



**PTTEP**

MEMBER OF  
**Dow Jones**  
**Sustainability Indices**  
In Collaboration with RobecoSAM

## Q3 2019 Financial Results and Strategy Update

Analyst Meeting

6 November 2019







**Industry Trends**



**Strategy and Growth**



**Financial Performance**





# Industry Trends



## Strategy and Growth

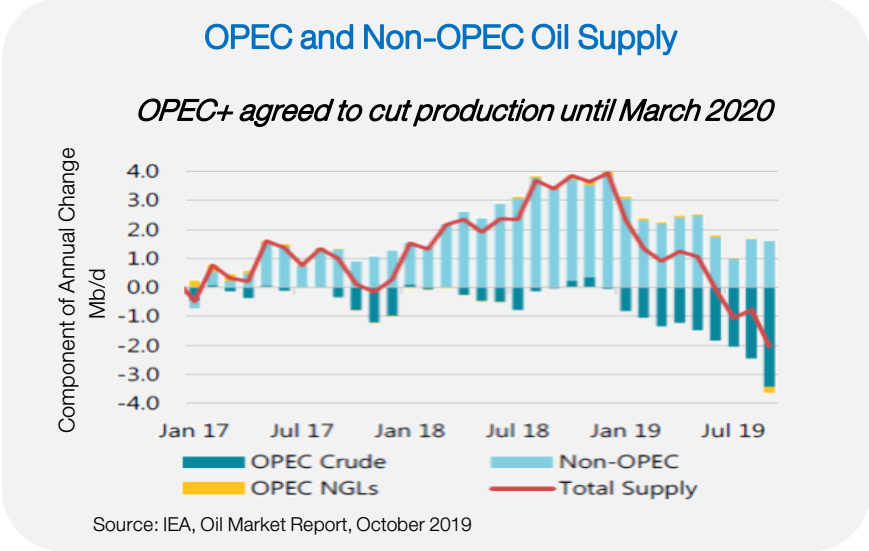
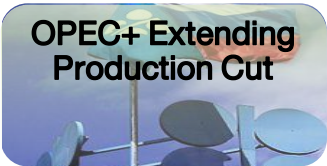
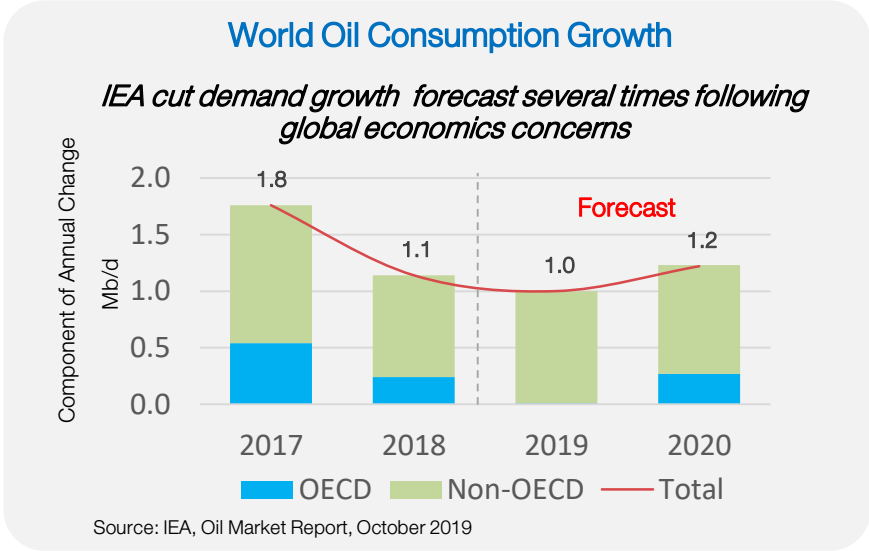
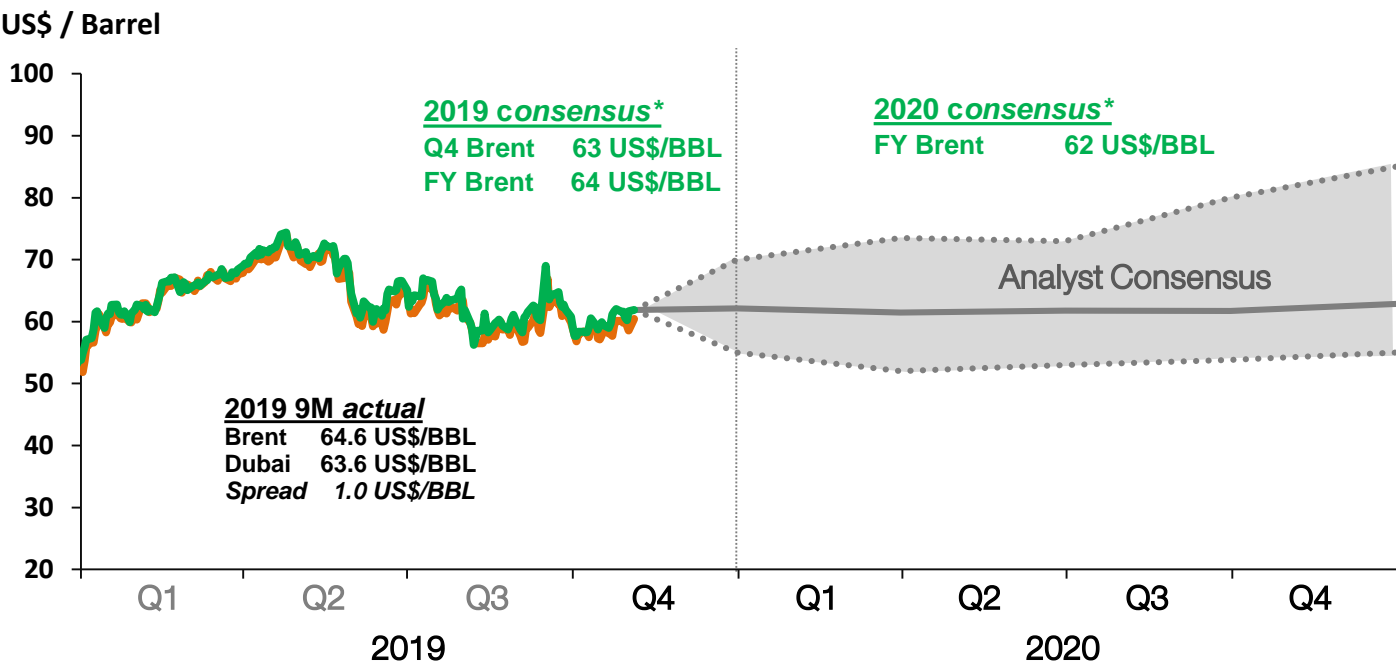


## Financial Performance



# Industry Trends: Oil Market Outlook

Price volatility driven by uncertainty of global economy

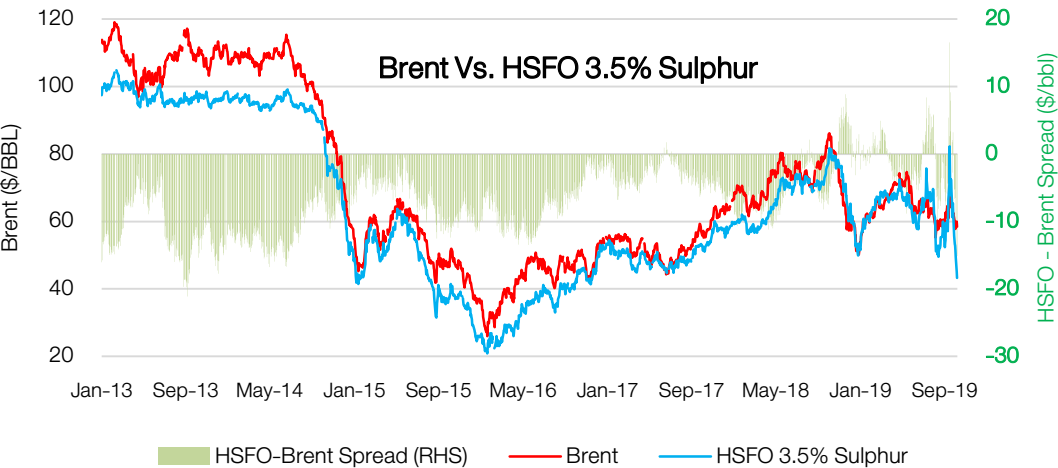


Remark: \* Bloomberg Analyst Consensus (OPFC) as of 1 Nov 2019



HSFO : Historical & Forward

Historically, HSFO-Brent Spread has been volatile





Industry Trends



**Strategy and Growth**



Financial Performance



## Ensuring Smooth Business Transition

### G1/61 and G2/61



- ✓ Signed Production Sharing Contract
- ✓ Signed Preliminary Facility Access Agreement
- ✓ Started Site Survey for Production Platform installation plan

### Newly Acquired Assets from Murphy



- ✓ 3<sup>rd</sup> Largest player by resources size after acquisition completion
- ✓ Transition in place for business continuity and operational synergy

### Newly Acquired Assets from Partex



- ✓ Completed transaction on 4 November 2019
- ✓ In process of business transition

## Acceleration of Exploration Activities





Industry Trends



Strategy and Growth



**Financial Performance**

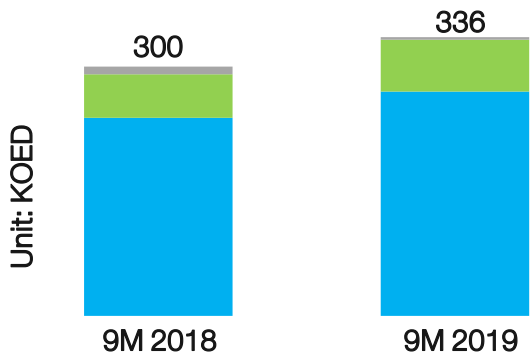


# 9M 2019 Key Financial Performance

Strong core performance supported by higher volume and gas price



## Sale Volumes



▲ **12% YTD**

The additional 22.22% interest in Bongkot Project And Murphy's acquisition

■ Thailand & MTJDA ■ Other SEA ■ Rest of world



## Average Selling Price

	9M 2018	9M 2019
Gas (\$/MMBTU)	6.24	6.91
Liquid (\$/BBL)	67.85	60.82
Weighted Avg. (\$/BOE)	46.25	46.83
Avg. Dubai (\$/BBL)	70.10	64.02
Volume Mix (Gas : Liquid)	71:29	72:28

▲ **1% YTD**

Strong gas price leading to higher average selling price

## Key Financial Performance

Unit : \$/BOE

	9M 2018	9M 2019
Cash cost	14.64	15.06
Non-Cash cost	16.64	15.80
Unit cost	31.28	30.86

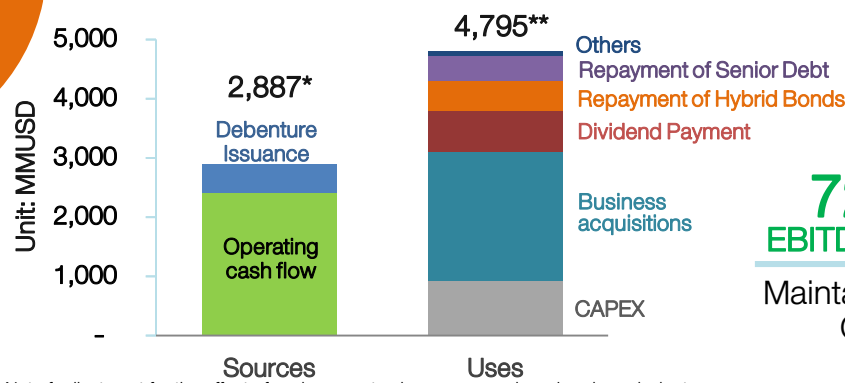
▼ **1% YTD**

Remain competitive unit cost

Note: Unit Cost : Exclude costs related to new business which is approximately 0.1\$/BOE for each period



## Unit Cost



**72% EBITDA Margin**

Maintain strong OCF

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)

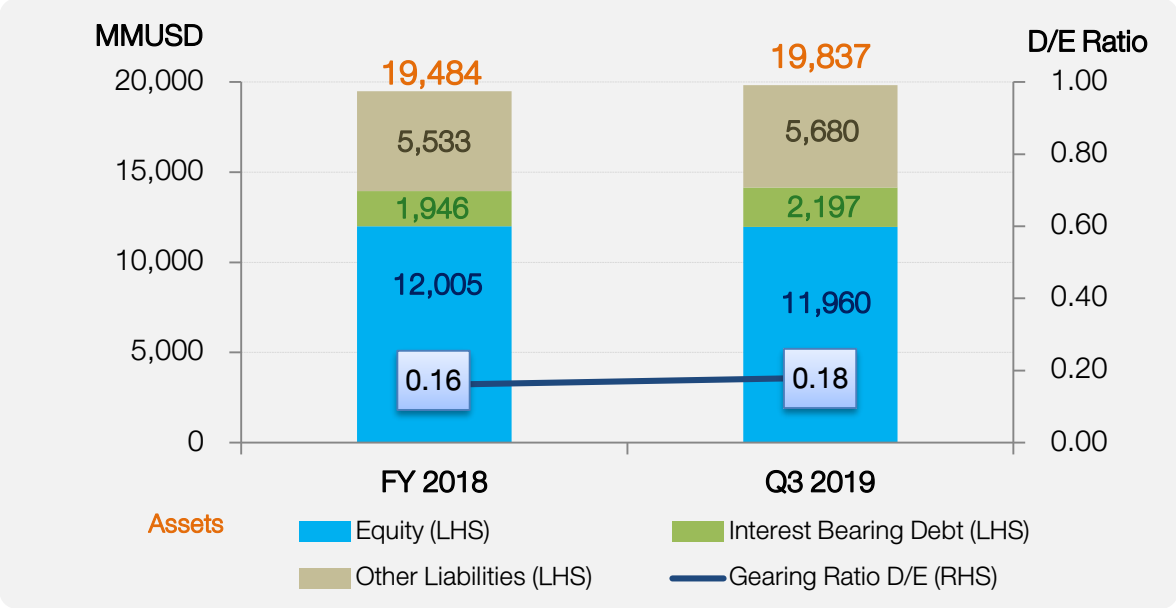


## 9M Source & Use of Funds



Capital Structure

Healthy balance sheet with low gearing

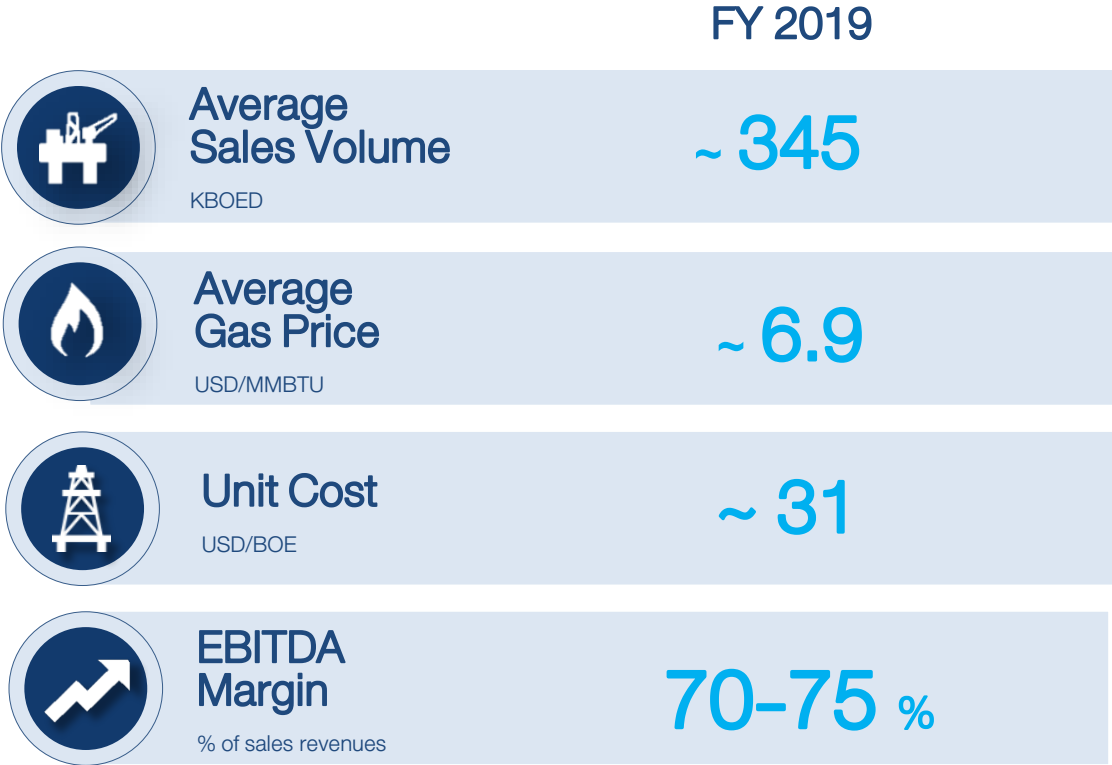


Debt Profile	<div><div>US\$ 100%</div><div>→</div><div>US\$ 100%</div></div>	
Weighted Average Cost of Debt (%)	5.32	5.04
[Fixed : Floating]	[100 : 0]	[100 : 0]
Average Loan Life (Years)	8.67	8.36

Remark: Debt profile excludes Hybrid bonds

2019 Guidance

Volumes boost with priorities in business transition for full value realization



Note: Included the acquisition of Murphy's business in Malaysia which was completed in July 2019  
Excluded the acquisition of Partex  
Based on FY2019 average Dubai oil price at 63 \$/BBL



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



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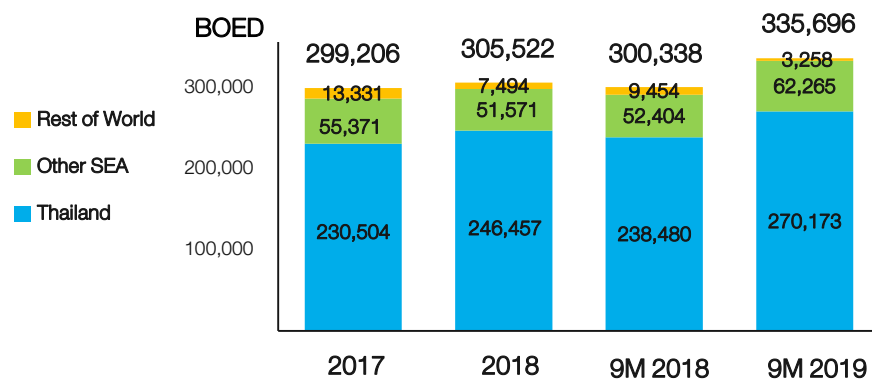
## Supplementary information

Q3 2019 Financial Results	12-18
Sustainability Development	19
Thailand Energy Updates	20-22
Reserves at the Year-end 2018	23
Revised Five-Year Investment Plan	24
Key Project Highlights by Region	25-37
Project Details	38-42
Organization Structure	43
Ratio and Formula	44

# Sales Volume & Unit Cost

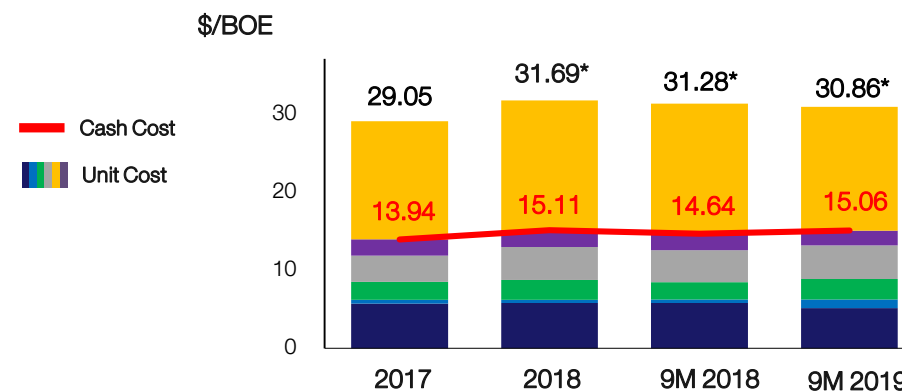
Upward sales volume after completion of acquisitions with competitive cost

## Sales Volume and Price



Gas (\$/MMBTU)	5.59	6.42	6.24	<b>6.91</b>
Liquid (\$/BBL)	52.26	67.40	67.85	<b>60.82</b>
Weighted Avg. (\$/BOE)	39.20	46.66	46.25	<b>46.83</b>
Avg. Dubai (\$/BBL)	53.14	69.65	70.10	<b>64.02</b>
Avg. HSFO (\$/BBL) (High Sulphur Fuel Oil)	49.64	67.01	65.15	<b>63.81</b>
Volume Mix (Gas : Liquid)	70 : 30	72 : 28	71 : 29	<b>72 : 28</b>
Revenue Mix (Gas : Liquid)	60 : 40	59 : 41	58 : 42	<b>64 : 36</b>

## Unit Cost



DD&A	15.11	16.58	16.64	<b>15.80</b>
Finance Cost	2.07	2.14	2.09	<b>1.88</b>
Royalties	3.37	4.21	4.10	<b>4.31</b>
G&A	2.30	2.57	2.19	<b>2.64</b>
Exploration Expenses	0.48	0.41	0.45	<b>1.10</b>
Operating Expenses	5.72	5.78	5.81	<b>5.13</b>
Lifting Cost	4.19	4.33	4.38	<b>3.88</b>

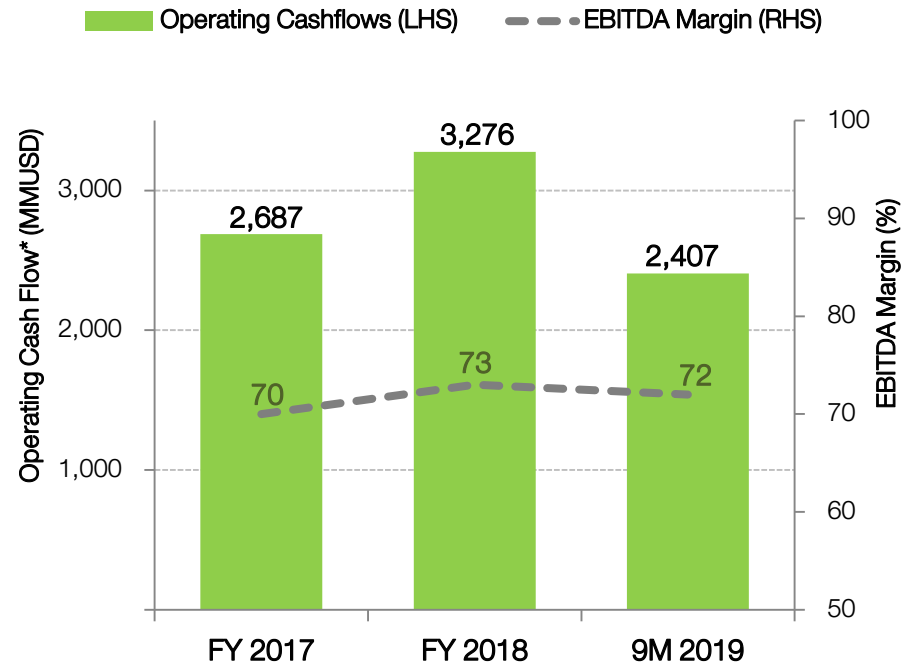
Note: \* Exclude costs related to new business, If include cost for 2018, 9M2018 and 9M2019 will be 31.72 \$/BOE, 31.35 \$/BOE and 30.96 \$/BOE respectively  
The formulas for calculating ratios are provided in the supplementary section for your reference



# Cash Flow Performance

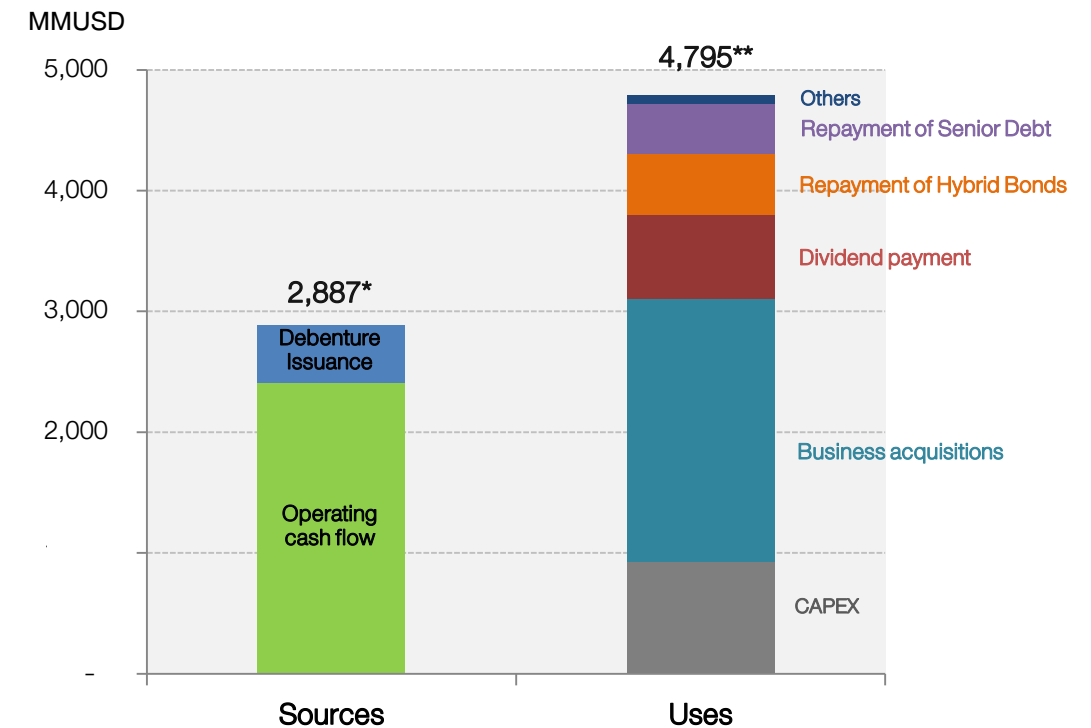
Robust operating cash flow

## Cash Flow Performance



Net Income	594	1,120	1,185
Recurring Net Income***	836	1,215	1,066

## Source & Use of Funds in 9M 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 Performance : Income Statement

*Sustained solid EBITDA*

	Q2 19	Q3 19	Q3 18	9M 19	9M 18
Sales and Revenue from Pipeline Transportation (MMUSD)	1,503	1,524	1,367	4,383	3,870
EBITDA (MMUSD)	1,087	1,054	992	3,166	2,836
Net Income (MMUSD)	433	358	315	1,185	851
Recurring Net Income (MMUSD)	389	303	292	1,066	932
Earning Per Share (USD)	0.10	0.09	0.07	0.29	0.20
<b>Key Financial Ratios</b>					
EBITDA Margin (%)	72	69	73	72	73
Return on Equity (%) (LTM)	12	12	10	12	10
Return on Capital Employed (%) (LTM)	11	11	9	11	9
Return on Equity (%) (LTM, Recurring Net Income)	11	11	10	11	10
Return on Capital Employed (%) (LTM, Recurring Net Income)	10	10	9	10	9

Note: The formulas for calculating ratios are provided in the supplementary section for your reference



# Financial Performance : Balance Sheet

*Healthy balance sheet with low gearing ratio*

	YE 18	Q3 19
Total Assets (MMUSD)	19,484	19,837
- Cash & cash equivalents * (MMUSD)	4,001	2,093
Total Liabilities (MMUSD)	7,479	7,877
- Interest bearing debt (MMUSD)	1,946	2,197
Equity (MMUSD)	12,005	11,960
<b>Key Financial Ratios</b>		
Total Debt to Equity (X)	0.16	0.18
Net Debt** to Equity (X)	(0.17)	0.01
Total Debt to Capitalization (X)	0.14	0.16
Total Debt to EBITDA (X)	0.63	0.49
EBITDA Interest Coverage (X)	32	42

**Credit Ratings :**

BBB+ (S&P), Baa1 (Moody's), AAA (TRIS)

**Weighted Average Cost of Debt \*\* :**

5.04%

**Average Loan Life \*\* :**

8.36 years

Note: \* Cash & Cash Equivalents (Cash on hand) include Short-term Investments (Fixed deposit > 3 months)

Net Debt = Total Debt less Cash & Cash Equivalents and Short-term Investments

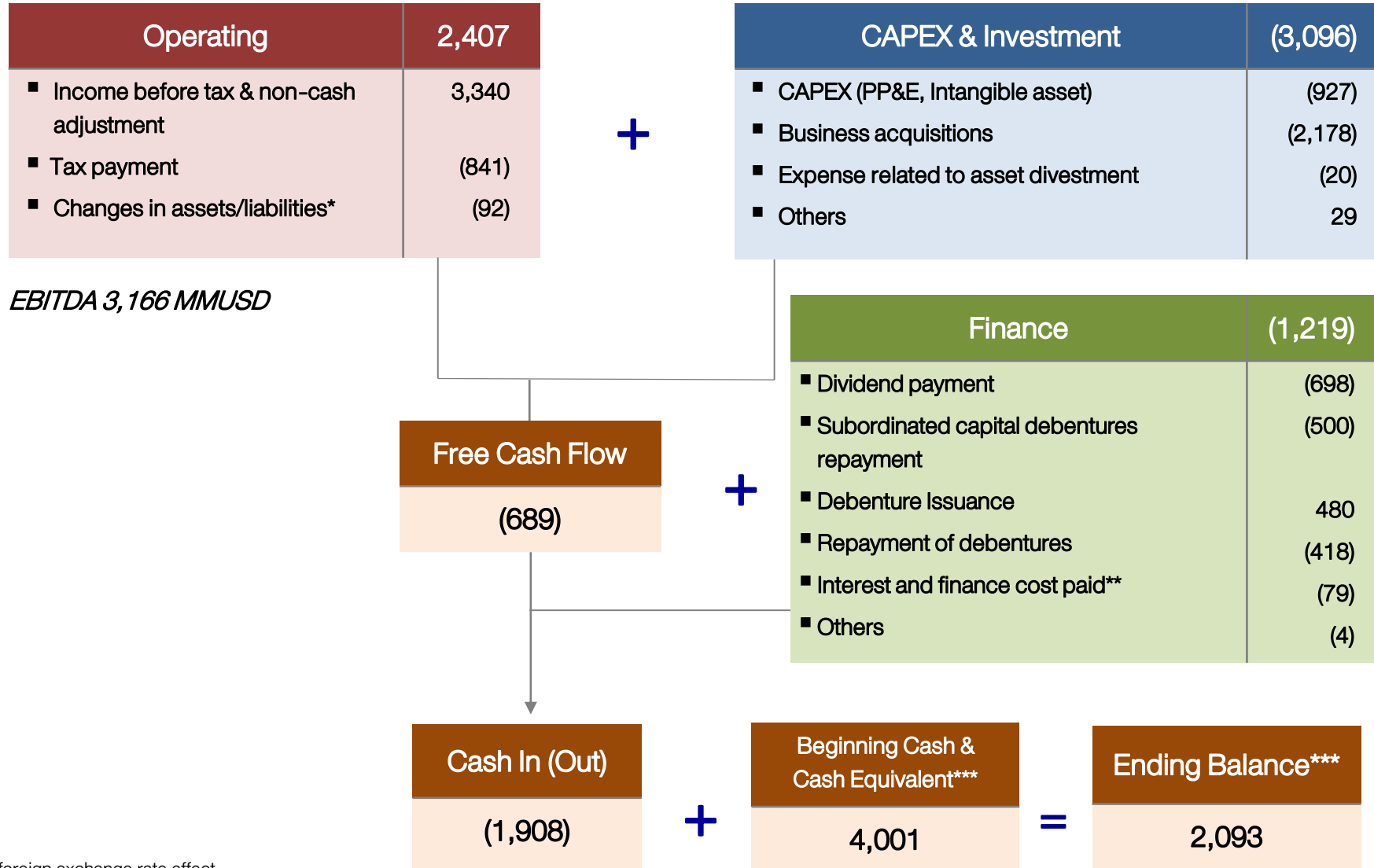
\*\* Excludes hybrid bonds

The formulas for calculating ratios are provided in the supplementary section for your reference

# Cash Flows : January – September 2019

Healthy operating cash flow

Unit : MMUSD



Note: \* Net of foreign exchange rate effect

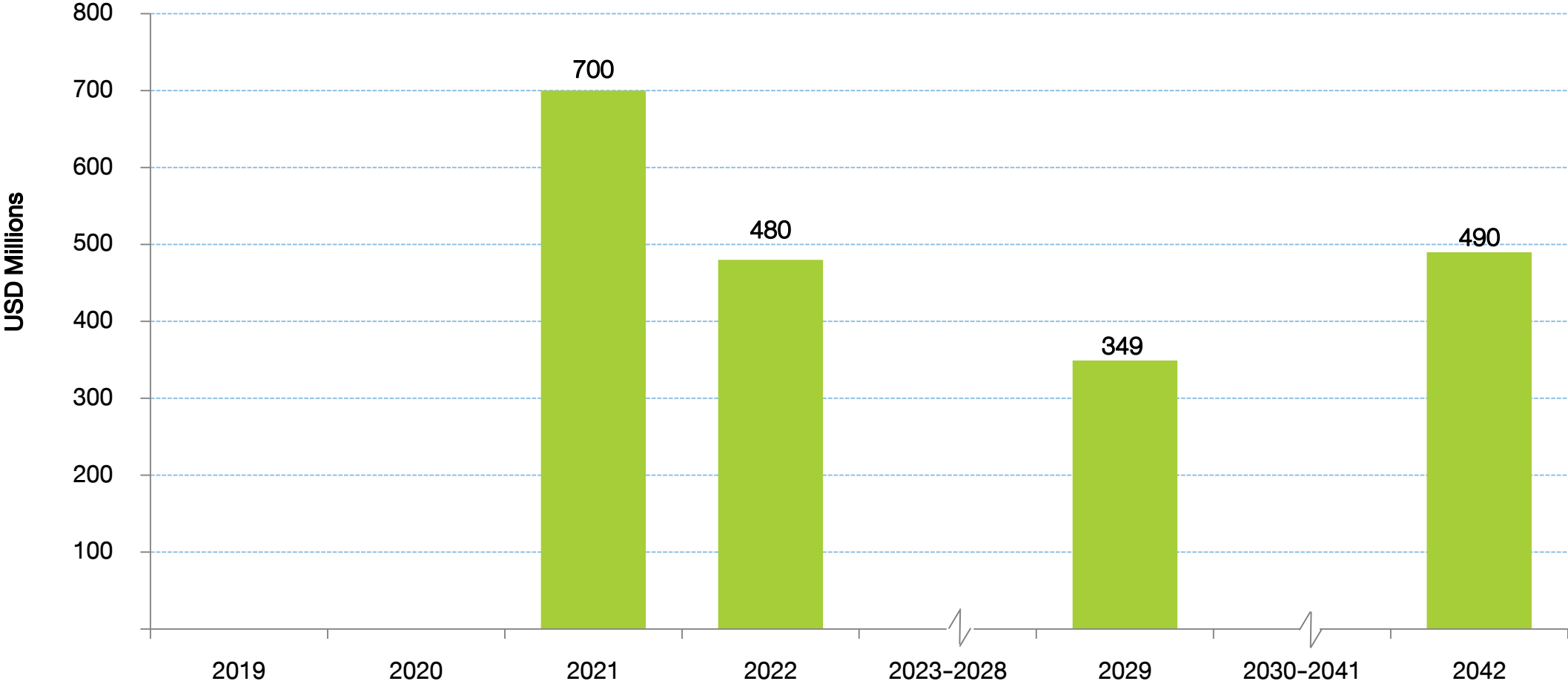
\*\* Net of interest received

\*\*\* Include Short-term Investment (Fixed deposit > 3 months)



# Debt Maturity Profile

As of September 2019



Note: Excludes Hybrid bonds  
Unit: USD Millions or equivalent after cross currency swap

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## 2019 DJSI Listed Company

PTTEP has been selected as a member of the 2019 Dow Jones Sustainability Indices (DJSI) for the 6<sup>th</sup> consecutive year and the 2<sup>nd</sup> time as industry leader in the DJSI World Oil and Gas Upstream & Integrated Industry



## Proven business integrity

Asia's Icon on Corporate Governance 2019 Award  
*Corporate Governance Asia magazine*

SET Sustainability Award 2018 – Outstanding Category  
*The Stock Exchange of Thailand (SET)*

Board of the Year Award 2018 (Silver)  
*The Thai Institute of Directors Association (IOD)*



FTSE4Good

## FTSE4Good Emerging Index 2019

PTTEP becomes a constituent of the FTSE4Good Emerging Index 2019 for the fourth consecutive year



## Green driver to environment

The Excellent Level (G-Gold) of the Green Office Award 2018  
*The Ministry of Natural Resources and Environment*

Green Leadership Category for T.M.S. Underwater Learning Site Project  
*The Asia Responsible Enterprise Awards 2018*

Water A List Award  
*Carbon Disclosure Project (CDP)*

## Exemplary social contributor

Best CSR Organizer 2019  
*BAZNAS of Indonesia  
(The National Zakat Board)*

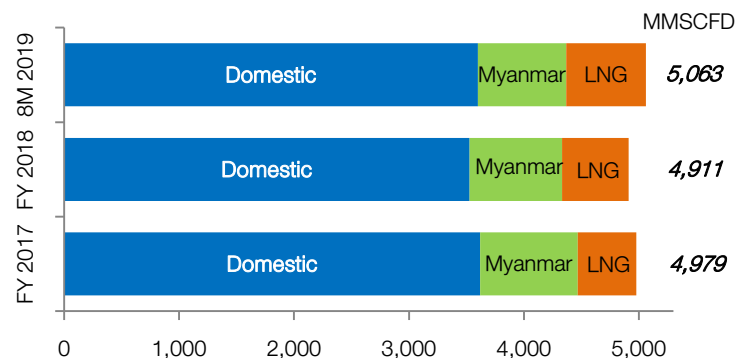
Thailand's Best Strategic Corporate Social Responsibility (ranked first)  
*Alpha Southeast Asia Magazine 2018*

Role Model Organization on Human Rights  
*Department of Rights and Liberties Protection,  
Ministry of Justice*



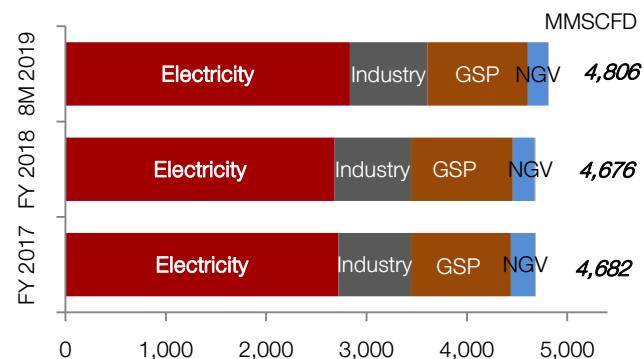
## Thailand Energy Overview

### Natural Gas Supply



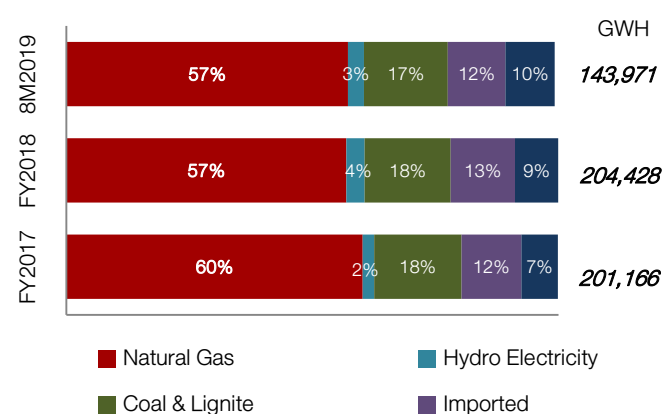
Slight decline from Myanmar piped gas imports due to natural decline and significant growth in LNG import

### Natural Gas Consumption



Source: EPPO

### Electricity Generation



## Exchange Rate Movement (THB/USD)



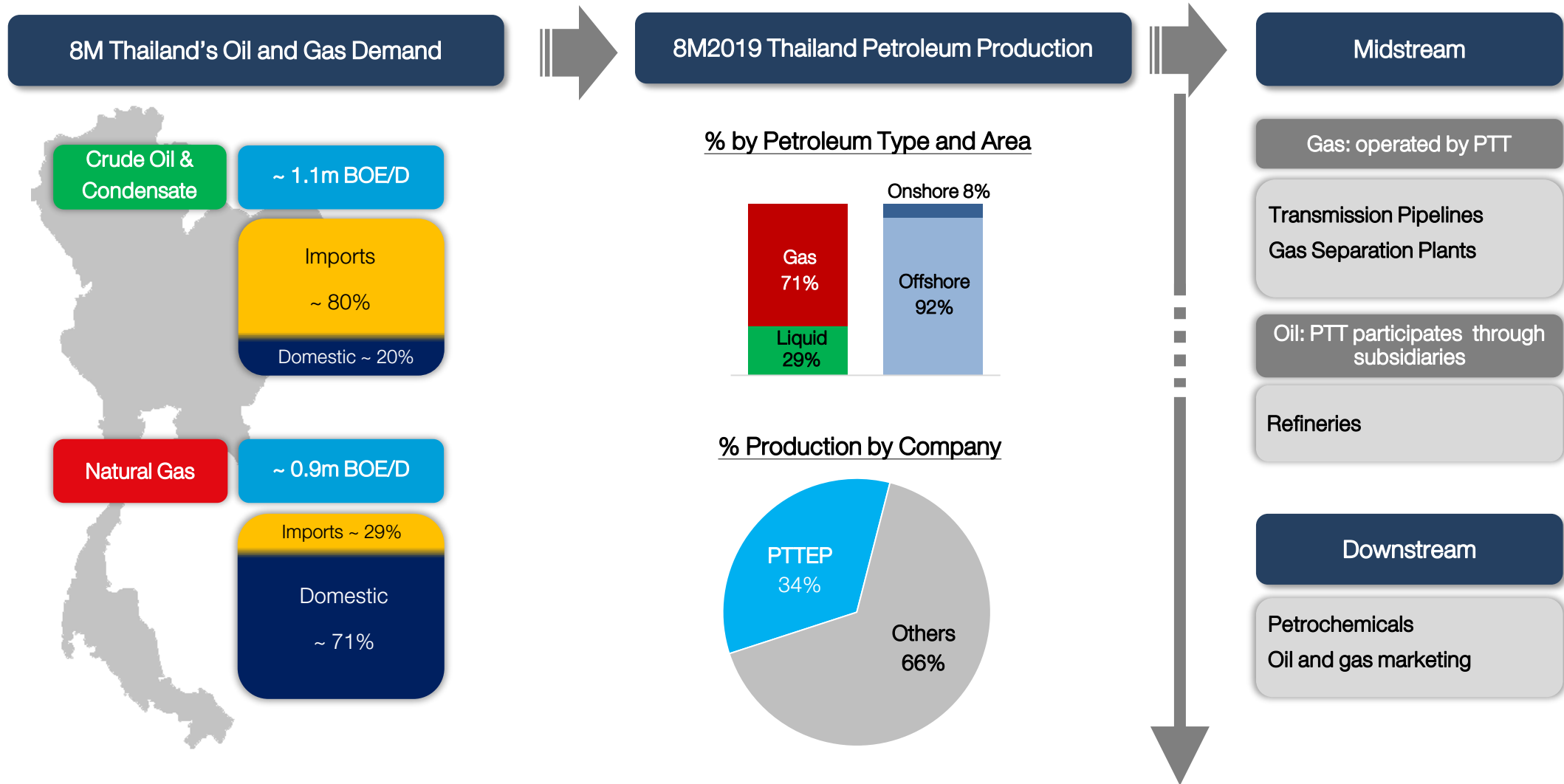
### Consensus on the exchange rate mostly depends on

- Tendency on FED to lower interest rate
- Trade war between the US and China
- Uncertainty on Brexit
- BOT's direction on monetary policy
- Slow recovery in Tourism growth

Source: Bank of Thailand, Bloomberg  
Forecast based on Bloomberg Consensus as of 1 November 2019

# Thailand's Energy Value Chain

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

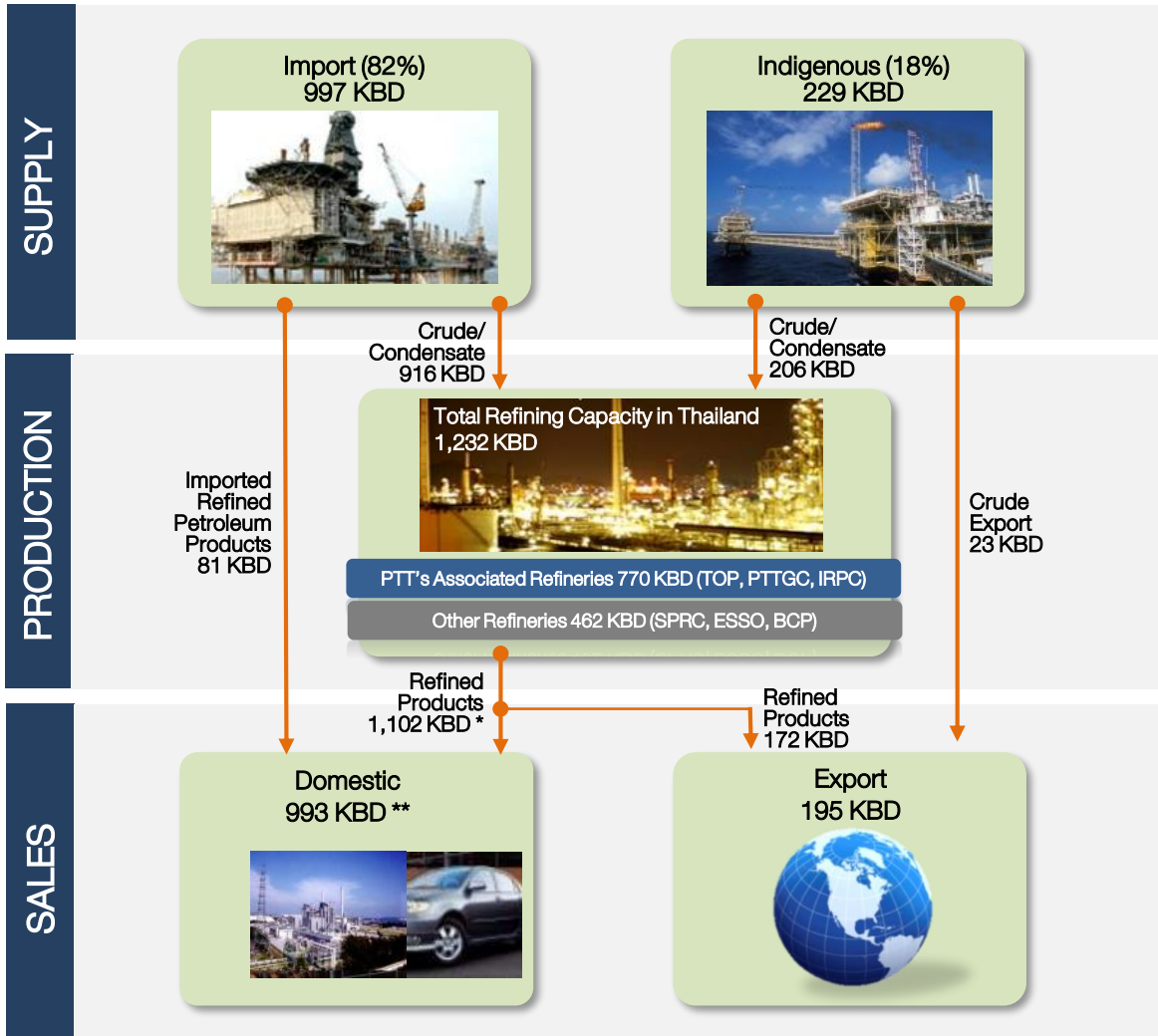


Source: Energy Policy and Planning Office (EPPO) and Department of Mineral Fuels (DMF)



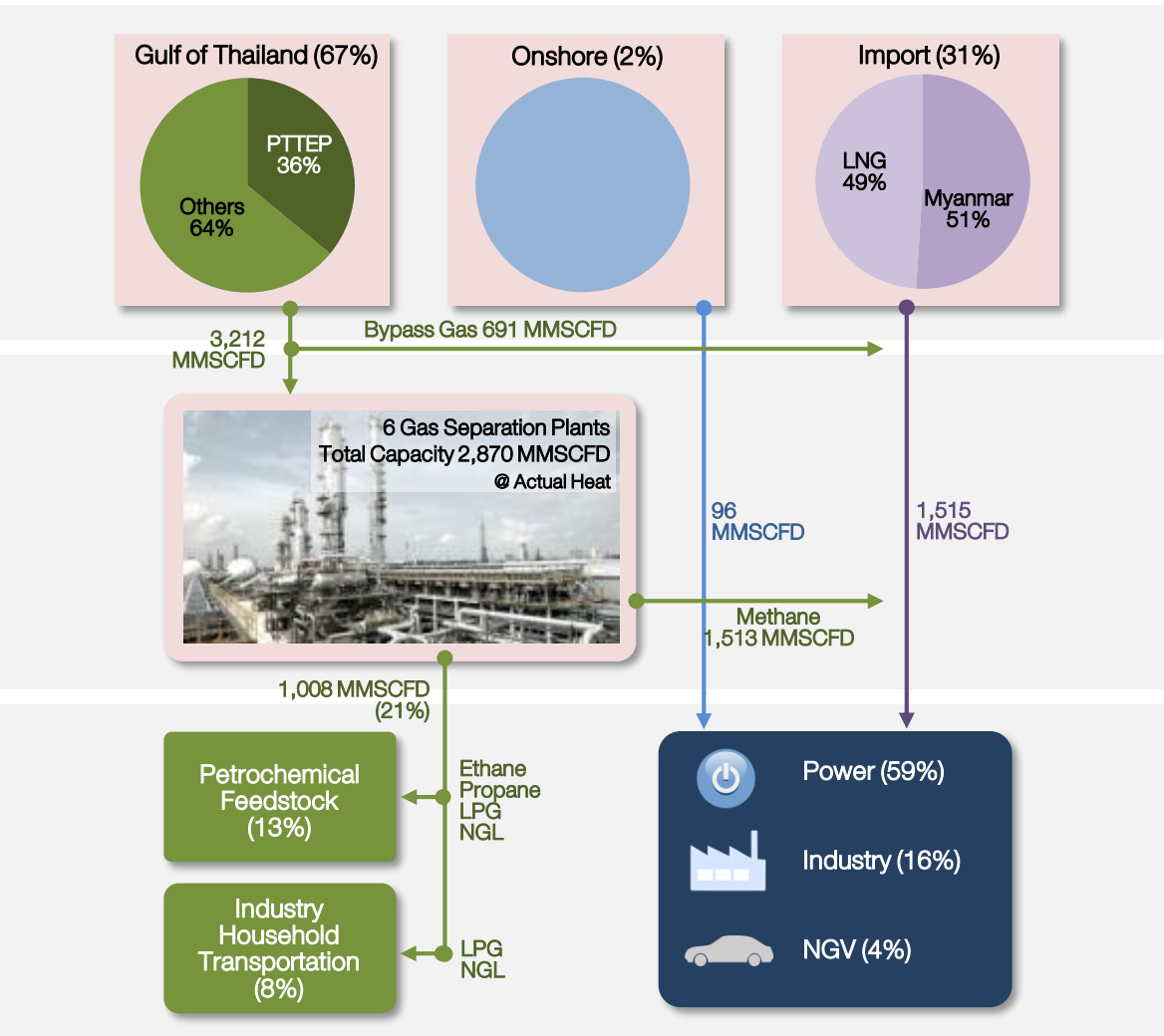
## Oil Balance\*\*\*

Maintains stability supply through adequate refining capacity



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

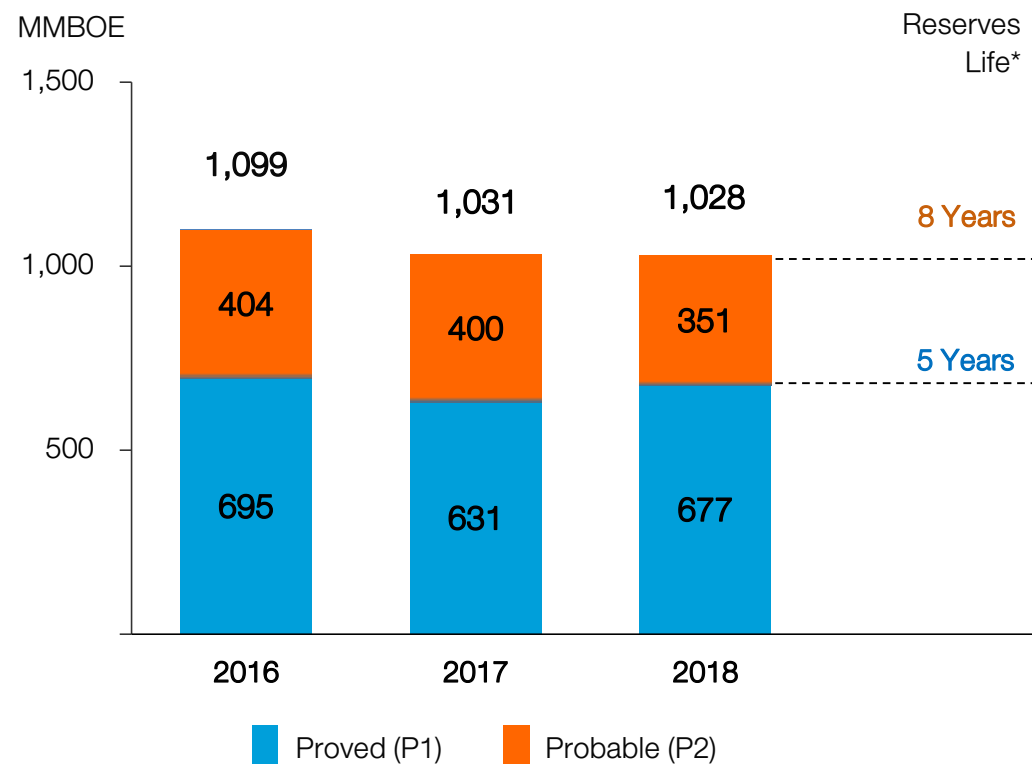
Main driver of the Thailand economy



Source: PTT  
Remark: \* Refined product from refineries = 1,102 KBD, including domestic supply of LPG from GSPs and Petrochemical Plants = 106 KBD  
\*\* Not included Inventory  
\*\*\* Information as of 8M19  
\*\*\*\* Information as of 9M19  
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

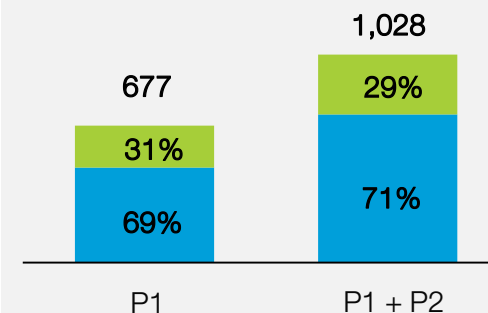


5-Year Average Proved Reserves Replacement Ratio (RRR)

2016	2017	2018
0.57x	0.58x	0.74x

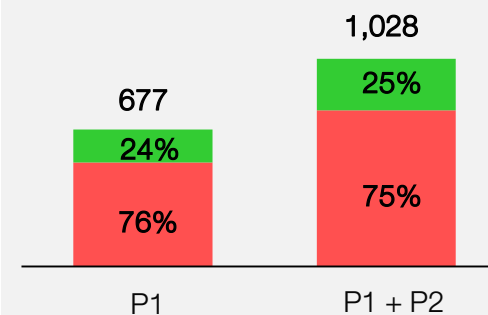
## 2018 by Geography

Domestic (Blue), International (Green)



## 2018 by Product Type

Gas (Red), Liquid (Green)



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

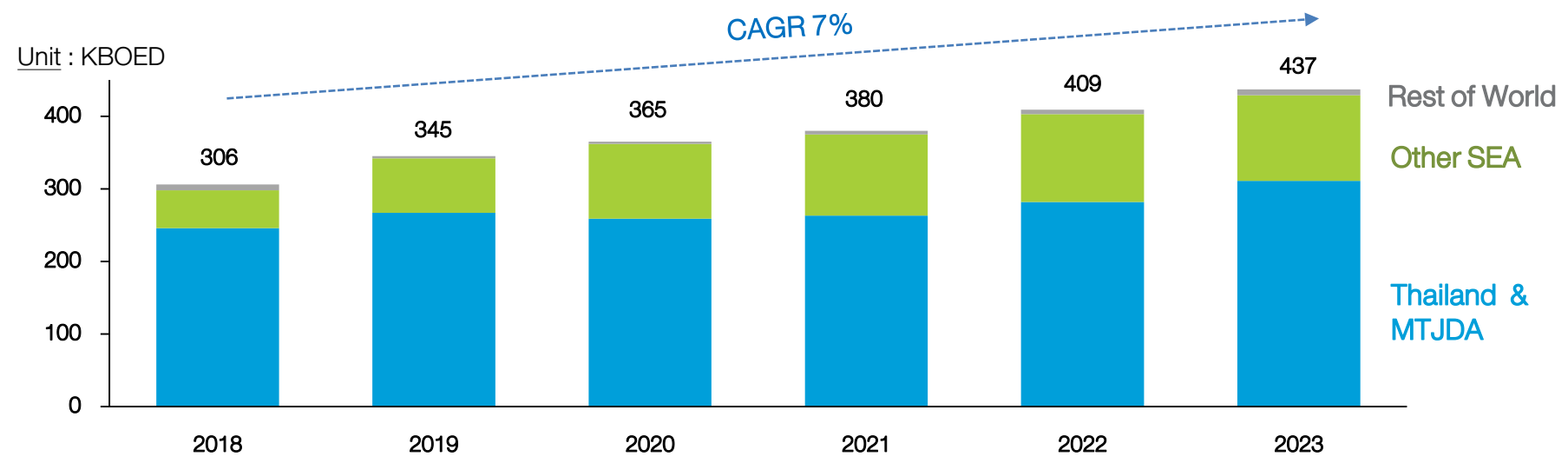


# Revised Five –Year Plan\*

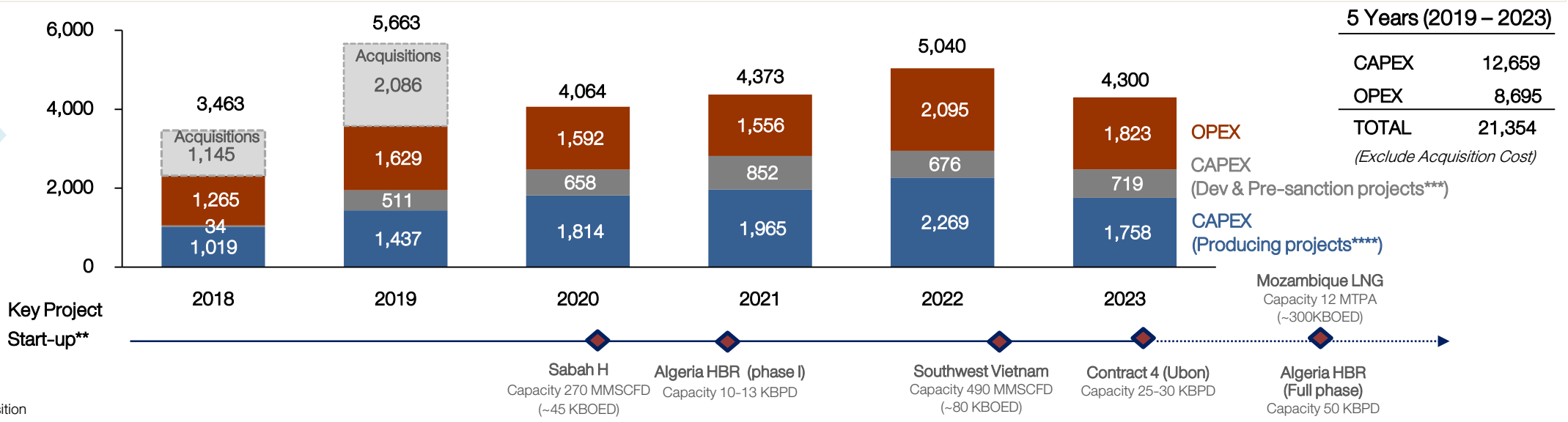
Incorporating growth from recent developments : Murphy and Bidding win of BKT & ERW



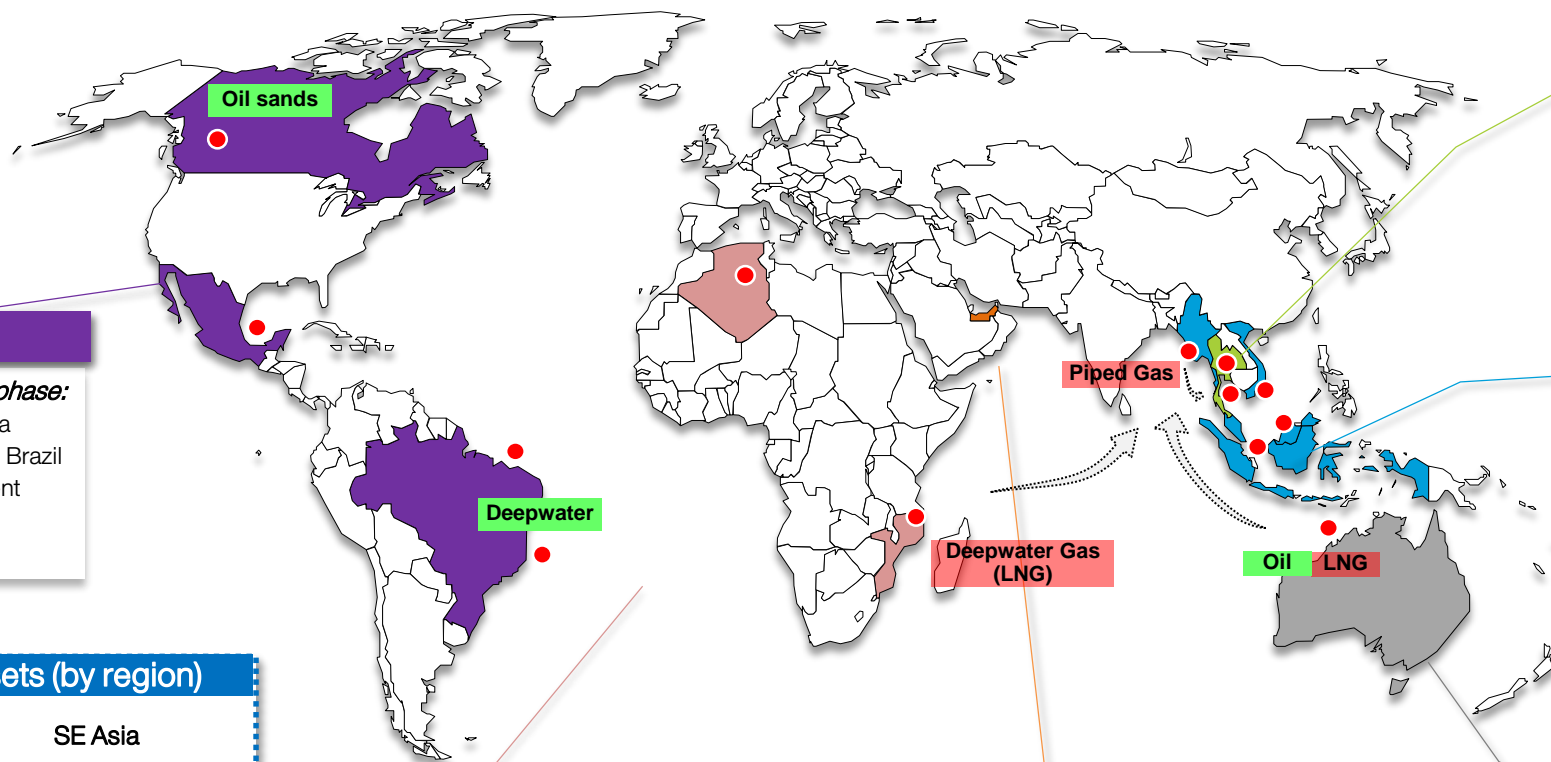
Sales Volume



Investment



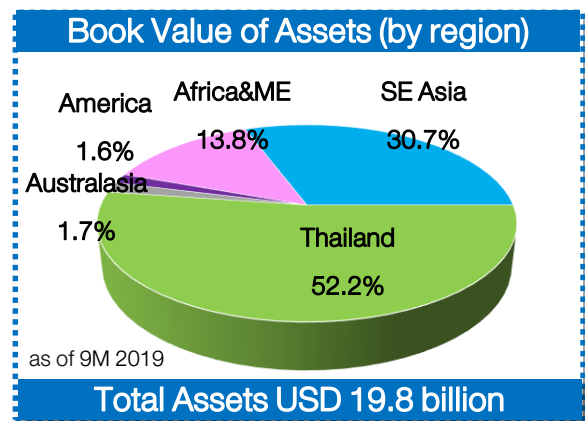
Note: \* Exclude Partex acquisition  
 \*\* Subject to FID timing  
 \*\*\* Development & Pre-sanction projects include Sabah H, Mozambique LNG, Contract 4 (Ubon), Algeria HBR and Southwest Vietnam  
 \*\*\*\* Includes exploration and appraisal in all projects and head office CAPEX



### North & South America

*Opportunities in an early phase:*

- Oil Sand project in Alberta
- Deepwater exploration in Brazil and Mexico with prominent and prudent operators



### Thailand

*PTTEP's core production base*

- 80% of total sales volume
- Key producing assets include Bongkot, Arthit, Contract 4 and S1
- The PSCs signing of Bongkot (G2/61) and Erawan (G1/61) on 25 February 2019

### Southeast Asia

*Second heartland to PTTEP*

- 19% of total sales volume mainly from Malaysia and Myanmar
- 3<sup>rd</sup> Largest by resources size in Malaysia with significant gas discovery in Sarawak SK 410B Project
- Gas production in Myanmar mostly supplied into Thailand
- Other producing assets in Vietnam (oil) and Indonesia (gas)

### Africa

*An area for growth, key projects include:*

- Production: Algeria's Bir Seba oil field with current flow rate of approximately 18 KBPD
- Development : Algeria's Hassi Bir Rakaiz with target phase 1 production in 2021
- Mozambique Area 1 with target first cargo in 2024

### Middle East

*First presence in UAE:*

- Awarded 2 new offshore exploration blocks in Jan 2019
- Partnered with experienced operator, ENI

### Australasia

*Potential gas development*

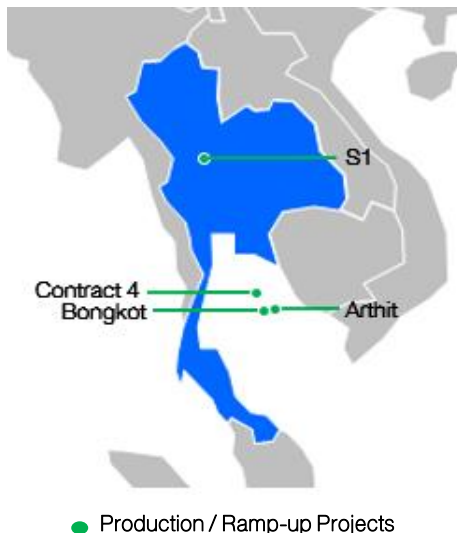
- Sizable undeveloped gas resources in Timor Sea
- Completion of Montara Divestment

Note : Excluding Partex acquisition

# Thailand, Myanmar and Malaysia

"Coming Home" to maintain strong foundation with full expertise

## Thailand



### Bongkot (66.6667% WI)

- Average natural gas and condensate sales volume of 779 MMSCFD and 22 KBPD in 9M2019

### S1 (100% WI)

- The largest onshore crude oil production field in Thailand with 9M2019 average crude oil sales volume of 30 KBPD

### Arthit (80% WI)

- Average sales volume in 9M2019 was 224 MMSCFD of natural gas and 11 KBPD of condensates

### Contract 4 (60% WI)

- Average sales rate of 411 MMSCFD for natural gas and 18 KBPD for condensate in 9M2019

## 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 304 MMSCFD in 9M2019
- Significant exploration acreage in offshore, Moattama Basin

### Project Status

#### Production

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

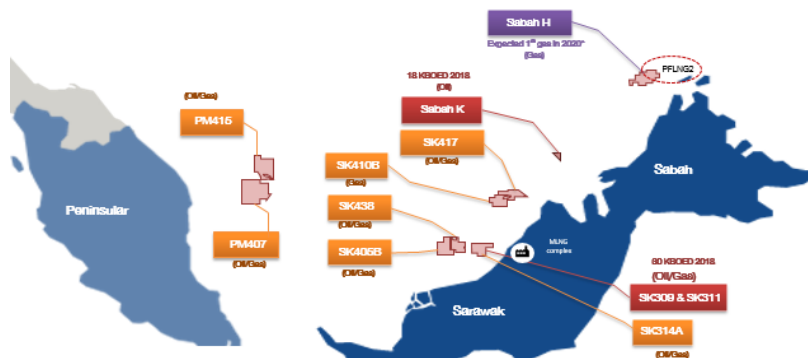
#### Appraisal

- M3 (80% WI)

#### Exploration

- MOGE 3 (77.5% WI)
- M11 (100% WI)
- MD-7 (50% WI)

## Malaysia



### Production

#### Block K Project\*

Kikeh (56% WI), Siakap North-Petai (SNP) (22.4% WI) and Gumusut-Kakap (GK) (6.4% WI)

- Average production volume in Q32019 was 24\*\* KBPD of crude oil

#### SK309 and SK311 Project\* (59.5% WI)

For East Patricia field (42% WI)

- Average production volume in Q32019 was 240 MMSCFD of natural gas and 24 KBPD of condensates and crude.

### Development

#### Block H Project\*

Rotan field (56% WI) Remaining Area (42% WI)

- First gas expected in Q3/2020
- Full capacity at 270 MMSCFD

### Exploration

#### Sarawak SK410B Project (42.5% WI)

- Multi TCF significant discovery
- Preparing additional drilling of an appraisal well in 2020

#### Other projects

- Evaluating petroleum potentials
- Plan for exploration and appraisal drilling in 2020-2021

\*This asset is a part of the acquisition of Murphy's business in Malaysia which was completed in July 2019

\*\*Block K gross production is net off unitization

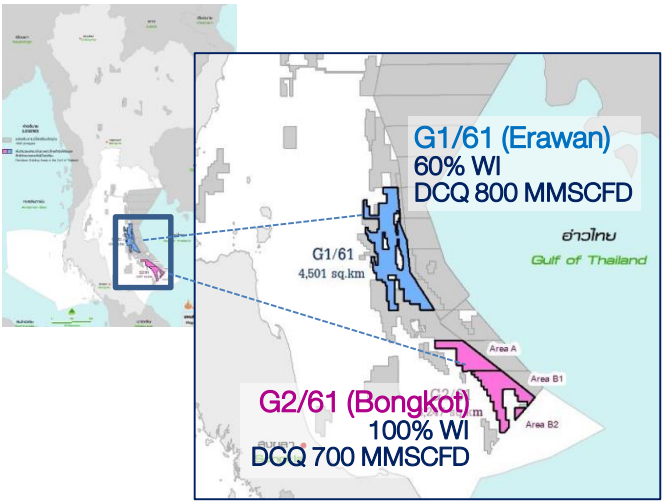
Note: WI – working interest



# Bongkot and Erawan: Thailand Champion in Domestic Gas Supply

Execute Bongkot and Erawan transition plan

To supply 2/3 of domestic gas production starting from 2022 onwards.....



## Growing production and reserves profile

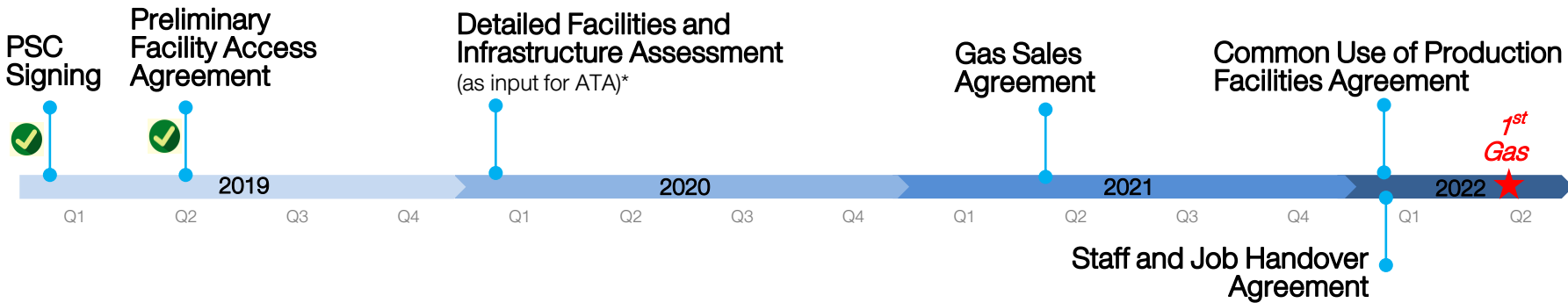
- Substantial volume boost for 10 years and beyond
- Immediate remarkable reserves addition
- Minimal risk in production profile



## Generating strong cash flow

- No heavy upfront investment
- Self funding (positive net cash flow)
- Achieved target IRR with strong margin despite lower price

Concrete transition plan as an operator of G1/61 (Erawan) under PSC



**\*Asset Transfer Agreement (ATA):** To be agreed between current concessionaires and DMF by 2021 (1 year prior concession end)

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

## Price Formula

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

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

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:

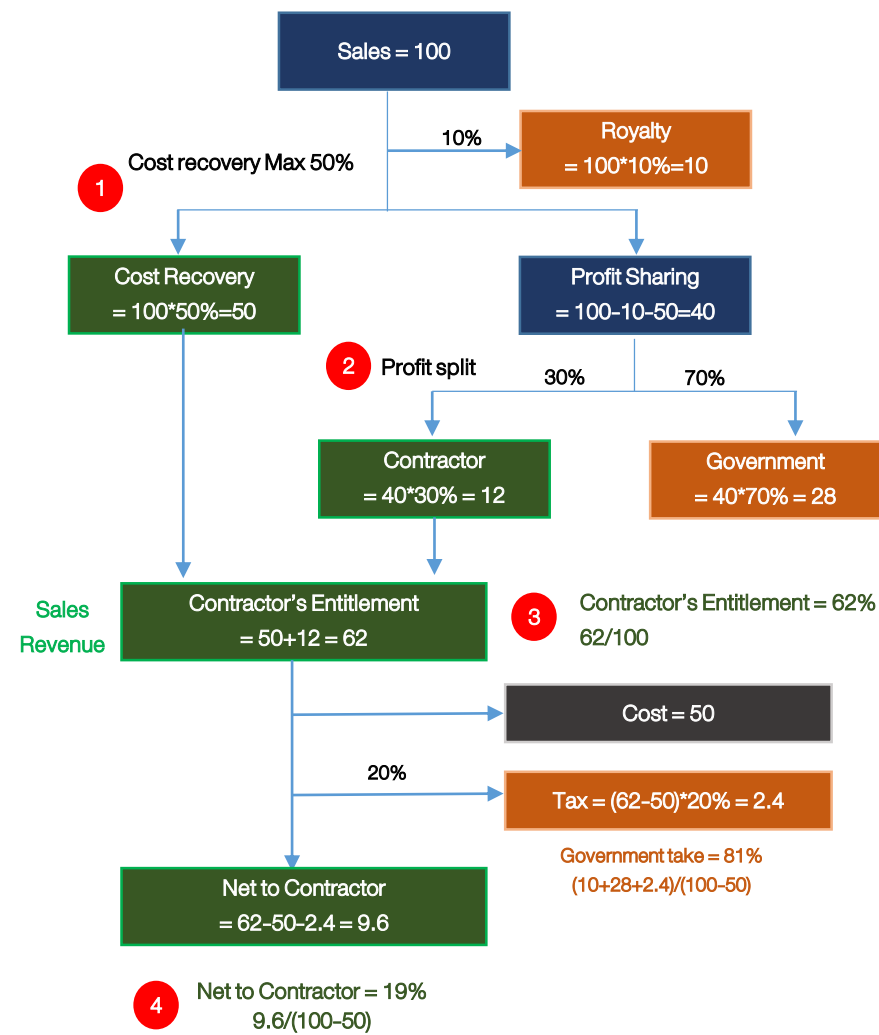
\* No later than 10 working days prior to the PSC signing date

\*\* 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



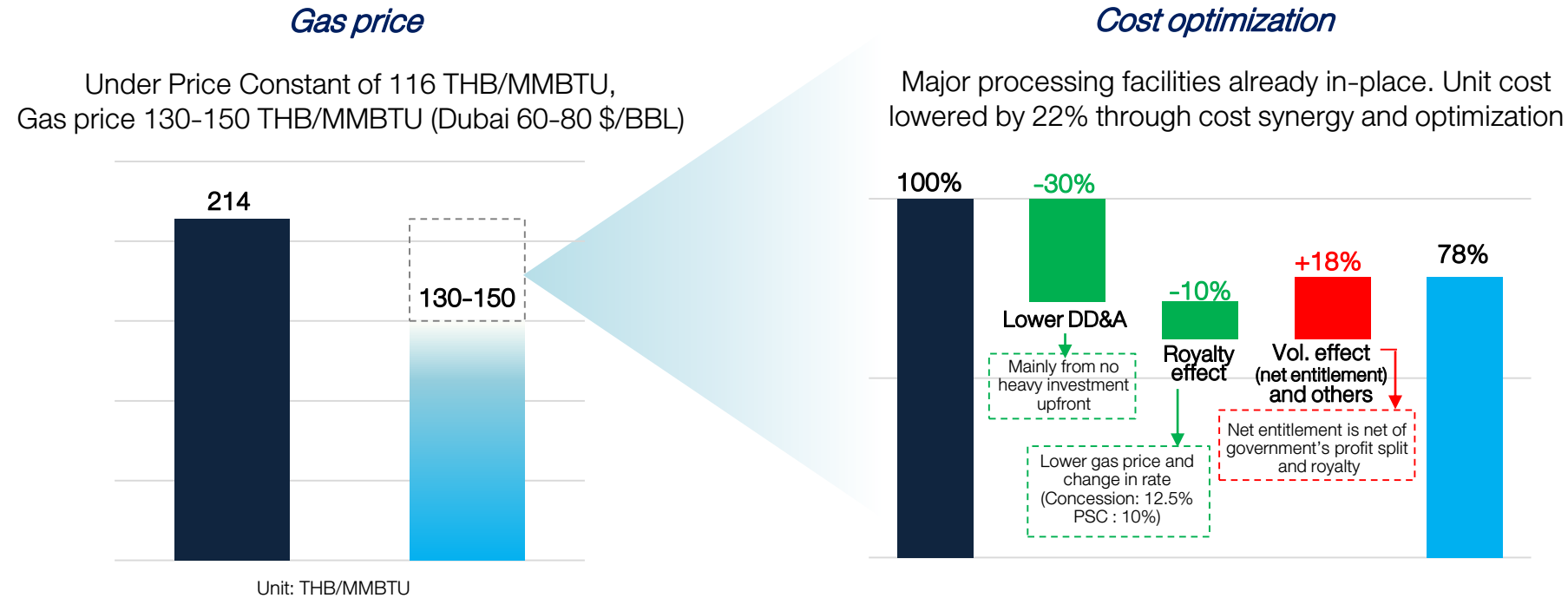
\*Assumption bases on field life, cost can be fully recovered

# Bongkot and Erawan: Thailand Champion in Domestic Gas Supply

Achievable cost optimization to sustain target return



With new gas price, we can achieve target IRR



Enablers of cost synergy and optimization through economy of scale and technology improvement

#### Wellhead Platform

- Lean design standardization
- Volume bundling & contracting strategy
- Platform topside and facility reuse

#### Drilling & Well

- Implement factory drilling
- Utilize drilling rig with GoT-fitted specifications
- Optimize drilling rig & service contracts across GoT

#### Logistics

- Synergy and optimize marine and aviation fleets across GoT
- Procurement strategy

#### Decommissioning

- Innovative solutions / technologies
- Economy of Scales



# Other South East Asia countries

Expanding foothold in the region

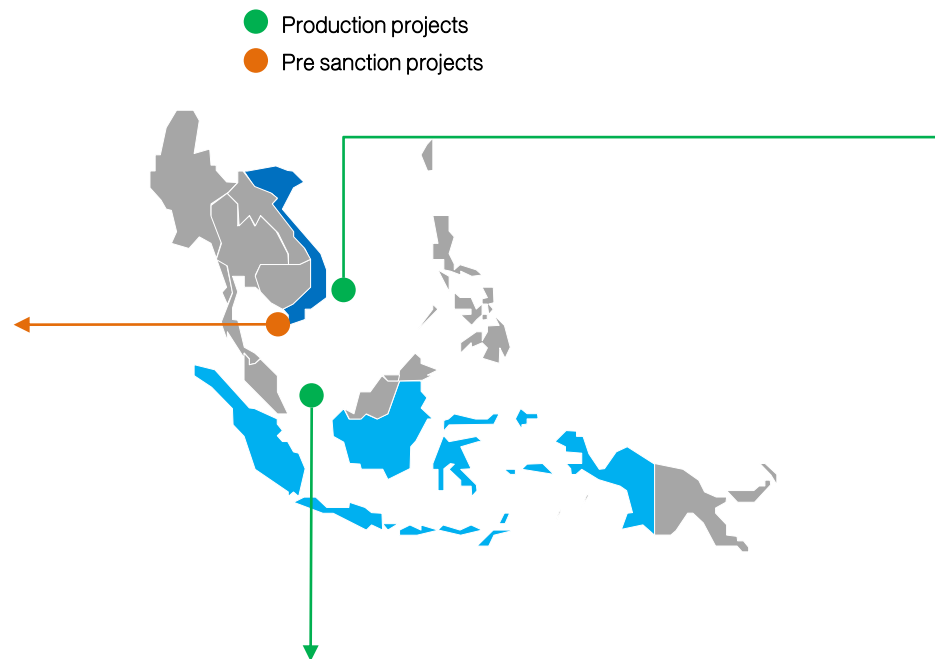
## Vietnam and Indonesia



### 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 2023, 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 9M2019
- The project is currently drilling an additional production well to maintain production plateau.

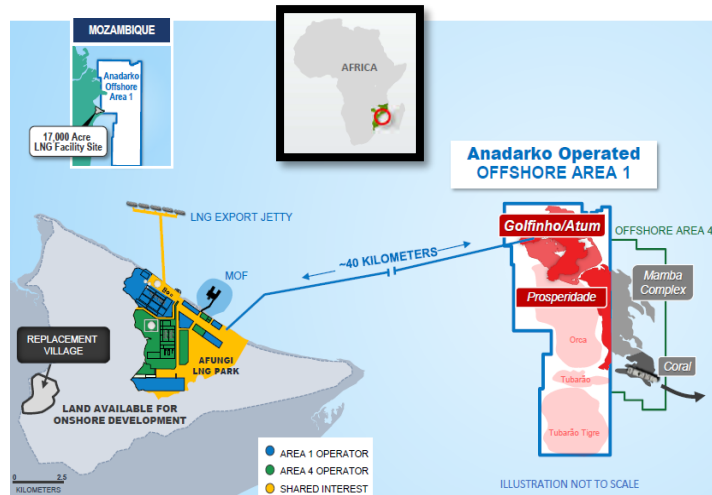


### Natuna Sea A (11.5% WI)

- Average sales volume of natural gas was 188 MMSCFD in 9M2019

# Mozambique Area 1

*FID, on the path of unlocking value from world class LNG asset*



*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

## Achievements

- ✓ Legal & Contractual Framework
- ✓ Plan of Development Approved
- ✓ Onshore & Offshore Contractors Awarded
- ✓ First Mover for the Marine Facility
- ✓ LNG SPAs ~11.1 MTPA

**FID in June 2019  
with initial 2 trains of  
12.88 MTPA capacity**

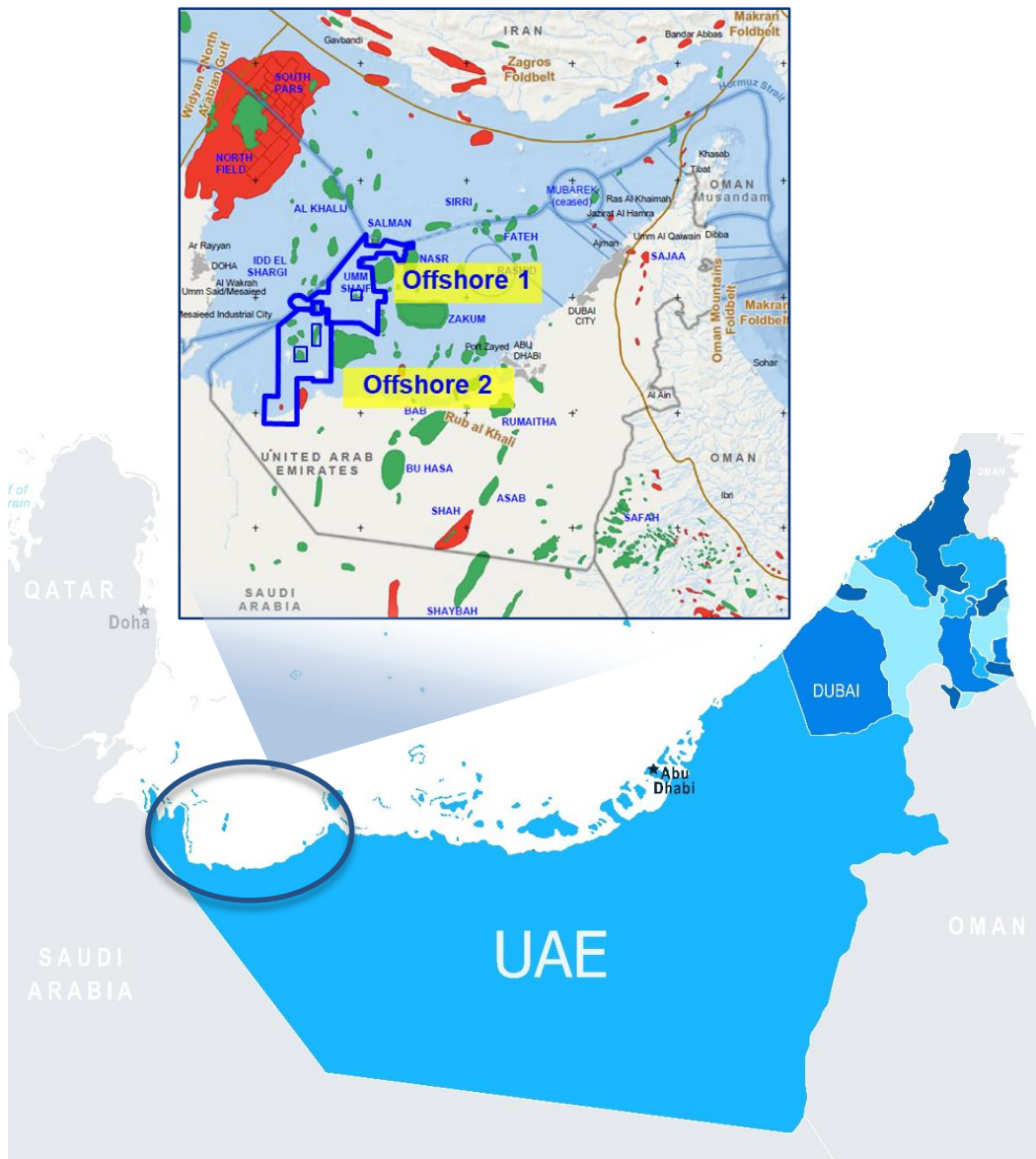
## Way Forward

- ✓ Project Finance  
*(2/3 Project Financed)*
- ✓ Drilling & Completion
- ✓ Onshore Construction and Offshore Installation
- ✓ Operation Readiness
- ✓ LNG Shipping

**1<sup>st</sup> Cargo  
expected  
2024**

# 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




# Acquisition of Partex


*Partnering with experienced operators in the Middle East*

- PTTEP acquired 100% of the shares in Partex, with total consideration of approximately USD 622 million
- The major assets are in Oman and UAE which include PDO (Block 6), the largest oil asset in Oman
- The acquisition was completed on 4 November 2019

## *“Gateway to Future Regional Investment”*

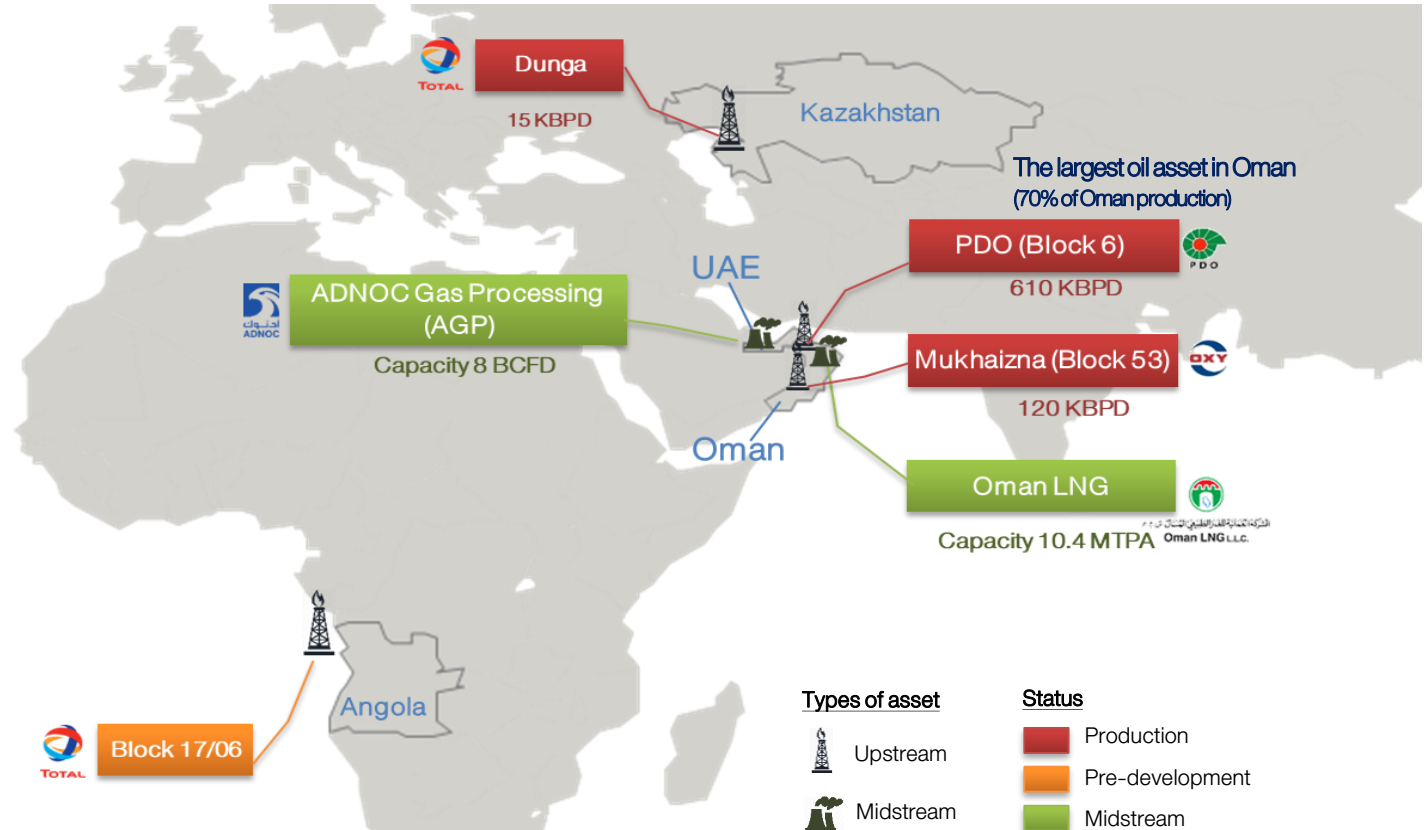
**Prolific Area**

**Strong Partnerships**

**World-Class Assets**

**Self funded with existing production**

- Sales volume +16,000 barrels/day
- 2P Add +65 million barrels

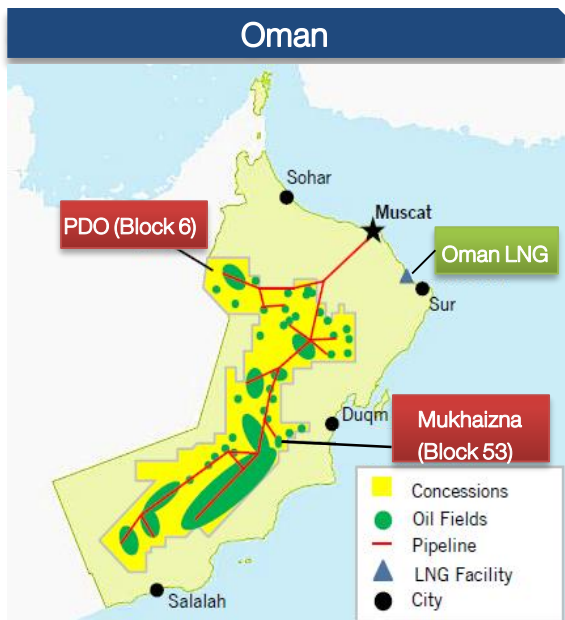


Note: Volumes stated represent gross volumes (100%)

# World Class Assets under Partex

Access to the largest oil asset in Oman and mega Midstream Complex

## Oman



### PDO (Block 6)

- Largest asset covering around 1/3 of the country
- Long-life asset, produced only 15% of reserves in-place
- Multi-field oil production: 610,000 BPD (70% of Oman production)
- Experienced and reputable partners



### Mukhaizna (Block 53)

- Largest single onshore producing field in Oman
- Oil production: 120,000 BPD (13% of Oman production)
- Strong and experienced operator

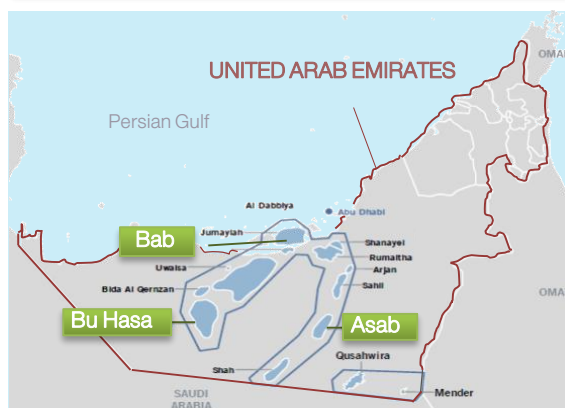


### Oman LNG

- The only LNG facility in Oman
- Processing capacity 10.4 MTPA
- Contracted LNG sales to international buyers: Japan and South Korea

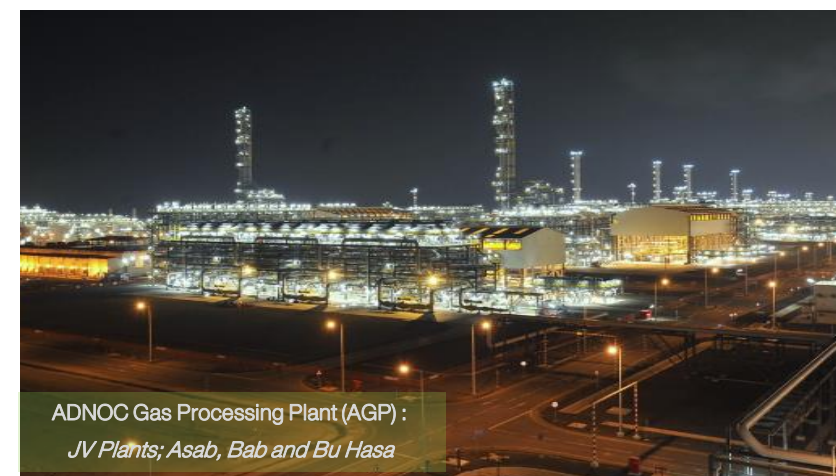


## UAE



### ADNOC Gas Processing (AGP)

- One of the largest gas processing complexes in the world (total capacity of 8 BCFD)  
JV: 3 plants with capacity of 1.2 BCFD  
Adnoc: 2 plants with capacity of 6.9 BCFD
- Essential to Abu Dhabi and UAE's economy
- Sizeable volumes of Propane, Butane and Naphtha offtake
- Strong and experienced partners



ADNOC Gas Processing Plant (AGP) :  
JV Plants; Asab, Bab and Bu Hasa

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

## Canada Oil Sands



### 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
- The project is currently under the evaluation for appropriate development plan

## Deep Water Brazil



### Barreirinhas AP1

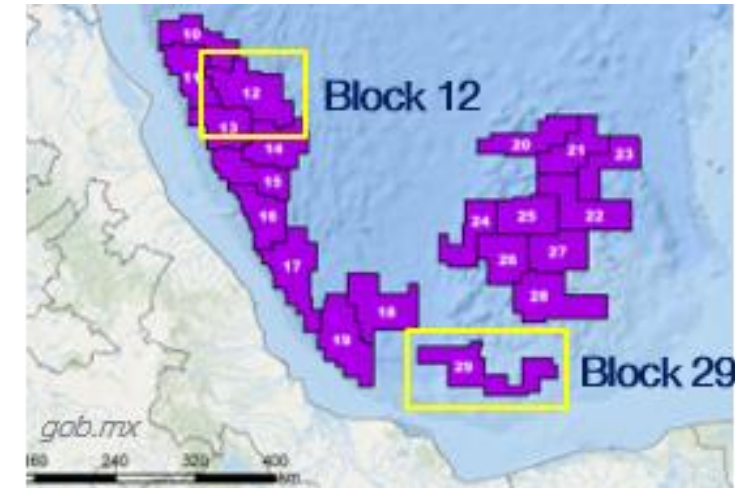
- Farm-in 25% from BG Group in 2014
- Operated by Shell Brasil (65% interest)
- Four offshore exploration blocks: BAR-M-215, BAR-M-217, BAR-M-252 and BAR-M-254

### BM-ES-23

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

In 2019, Both projects are currently evaluating the petroleum potential

## 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

In 2019, projects received the exploration plan approval from the National Hydrocarbons Commission in Mexico and are currently evaluating the petroleum potential for further process according to the approved plan

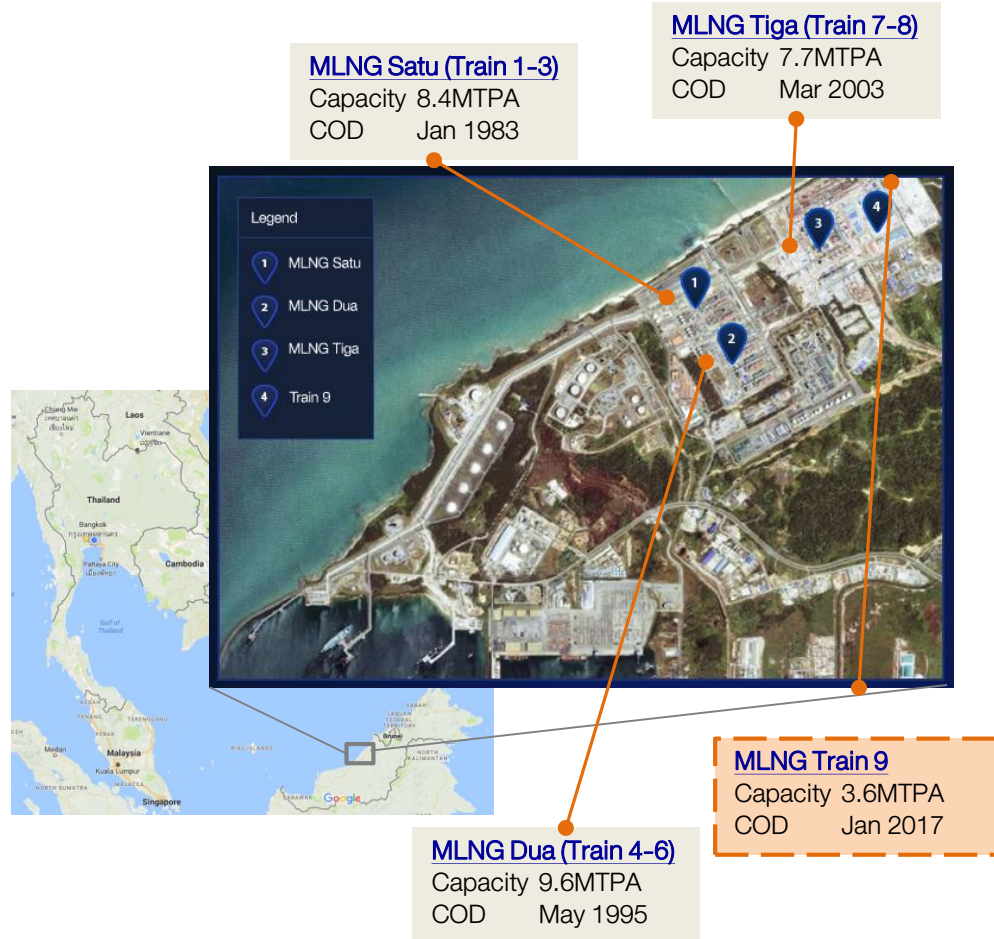


# LNG Value Chain Investment : MLNG Train 9


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)	<div> <div> Petronas JX Nippon PTT Global LNG Sarawak State Sabah State </div> <div> 65% 10% 10% 10% 5% </div> <div>  </div> </div>

## Investment Rationales

- 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

## Key activity in 2020

- Keep maximizing LNG production up to plant capacity
- Continue to improve plant reliability & utility rejuvenation
- Get ready for 2021 plant turnaround

# New Business Opportunities

Expand value chain, create innovation and step towards long-term sustainability



## "Integrated Energy Solution"



E&P

+



Pipeline

+



Power Plant

- Enhance value of existing assets in Myanmar e.g. Zawtika, M3
- Support Myanmar pipeline infrastructure development
- Partner with Independent Power Producer (IPP)



AI AND  
ROBOTICS  
VENTURES

## "Cutting Edge Technology for E&P and more"

UAV



### Aerial inspection service:

- Flare Tower
- Telecommunication Tower
- Tank inspection

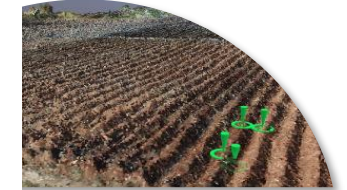
AUV



### Subsea Inspection & Surveillance:

- Pipeline and structural inspection
- Geophysical survey
- Gas leak survey

Non  
E&P



### Focused Sectors:

- Agriculture
- Environmental
- Security

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

	Project	Status*	Phase	PTTEP's Share	Partners (as Sep 2019)	9M2019 Average Sales Volume **		2019 Key Activities
						Gas	Oil and Other	
Thailand and JDA								
1	Arthit	OP	Production	80%	Chevron MOECO 16% 4%	224 MMSCFD	Condensate: 11 KBPD	<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	Production	100%		-	-	
3	B8/32 & 9A		Production	25%	Chevron MOECO 51.66% KrisEnergy 16.71% Palang Sophon 4.63% 2%	75 MMSCFD	Crude: 22 KBPD	<ul style="list-style-type: none"><li>• Drill development wells</li><li>• Perform waterflood activities</li></ul>
4	Bongkot	OP	Production	66.6667%	TOTAL 33.3333%	779 MMSCFD	Condensate: 22 KBPD	<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)		Production	5%	Chevron MOECO 71.25% 23.75%	625 MMSCFD	Crude: 18 KBPD Condensate: 23 KBPD	<ul style="list-style-type: none"><li>• Drill development wells</li><li>• Prepare for decommissioning activities</li><li>• Awarded as a operator for Erawan field (Contract 1, 2 and 3) under PSC (after concession-end in 2022)</li></ul>
6	Contract 4 (Formerly Pailin)		Production	60%	Chevron MOECO 35% 5%	411 MMSCFD	Condensate: 18 KBPD	<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		Production	20%	ExxonMobil 80%	8 MMSCFD	-	<ul style="list-style-type: none"><li>• Ensure gas deliverability level at DCQ***</li></ul>
8	G4/43		Production	21.375%	Chevron MOECO 51% 21.25% Palang Sophon 6.375%	1.5 MMSCFD	Crude: 3 KBPD	<ul style="list-style-type: none"><li>• Drill development wells</li><li>• Perform waterflood activities</li></ul>
9	G4/48		Production	5%	Chevron MOECO 71.25% 23.75%	3 MMSCFD	Crude: 0.8 KBPD	<ul style="list-style-type: none"><li>• Drill development wells</li></ul>
10	L53/43 & L54/43	OP	Production	100%		-	Crude: 1.8 KBPD	<ul style="list-style-type: none"><li>• Maintain production plateau</li><li>• Perform reservoir management and waterflood activities</li></ul>
11	PTTEP1	OP	Production	100%		-	Crude: 245 BPD	<ul style="list-style-type: none"><li>• Maintain production plateau</li><li>• Perform reservoir management and waterflood activities</li></ul>
12	S1	OP	Production	100%		10 MMSCFD	Crude: 30 KBPD LPG: 0.2 KMT/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>
13	Sinphuhorm	OP	Production	55%	Apico**** 35% ExxonMobil 10%	81 MMSCFD	Condensate: 262 BPD	<ul style="list-style-type: none"><li>• Ensure gas deliverability</li><li>• Improve recovery from infill drilling</li></ul>

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

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

\*\*\* DCQ = Daily Contractual Quantity

\*\*\*\* PTTEP holds indirectly and directly 80.48% participating interest in Sinphuhorm Project. APICO also holds 100% participating interest in Block L15/43 and Block L27/43.



	Project	Status*	Phase	PTTEP's Share	Partners (as of Sep 2019)		9M2019 Average Sales Volume **		2019 Key Activities
							Gas	Oil and Other	
Thailand and JDA									
14	L22/43	OP	Production	100%			-	-	• Maintain production operation
15	MTJDA	JOC	Production	50%	Petronas-Carigali	50%	335 MMSCFD	Condensate: 8.9 KBPD	• Drill exploration and development wells
16	G9/43	OP	Exploration	100%					
17	G1/61 (Erawan)	OP	Exploration	60%	MP G2 (Thailand) Limited	40%			
18	G2/61 (Bongkot)	OP	Exploration	100%					
Overseas									
1	Vietnam 9-2	JOC	Production	25%	PetroVietnam SOCO	50% 25%	14 MMSCFD	Crude:4.2 KBPD	• Maintain production level • Perform well intervention program
2	Vietnam 16-1	JOC	Production	28.5%	PetroVietnam SOCO OPECO	41% 28.5% 2%	7 MMSCFD	Crude: 17 KBPD	• Maintain production level • Drill development wells and water injection well • Upgrade gas lift system
3	Natuna Sea A		Production	11.5%	Premier Oil KUFPEC Petronas Pertamina	28.67% 33.33% 15% 11.5%	188 MMSCFD	Crude: 1.3 KBPD	• Well intervention program to secure Gas Deliverability • Drill development wells
4	Yadana		Production	25.5%	TOTAL Chevron MOGE	31.24% 28.26% 15%	796 MMSCFD	-	• Drill infill wells • Perform 3D seismic activities • Ensure gas deliverability level at DCQ***
5	Yetagun		Production	19.3178%	Petronas-Carigali MOGE Nippon Oil PC Myanmar (Hong Kong)	30.00140% 20.4541% 19.3178% 10.90878%	112 MMSCFD	Condensate: 2.3 KBPD	• Maintain production level • Drill exploration and development wells • Perform 3D seismic activities
6	Zawtika (M9 & a part of M11)	OP	Production	80%	Myanma Oil and Gas Enterprise (MOGE)	20%	304 MMSCFD	-	• Drill 3 exploration wells • Drill development wells • Perform 3D seismic activities • Prepare to Install wellhead platforms
7	Algeria 433a & 416b (Bir Seba)	JOC	Production	35%	PetroVietnam Sonatrach	40% 25%	-	Crude: 3.3 KBPD (net entitlement)	• Drill development wells • Plan for BRS Phase 2 oil field development
8	Malaysia	OP (except Gumusut- Kakap (GK) in Sabah K)	Production/ Exploration/ Developmen t	6.4-80% (varied by permits)			SK309 and SK311 240 MMSCFD	SK309 and SK311 Crude & Condensate 24 KBPD Block K Crude : 24 KBPD	• Transition plan for operation of the newly acquired blocks • Sarawak SK410B - Drilled 1 exploration well with multi TCF discovery • Sarawak SK417, SK438- Prepare to drill exploration and appraisal wells • PM407 and PM415 - Signed PSC with Petronas on 21/03/2019

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

\*\* Sales volume stated at 100% basis except for Algeria 433a & 416b (Net Entitlement) and Malaysia (Production volume 100% as of Q3/2019)/ For Block K, gross production is net off unitization

\*\*\* DCQ = Daily Contractual Quantity

	Project	Status*	Phase	PTTEP's Share	Partners (as of Sep 2019)	2019 Key Activities
<b>Overseas</b>						
9	Myanmar M3	OP	Exploration	80%	MOECO 20%	<ul style="list-style-type: none"> <li>Negotiate the commercial framework with the Myanmar government</li> <li>Perform Front End Engineering Design (FEED study)</li> </ul>
10	Myanmar M11	OP	Exploration	100%		<ul style="list-style-type: none"> <li>Drill first exploration well to prove up recoverable resources</li> </ul>
11	Myanmar MD-7	OP	Exploration	50%	TOTAL 50%	<ul style="list-style-type: none"> <li>Drill first exploration well to prove up recoverable resources</li> </ul>
12	Myanmar MOGE 3	OP	Exploration	77.5%	Palang Sophon 10% MOECO 10% WinPreciousResources 2.5%	<ul style="list-style-type: none"> <li>Drill 3 exploration wells</li> </ul>
13	Vietnam B & 48/95		Exploration	8.5%	PVN 65.88% MOECO 25.62%	<ul style="list-style-type: none"> <li>Finalize on Commercial agreements</li> <li>Finalize on Engineering Procurement Construction Installation (EPCI) bidding process</li> </ul>
14	Vietnam 52/97		Exploration	7%	PVN 73.4% MOECO 19.6%	<ul style="list-style-type: none"> <li>Finalize on Commercial agreements</li> <li>Finalize on Engineering Procurement Construction Installation (EPCI) bidding process</li> </ul>
15	PTTEP Australasia (PTTEP AA)	OP	Exploration	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>
16	Mozambique Area 1		Development	8.5%	Anadarko, Mitsui, 26.5%, 20% ENH, ONGC 15%, 10% Beas Rovuma, Bharat 10%, 10%	<ul style="list-style-type: none"> <li>Announced FID with the onshore LNG facility of the initial two liquefaction trains, capacity of 12.88 MTPA on 18 June 2019</li> <li>Successfully secured the long-term LNG sales of 11.1 MTPA with key LNG buyers in both Asia and Europe, expected the signing by the end of 2019</li> <li>First Cargo is expected by 2024</li> </ul>
17	Algeria Hassi Bir Rekaiz	OP	Development	24.5%	CNOOC 24.5% Sonatrach 51%	<ul style="list-style-type: none"> <li>Started development on Phase 1 since March 2019 with the expected first oil production for the initial phase around 10,000-13,000 barrels per day (BPD) in 2021 and the second phase production capacity ramping up to around 50,000-60,000 BPD in 2025</li> </ul>
18	Mariana Oil Sands	OP	Exploration	100%		<ul style="list-style-type: none"> <li>Assess appropriated development approach</li> </ul>
19	Barreirinhas AP1		Exploration	25%	Shell Brasil 65% Mitsui E&P Brasil 10%	<ul style="list-style-type: none"> <li>Assess petroleum potential</li> </ul>
20	Brazil BM-ES-23		Exploration	20%	Petrobras 65% INPEX 15%	<ul style="list-style-type: none"> <li>Assess petroleum potential</li> </ul>
21	Mexico block 12 (2.4)		Exploration	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>
22	Mexico block 29 (2.4)		Exploration	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>
23	Abu Dhabi Offshore 1		Exploration	30%	Eni Abu Dhabi 70%	<ul style="list-style-type: none"> <li>Conduct Seismic</li> </ul>
24	Abu Dhabi Offshore 2		Exploration	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 Partex's Acquisition

## Project Details (1/2)

	Country	Project	Working Interest	Type of Asset/ Status	2018 Total Production volume	2018 Net Sale volume
1	Sultanate of Oman	PDO (Block 6)	Government of Oman 60% Shell 34% Total 4% <b>Partex</b> 2% <i>PDO* (Joint Operating Company)</i>	Upstream Oil <i>Production</i>	610,000 BPD	12,200 BPD
2		Mukhaizna (Block 53)	Occidental* 47% OOCEP 20% Indian Oil 17% Mubadala 15% <b>Partex</b> 1%	Upstream Oil <i>Production</i>	120,000 BPD	700 BPD
3		Oman LNG	Government of Oman 51% Shell 30% Total 5.54% Korea LNG 5% Mitsubishi 2.77% Mitsui 2.77% <b>Partex</b> 2% Itochu 0.92% <i>OLNG* (Joint Operating Company)</i>	Midstream LNG <i>Production capacity 10.4 MTPA</i>	N/A	N/A
4	Republic of Kazakhstan	Dunga	Total* 60% OOCEP 20% <b>Partex</b> 20%	Upstream Oil <i>Production</i>	15,000 BPD	3,000 BPD

\* Operator



# Projects from Partex's Acquisition

## Project Details (2/2)

	Country	Project	Working Interest		Type of Asset	2018 Total Production volume	2018 Net Sale volume
5	United Arab Emirates	<b>AGP</b>	ADNOC*	68%	Midstream Gas <i>Production Processing capacity 1.2 BCFD</i>	N/A	N/A
			Shell	15%			
			Total	15%			
			<b>Partex</b>	<b>2%</b>			
6	Republic of Angola	<b>Block 17/06</b>	Total*	30%	Upstream Oil <i>Pre-Development</i>	N/A	N/A
			Sonangol	30%			
			SSI	27.5%			
			Acrep	5%			
			Falcon Oil	5%			
			<b>Partex</b>	<b>2.5%</b>			
7	Federative Republic of Brazil	<b>Potiguar</b>	<b>Partex*</b>	50%	Upstream Oil <i>Production</i>	300 BPD	150 BPD
			Petrobras	50%			

\* Operator

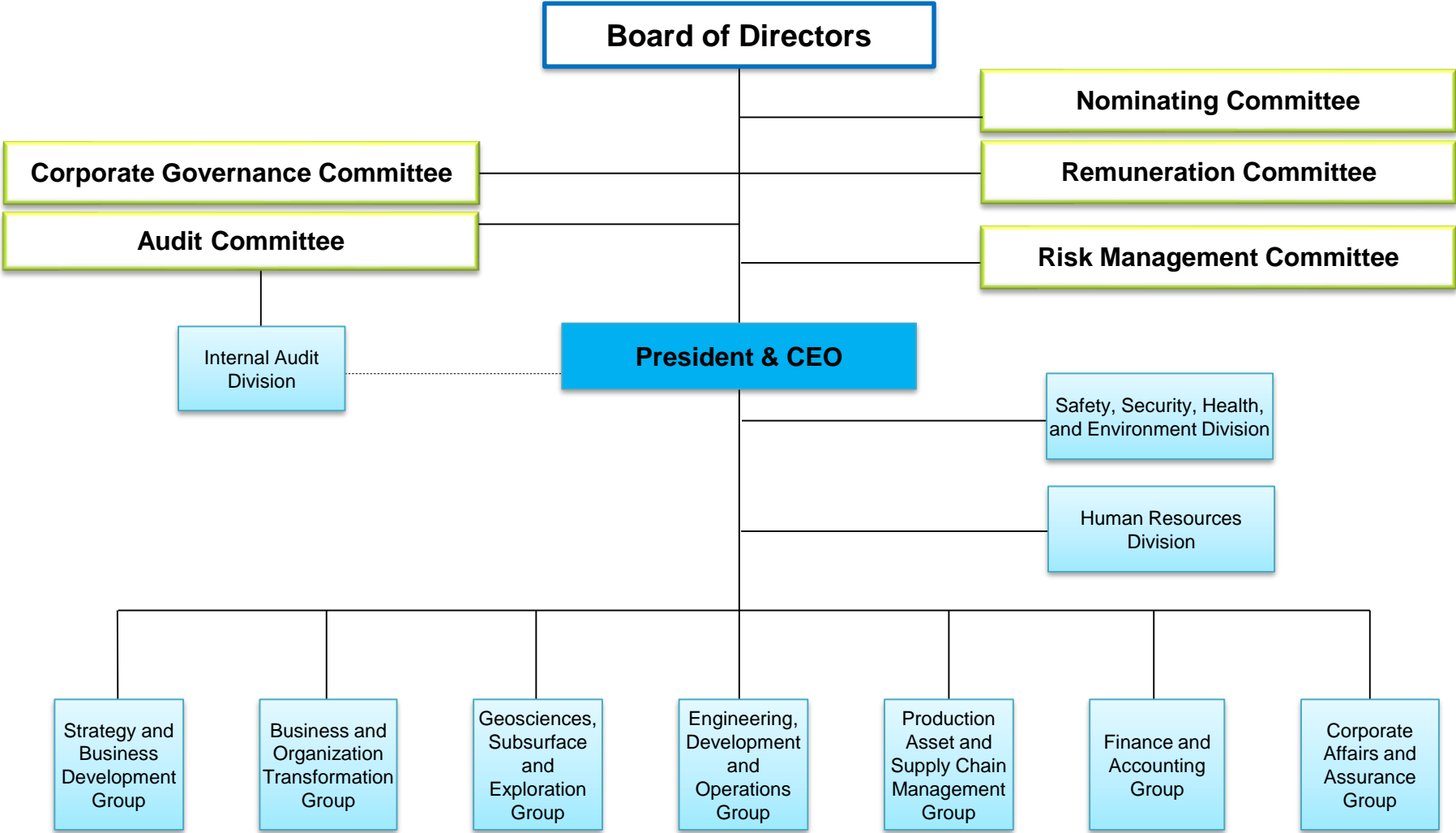
### Note:

PDO: Petroleum Development Oman  
 OLNG: Oman LNG L.L.C.  
 OOCEP: Oman Oil Company Exploration & Production LLC  
 ADNOC: Abu Dhabi National Oil Company  
 SSI: Sonangol Sinopec International (SSI) Seventeen Limited

BPD: Barrel per Day  
 BCFD: Billion Cubic Feet per Day  
 MTPA: Million Ton per Annum

# 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	$\text{Trailing-12-month EBITDA} / \text{Trailing-12-month Interest Expenses \& Amortization of Bond Issuing Cost}$