MD-7	OP	50%	TOTAL 50%	• Drill first exploration well to prove up recoverable resources
29	Myanmar MOGE 3	OP	77.5%	Palang Sophon 10% MOECO 10% WinPreciousRes 2.5%	• Drill 3 exploration wells
30	Vietnam B & 48/95		8.5%	PVN 65.88% MOECO 25.62%	• Finalize on Commercial agreements • Finalize on Engineering Procurement Construction Installation (EPCI) bidding process
31	Vietnam 52/97		7%	PVN 73.4% MOECO 19.6%	• Finalize on Commercial agreements • Finalize on Engineering Procurement Construction Installation (EPCI) bidding process
32	Sarawak SK410B	OP	42.5%	KUFPEC 42.5% Petronas-Carigali 15%	• Drill 1 appraisal well
33	Sarawak SK417	OP	80%	Petronas-Carigali 20%	• Prepare to drill exploration and appraisal wells
34	Sarawak SK438	OP	80%	Petronas-Carigali 20%	• Drill 1 exploration well and 1 appraisal well
35	PM407	OP	55%	Petronas 45%	• Signed PSC with Petronas on 21/03/2019
36	PM415	OP	70%	Petronas 30%	

\* Status: OP = PTTEP operatorship / JOC = PTTEP joint operatorship

# Project information 4/4

## Exploration/Development phase

	Project	Status*	PTTEP's Share	Partners (as of March 2019)	2019 Key Activities
<b>Exploration/Development Phase</b>					
<b>Overseas</b>					
37	PTTEP Australasia (PTTEP AA)	OP	90%-100% (varied by permits)		<ul style="list-style-type: none"> <li>Completed Montara Field Divestment to Jadestone on 28 Sep 2018</li> <li>Drill exploration well in AC/P54</li> </ul>
38	Mozambique Area 1		8.5%	Anadarko, Mitsui, 26.5%, 20% ENH, ONGC 15%, 10% Beas Rovuma, Bharat 10%, 10%	<ul style="list-style-type: none"> <li>Prepare work to support Final Investment Decision (FID) targeted in 1H 2019 including LNG marketing and finalize remaining commercial contracts together with project finance</li> </ul>
39	Algeria Hassi Bir Rekaiz	OP	24.5%	CNOOC 24.5% Sonatrach 51%	<ul style="list-style-type: none"> <li>Finalize on Engineering Procurement and Construction (EPC)</li> <li>Drill development wells</li> </ul>
40	Mariana Oil Sands	OP	100%		<ul style="list-style-type: none"> <li>Assess appropriated development approach</li> </ul>
41	Barreirinhas AP1		25%	Shell Brasil 65% Mitsui E&P Brasil 10%	<ul style="list-style-type: none"> <li>Assess petroleum potential</li> </ul>
42	Brazil BM-ES-23		20%	Petrobras 65% INPEX 15%	<ul style="list-style-type: none"> <li>Assess petroleum potential</li> </ul>
43	Mexico block 12 (2.4)		20%	PC Carigali Mexico 60% Ophir Mexico 20%	<ul style="list-style-type: none"> <li>G&amp;G study to access petroleum potential</li> </ul>
44	Mexico block 29 (2.4)		16.67%	Repsol Mexico 30% PC Carigali Mexico 28.33% Sierra Nevada 25%	<ul style="list-style-type: none"> <li>G&amp;G study to access petroleum potential</li> </ul>
45	Abu Dhabi Offshore 1		30%	Eni Abu Dhabi 70%	<ul style="list-style-type: none"> <li>Conduct Seismic</li> </ul>
46	Abu Dhabi Offshore 2		30%	Eni Abu Dhabi 70%	<ul style="list-style-type: none"> <li>Conduct Seismic and drill exploration &amp; appraisal wells</li> </ul>

\* Status: OP = PTTEP operatorship / JOC = PTTEP joint operatorship



# Projects from Murphy Malaysia Acquisition

## Project Details (1/2)

	Project		Working Interest		Oi/Gas	Covering Area (km <sup>2</sup> )	2018 Net Sales Volume
<u>Producing Phase</u>							
1	SK309 & SK311		PTTEP HKO* 59.5% (Operator) Pertamina 25.5% Petronas 15%		Oil and Gas	903.7	Oil 13,000 BPD Gas 105 MMSCFD (equivalent to 30,000 BOED)
			<u>For East Patricia field</u> PTTEP HKO* 42% (Operator) Petronas 40% Pertamina 18%			13	
2	Sabah K	Kikeh	PTTEP HKO* 56% (Operator) Petronas 20% Pertamina 24%		Oil	247	Oil 17,000 BPD Gas 6 MMSCFD (equivalent to 18,000 BOED)
		Siakap North-Petai (SNP)	Shell 24% Conoco Phillip 24% PTTEP HKO* 22.4% (Operator) Petronas 20% Pertamina 9.6%		Oil	10.5	
		Gumusut-Kakap (GK)	Shell 29.1% (Operator) Conoco Phillips 29.1% Petronas 16.8% PTTEP HKO* 6.4% Pertamina 2.7% Brunei contractors 15.9%		Oil	4	

\* PTTEP's Post-acquisition positions, expected completion by the second quarter of 2019 and subject to customary consents and regulatory approvals

# Projects from Murphy Malaysia Acquisition

## Project Details (2/2)

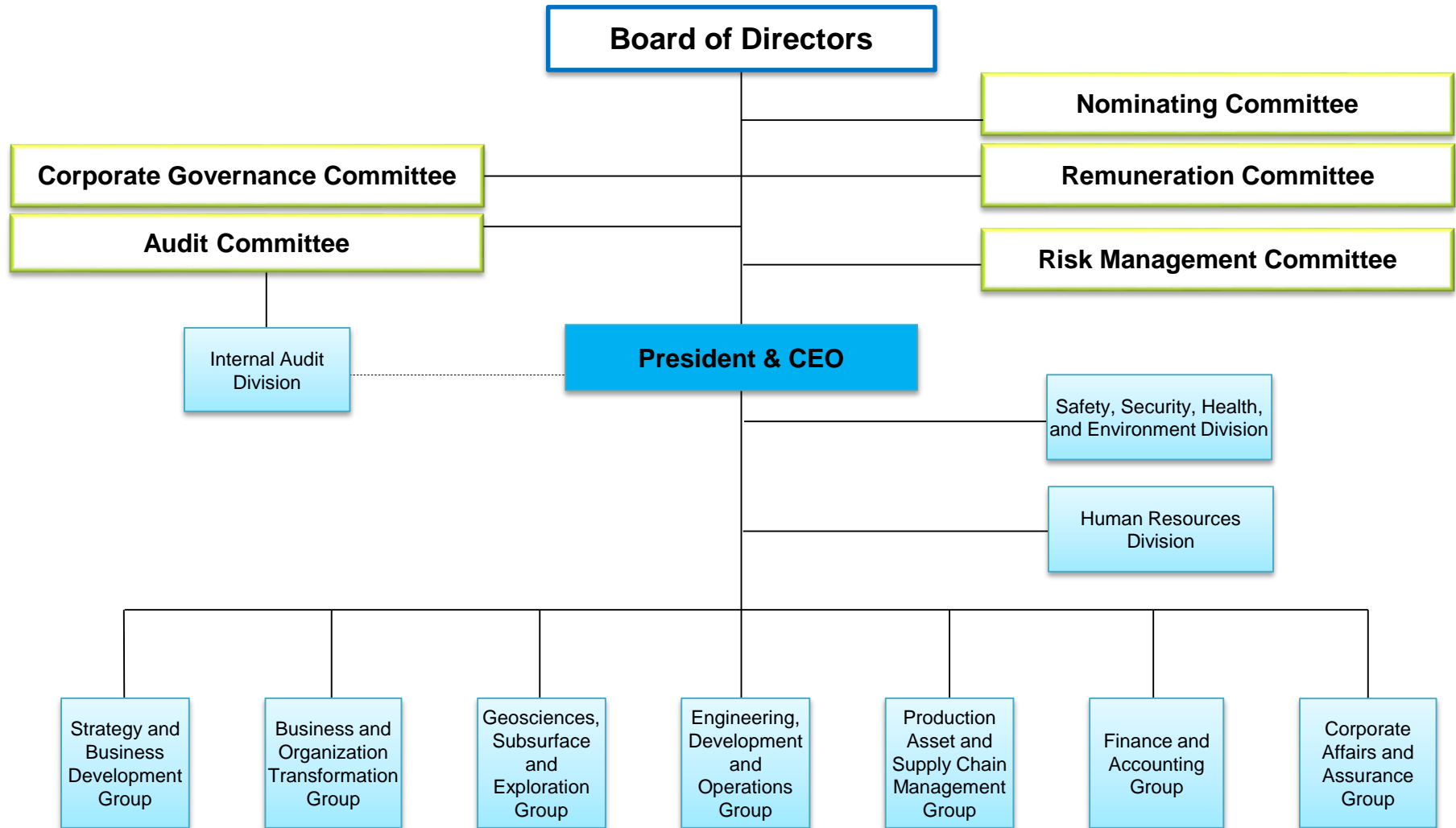


	Project	Working Interest		Oi/Gas	Covering Area (km²)	2018 Net Sales Volume
Development Phase						
3	Sabah H	Rotan Field PTTEP HKO* 56% (Operator) Petronas 20% Pertamina 24%		Gas	17.6	Expected first gas in 2H 2020, ramping up to full capacity at 270 MMSCFD. Net sales volume to be 130 MMSCFD or equivalent to 22,000 BOED
		Remaining Area PTTEP HKO* 42%(Operator) Petronas 40% Pertamina 18%			2,693.8	
Exploration Phase						
4	SK314A	PTTEP HKO* 59.5% (Operator) Pertamina 25.5% Petronas 15%		Oil/Gas	1,975	N/A
5	SK405B	PTTEP HKO* 59.5% (Operator) MOECO 25.5% Petronas 15%		Oil/Gas	2,305	N/A

\* PTTEP's Post-acquisition positions, expected completion by the second quarter of 2019 and subject to customary consents and regulatory approvals

# Organization structure

Ensuring transparency, integrity and good corporate governance



Ratio	Formula
Lifting Cost (\$/BOE)	$(\text{Operating Exp.} - \text{Transportation Cost} - \text{Stock Variation} - \text{Other expenses not related to lifting}) / \text{Production Volume}$
Cash Cost (\$/BOE)	$(\text{Operating Exp.} + \text{Exploration Exp.} + \text{G\&A} + \text{Royalties} + \text{Finance Cost}) / \text{Sales Volume}$
Unit Cost (\$/BOE)	$(\text{Operating Exp.} + \text{Exploration Exp.} + \text{G\&A} + \text{Royalties} + \text{Finance Cost} + \text{DD\&A}) / \text{Sales Volume}$
Reserves Replacement Ratio	$5\text{-Yr Additional Proved Reserves} / 5\text{-Yr Production Volume}$
Reserves Life Index (Year)	$\text{Proved Reserves} / \text{Production Volume}$
Success Ratio	$\text{Number of wells with petroleum discovery} / \text{Total number of exploration and appraisal wells}$
Sales Revenue	$\text{Sales} + \text{Revenue from pipeline transportation}$
EBITDA	$(\text{Sales} + \text{Revenue from pipeline transportation}) - (\text{Operating expenses} + \text{Exploration expenses} + \text{Administrative expenses} + \text{Petroleum royalties and remuneration} + \text{Management's remuneration})$
EBITDA Margin	$\text{EBITDA} / \text{Sales Revenue}$
Return on Equity	$\text{Trailing-12-month net income} / \text{Average shareholders' equity between the beginning and the end of the 12-month period}$
Return on Capital Employed	$(\text{Trailing-12-month net income} + \text{Trailing-12-month Interest Expenses \& Amortization of Bond Issuing Cost}) / (\text{Average shareholders' equity and average total debt between the beginning and the end of the 12-month period})$
Simple Effective Tax Rate	$\text{Income tax expenses} / \text{Income before income taxes}$
Total debt	$\text{Short-term loans from financial institution} + \text{Current portion of long-term debts} + \text{Bonds} + \text{Long-term loans from financial institution}$
Net debt	$\text{Total debt} - \text{Liquidity}$
Debt to Equity	$\text{Total debt} / \text{Shareholders' equity}$
Net Debt to Equity	$\text{Net debt} / \text{Shareholders' equity}$
Total Debt to Capital	$\text{Total debt} / (\text{Total debt} + \text{Shareholders' equity})$
Total Debt to EBITDA	$\text{Total debt} / \text{Trailing-12-month EBITDA}$
Net Debt to EBITDA	$\text{Net debt} / \text{Trailing-12-month EBITDA}$
EBITDA Interest Coverage Ratio	$\text{Trailing-12-month EBITDA} / \text{Trailing-12-month Interest Expenses \& Amortization of Bond Issuing Cost}$