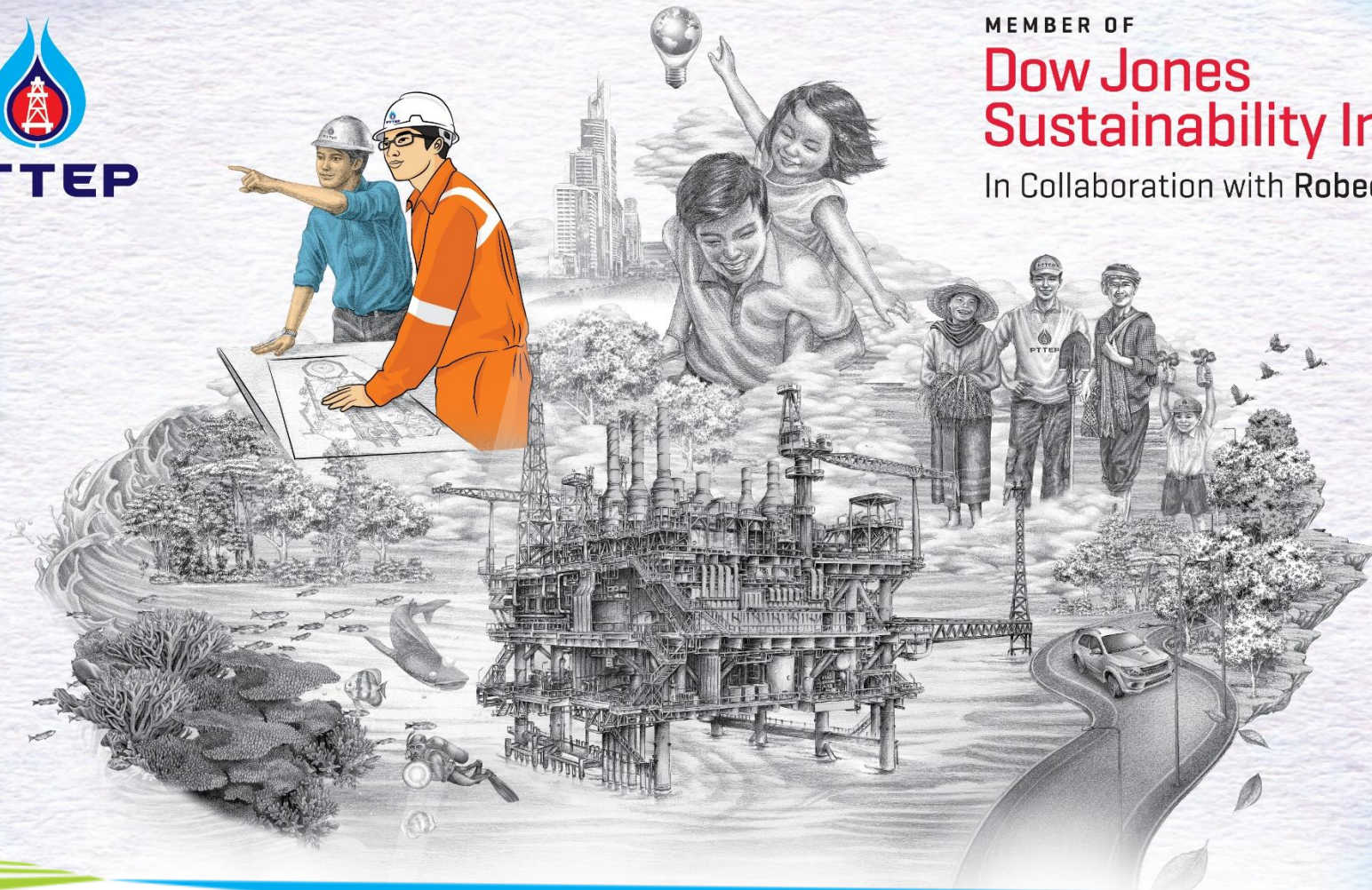




MEMBER OF

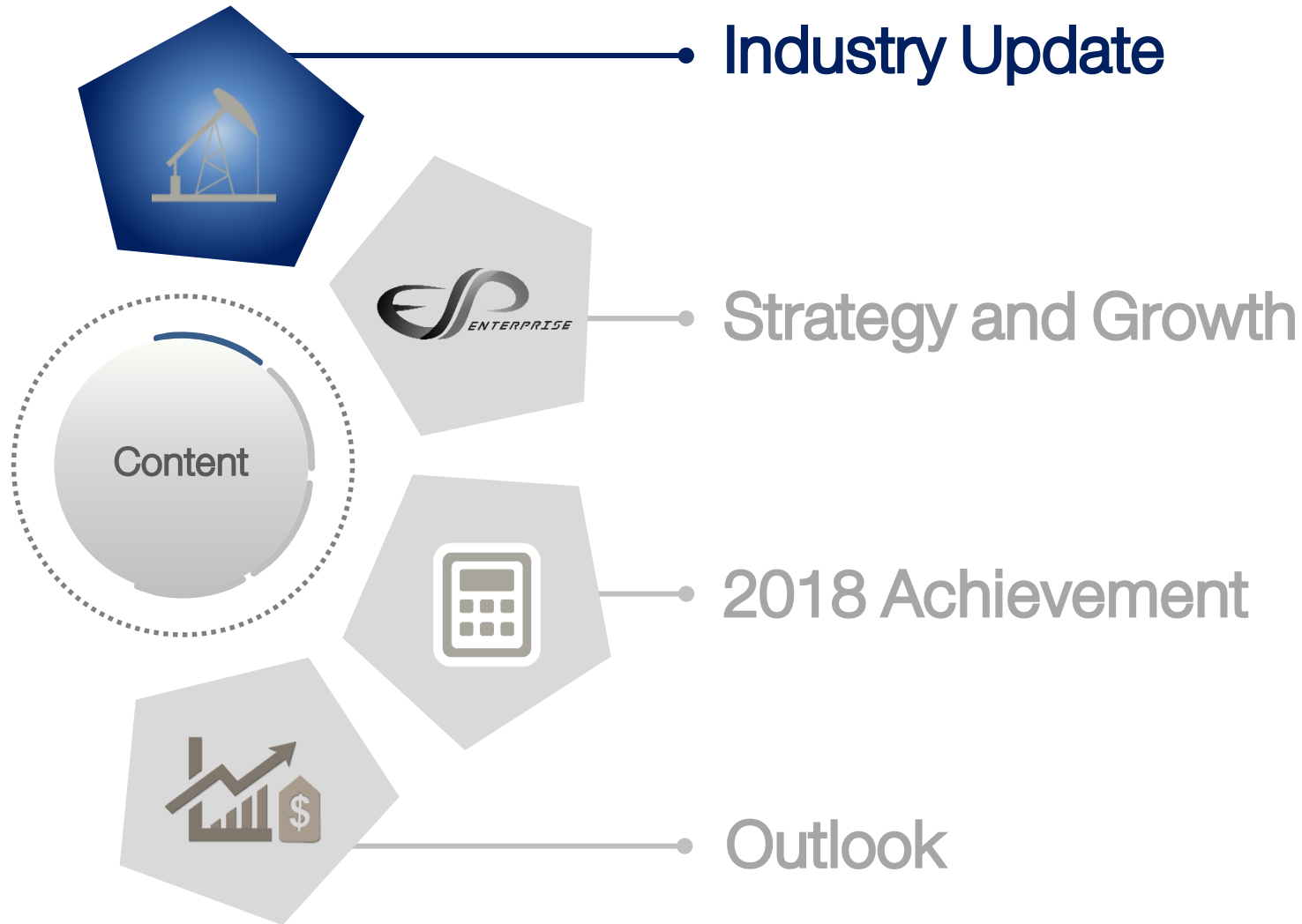
**Dow Jones  
Sustainability Indices**

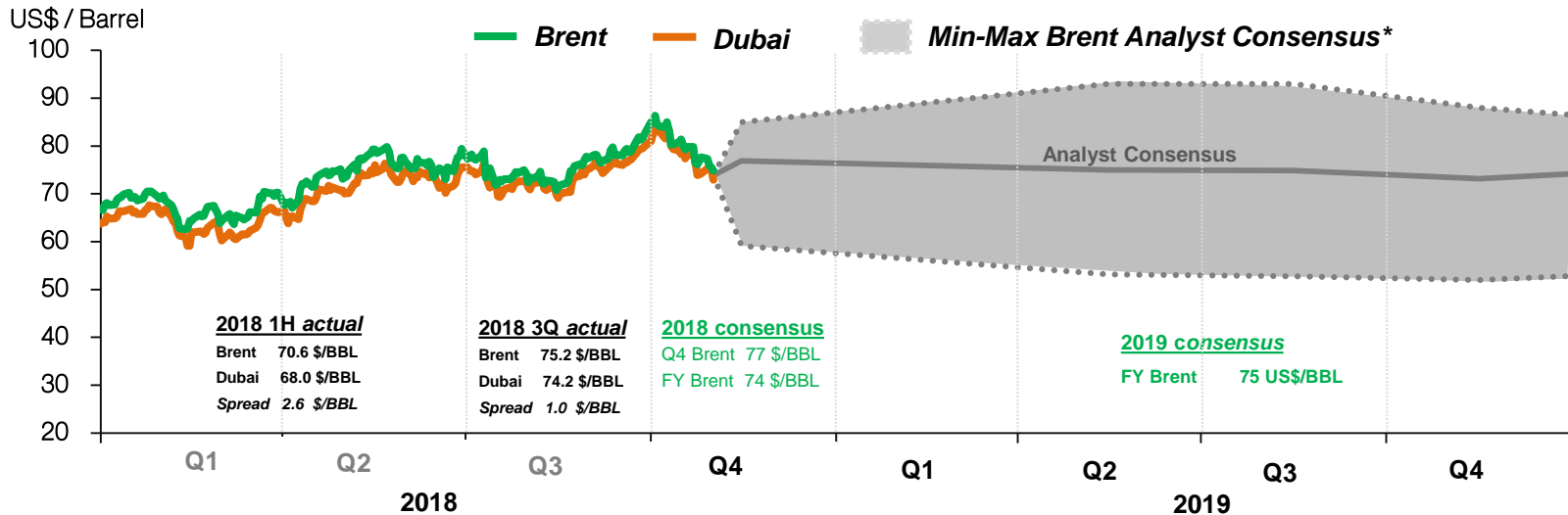
In Collaboration with RobecoSAM 



## Krungsri Energy and Petrochemical Day

*23 November 2018*



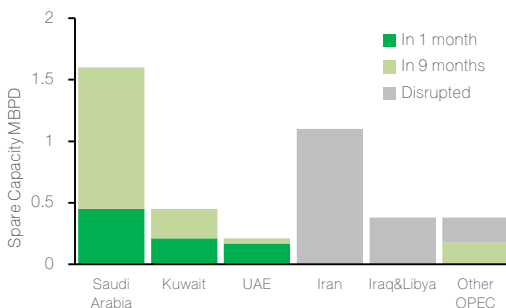


## Short-term Key Drivers & Outlook

### ▲ Iran Supply Shortage & OPEC Spare Cap

- Sanction can halt Iran supply up to 1 MMBPD
- OPEC spare capacities mainly from Saudi Arabia, Kuwait and UAE are eroding

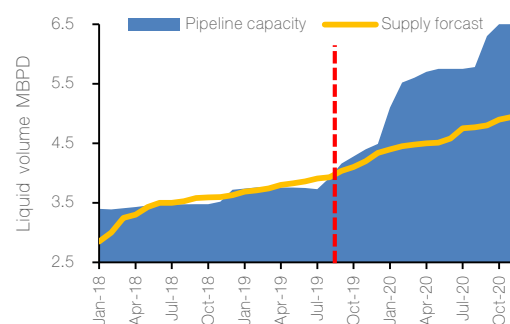
Q4 2018 OPEC spare capacity



### ▲ US Pipeline Bottleneck

- Permian capacity remains limited and temporary truck movement is expensive
- However pipeline construction is on track to complete in Q3 2019

US Pipeline capacity



### ▼ Softened Global Demand & other bearish

#### US-China trade war

- Tension provokes risks on confidence and pressures global economic growth

#### Global economy slowdown

- IMF cut 2018-2019 global growth forecast from 3.9% to 3.7%

#### Minimal Iran Sanction impact

- US waived Iranian crude import for some countries
- EU set up Special Purpose Vehicle (SPV) to trade with Iran after US sanction

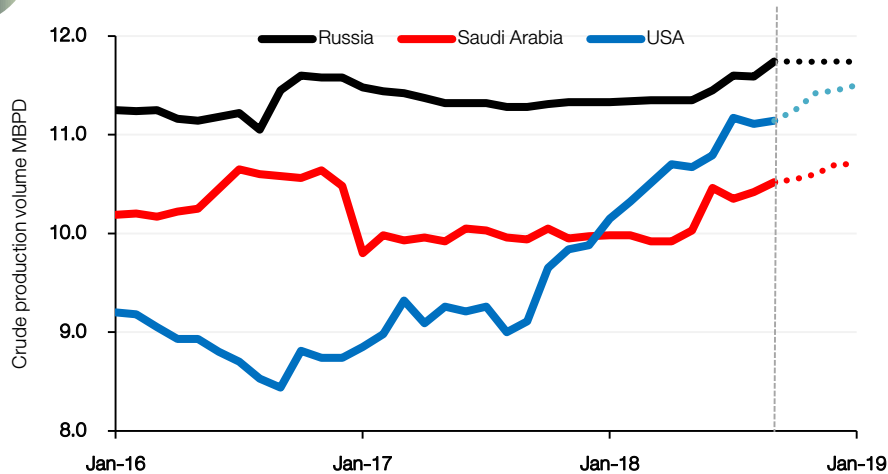


# Key Highlights

US shale super power still faces constraints and LNG shortage shows after 2023 onward



## Crude production: Growing supply from Major Crude Producers

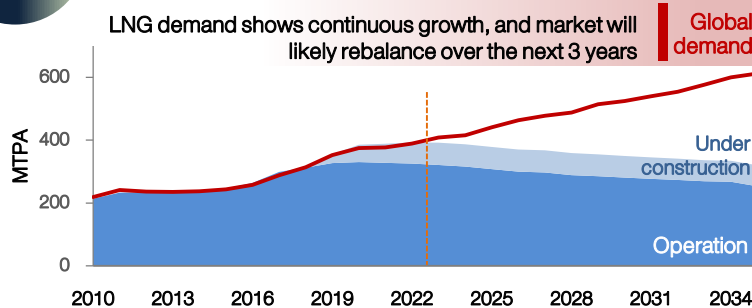


Source: IEA report and The Economist

- In September 2018, global crude supply approached 100 MBPD, growth led by Non-OPEC such as US
- Key engine boosted US output is shale expansions
- Although extracting oil from shale became more efficient, but the industry is facing;
  - cost rising
  - long term labor shortage
  - productivity gain slowing (as drilled closer)
  - intensive water consumption and environmental concerns e.g. small earthquake
- Higher likelihood that shale supply is unable to keep up with rising demand



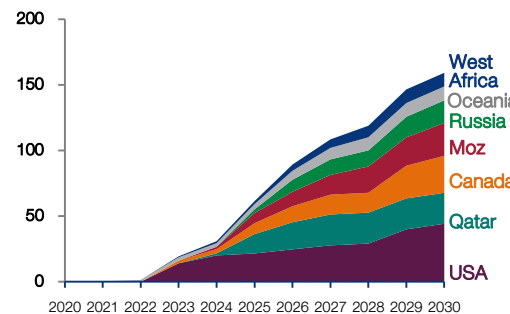
## LNG update: Risks of a global LNG oversupply continue to reduce but price recovery might be dented by the amount of new FID



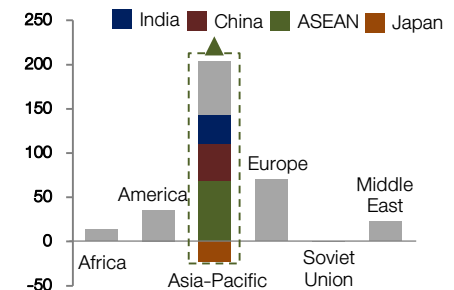
Global Supply

New LNG projects are needed on-stream as a demand gap emerges in 2022. Thus, there is momentum behind investment decision of pre-FID projects

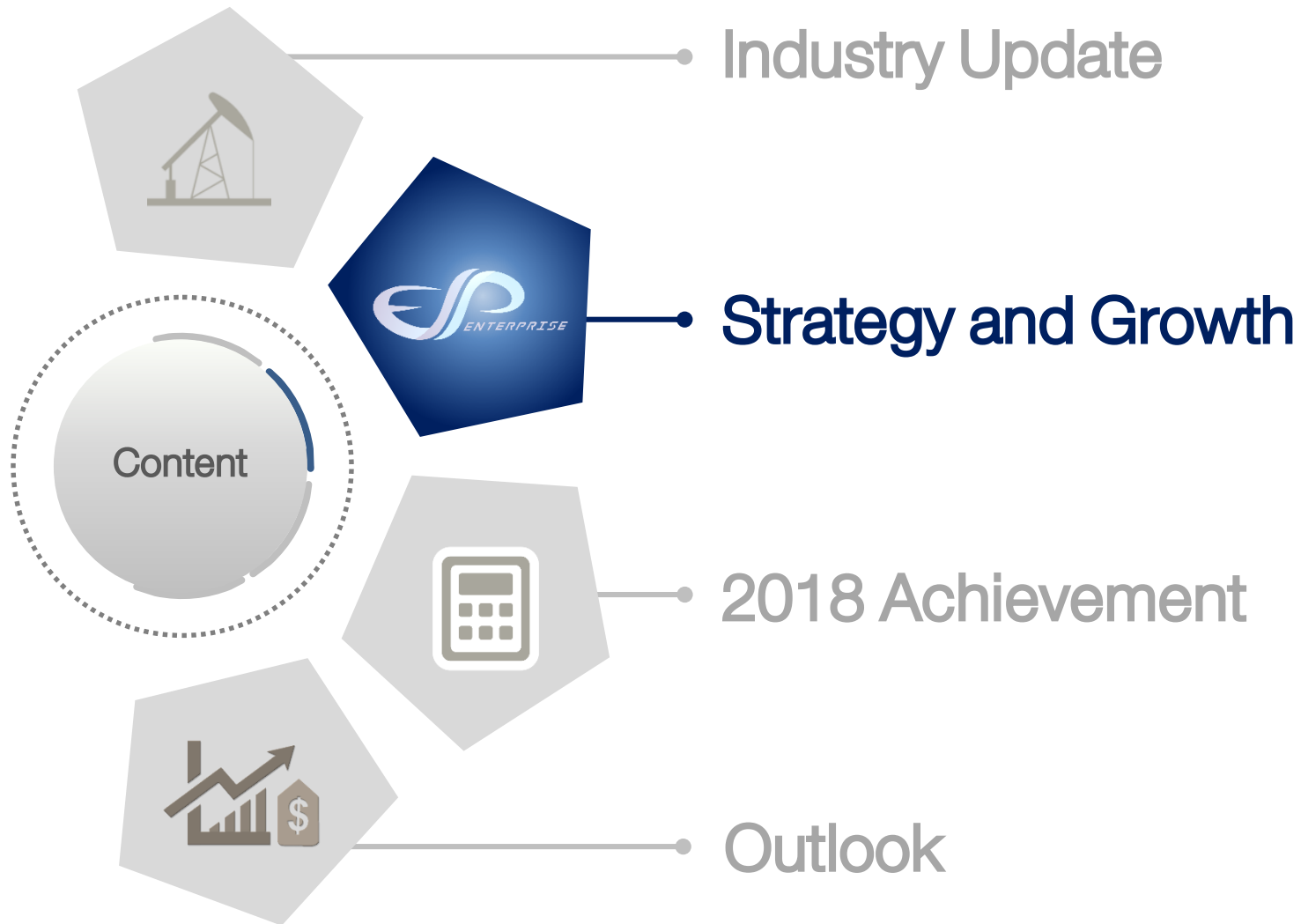
### LNG supply growth areas



### LNG demand growth outlook (2017-2035)



- Pre-FID LNG capacity adds are expected, with current strong fundamental, players speed-up to take FID
- Key drivers of Asian LNG demand growth include pro-gas energy policies and emerging market growth



# Strategic Business Plan

Continue to operate under 3Rs “RESET REFOCUS and RENEW”

## RESET

Aspiration Production  
Growth and Sustain Cost  
Competitiveness



Potential to supply  
more gas from  
current level



Implement digitalization  
to improve productivity  
and sustain cost  
competitiveness



Divest non-core assets,  
Accelerate and/or De-  
risk exploration projects

## REFOCUS

E&P Growth to  
Increase R/P



### Coming-home strategy:

- Focus on gas security for Thailand
- Accelerate exploration in Myanmar and Malaysia



### Realize E&P growth and build up healthy portfolio:

- Consolidate TH opportunities
- Expand M&A and EXP in SEA
- Attempt to enter ME resilience project



Capture LNG value  
chain opportunity

## RENEW

New Opportunities



Transform PTTEP to an agile,  
lean and innovative  
organization



Add new line of business  
(G2P, Robotic, AI and others)

# Continue to Pursue Growth Strategies

Production and Reserve accretion remains the top priority

Strive to win the Bidding: *Bid announcement is scheduled by the end of 2018*



Consortium from the bid submission



Source: DMF

## Summary of TOR

### Bidding Obligations

#### Minimum DCQ

- G1/G1: 800MMSCFD
- G2/G1: 700MMSCFD

#### Gas price formula

Commit under fixed formula in TOR

#### Facility bonus

- G1/G1: 350 MMTHB
- G2/G1: 175 MMTHB

#### Decommissioning

Must be obligated all infrastructure / facilities both new and transferred per PSC agreement

## Bidding Proposal

### 1 Technical

1. Preparation period work plan
2. Exploration work plan
3. Field development plan

### 2 State Participation: 25% stake

### 3 Commercial

score

65% **Price Constant:** ≤ 214.23 THB per MMBTU

25% **Profit split:** ≤ 50%

**Bonuses:** Signature Bonus ≥ 350 MMTHB, Production Bonus ≥ 175 MMTHB and Training/CSR ≥ 3.5 MMTHB/Year

5% **Thai Employee Ratio:** ≥ 80% in 1<sup>st</sup> year and ≥ 90% in 5<sup>th</sup> year

## Execution of M&A Deal

### Geographical

SEA, Middle East and other potential areas

### Target

Focus on producing or near-producing

### Size

500 – 1,000 MMUSD

## Fast-tracking FID

### Mozambique Rovuma Offshore Area 1

*Stronger path towards FID by 1H2019*

- Legal & Contractual Framework approved and resettlement Commenced
- 1.2 MTPA SPA signed with EDF and 0.28 MTPA signed with Tohoku Electric

Along with finalizing key terms of other pre-FID candidates

Southwest Vietnam

Ubon (Contract 4)

Algeria HBR

## Exploration Portfolio

### Grow the foothold

Focus drilling activities in Thailand and Myanmar

### Strengthen backyard

Establish “Cluster Model” in Malaysia

### Joint Venture

Expand into prolific areas e.g. Mexico





# 2018 Key Achievements and Outlook

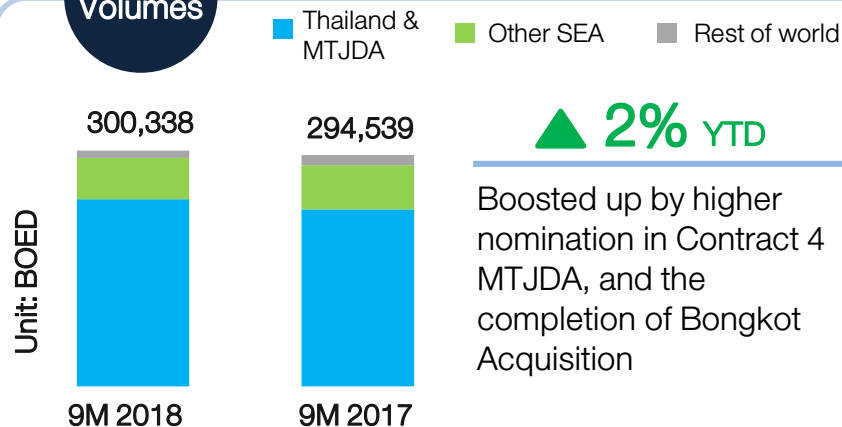
Unlocking value through concrete plan with solid financial position to capture business growth



# Financial Performance Key Drivers

Generated solid operating cash flow 9M2018 driven by strong core performance

## Sale Volumes



## Average Selling Price

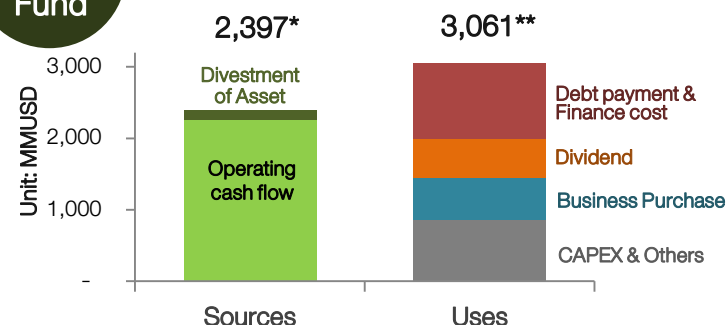
	9M 2018	9M 2017	
Gas (\$/MMBTU)	6.24	5.54	▲ <b>21% YTD</b>
Liquid (\$/BBL)	67.85	49.87	
Weighted Avg. (\$/BOE)	46.25	38.29	
Avg. Dubai (\$/BBL)	70.10	51.06	
Avg. HSFO (\$/BBL) (High Sulphur Fuel Oil)	65.15	47.79	
Volume Mix (Gas : Liquid)	71:29	70:30	Better global oil price led to improved ASP

## Unit Cost

Unit : \$/BOE	9M 2018	9M 2017	
Cash cost	14.64	13.25	▲ <b>10% YTD</b>
Non-Cash cost	16.64	15.11	
Unit cost	31.28*	28.36	

Driven by higher royalties and DD&A from Bongkot acquisition and more completed asset in S1

## Source & Uses of Fund



**73% EBITDA Margin**

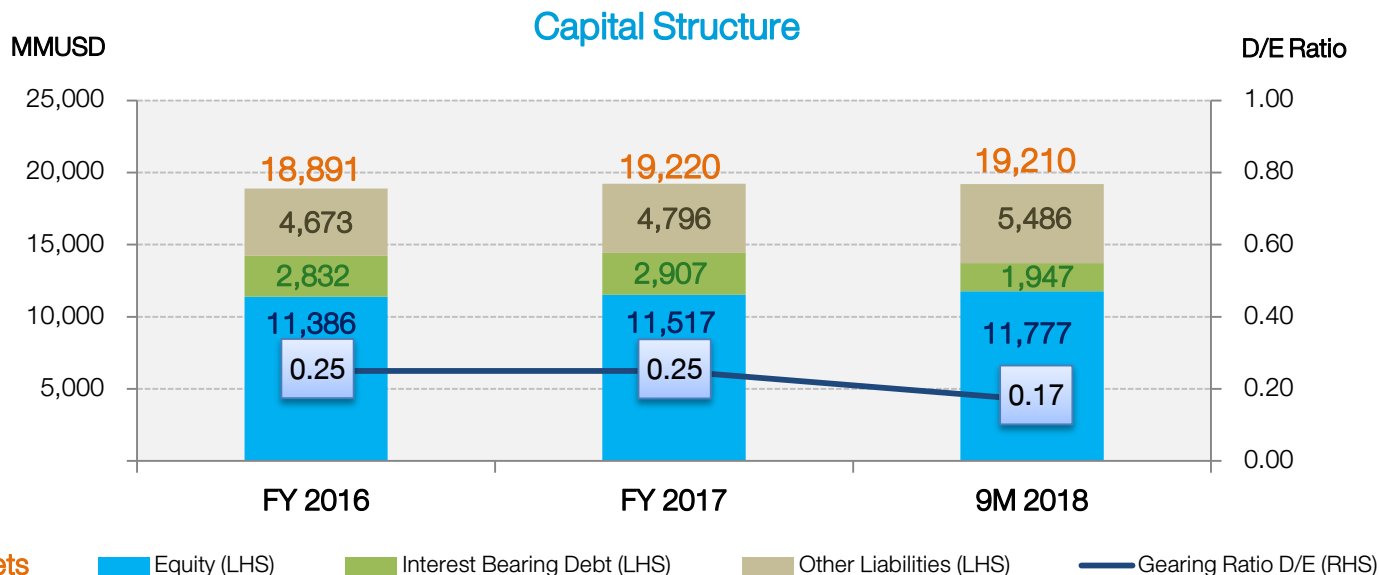
Maintain strong OCF and sustain EBITDA Margin level

Note: \* Exclude costs related to new business, if include, unit cost for 9M 2018 will be 31.35\$/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)

# Financial Position

Healthy balance sheet with low gearing ratio

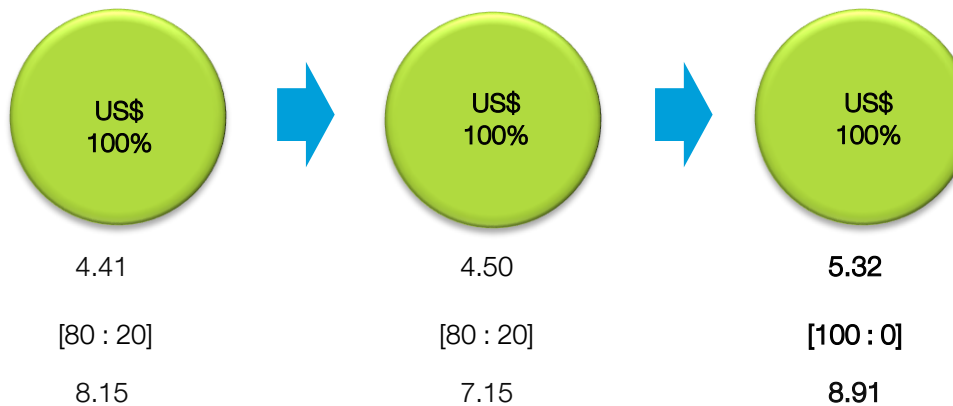


## Debt Profile\*

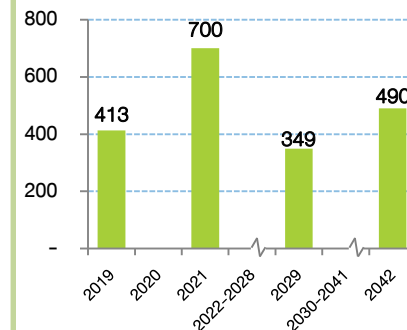
Weighted Average  
Cost of Debt\* (%)

[Fixed : Floating]

Average Loan Life\* (Years)



## Debt Maturity Profile\* (as of end of September 2018)



Unit: USD Millions or equivalent after cross currency swap

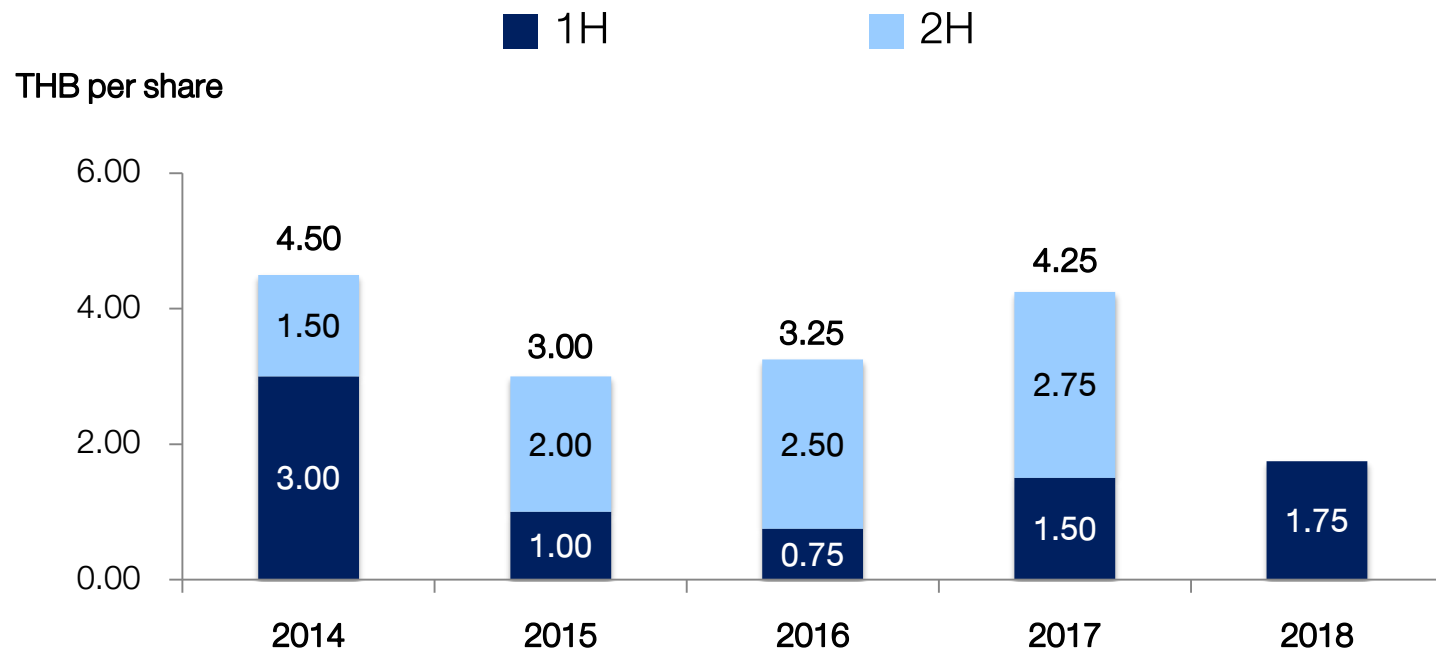
Remark: \* Excludes Hybrid bonds

# Dividends

Demonstrating our dividend commitment to shareholders



## Dividend Payment History (Policy : No Less Than 30% of Net Income)



Payout Ratio (%)	82	N/A	98	90	39
------------------	----	-----	----	----	----





# Financial Outlook

Strive to deliver strong core operational performance

....Expect strong 2018 core performance



Average Sales  
Volume\*

**~310** KBOED



Average Gas  
Price\*\*

**~6.5** \$/MMBTU



Unit Cost

**~31** \$/BOE



EBITDA Margin

**70-75** %  
Of sales revenues

Note: \* Included sales volume from 1) the additional stakes in Bongkot and 2) Montara until the divestment completion

\*\* Based on FY2018 Dubai oil price at 72 \$/BBL

# Key Takeaways

Maximizing value through solid growth platforms

## Strengthen fundamental

- Sustain competitive cost structure
- Uplift sales volume through efficiency improvement
- Maintain healthy margin

## Focus on production and reserves accretion

- Implement series of portfolio rationalization
- Continue gas-weighted portfolio in line with global trend
- Push forward FID of key pre-development projects
- Expansion exploration portfolio and M&A execution in focus areas

## Ready for future challenges

- Organizational Transformation
- Collaboration with PTT for LNG value chain investments
- Diversification through new business opportunities

## Solid balance sheet to support growth

- \$3.8 Bn cash on hand with concrete capital structure
- Consistent dividend payments to shareholders



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



<http://www.pttep.com>



[IR@pttep.com](mailto:IR@pttep.com)



+66 2 537 4000



Passion to Explore  
For a Sustainable Future





## Q3 2018 Financial Results

18-20

## 5-year Investment Plan

21-22

## Sustainability Development

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## Thailand Updates

24-26

## Reserve and Resources

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## Key Project Highlights by Region

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## Project Details

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## Organization Structure

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## Ratio and Formula

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# Summary of Q3 2018 Financial Results

Better net income QoQ driven by THB appreciation and strong core performance

Unit : MMUSD

Statement of Income	Q2 18	Q3 18	% QoQ	Q3 17	% YoY	9M 18	9M 17	% YTD
<b>Total Revenues</b>	<b>1,347</b>	<b>1,398</b>	<b>4%</b>	<b>1,134</b>	<b>23%</b>	<b>3,960</b>	<b>3,252</b>	<b>22%</b>
Sales	1,293	1,338	3%	1,064	26%	3,792	3,079	23%
Others	54	60	11%	70	(14%)	168	173	(3%)
Sales Volume (BOED)	302,846	304,940	1%	298,139	2%	300,338	294,539	2%
Sales Price (USD/BOE)	46.94	47.67	2%	38.78	23%	46.25	38.29	21%
<b>Total Expenses</b>	<b>1,234</b>	<b>1,083</b>	<b>(12%)</b>	<b>1,398</b>	<b>(23%)</b>	<b>3,109</b>	<b>2,947</b>	<b>5%</b>
<b>Major Expenses:</b>								
Operating Expenses	169	166	(2%)	162	2%	476	457	4%
Exploration Expenses	15	19	27%	9	>100%	37	29	28%
DD&A	460	496	8%	413	20%	1,364	1,214	12%
Impairment Loss on Assets	-	-	-	558	(>100%)	-	558	(>100%)
Loss on Divestment	-	37	>100%	-	>100%	37	-	>100%
Income Tax Expense	329	105	(68%)	57	84%	439	116	>100%
(Gain)/Loss on FX	30	6	(80%)	(23)	>100%	11	(37)	>100%
<b>Net Income</b>	<b>113</b>	<b>315</b>	<b>&gt;100%</b>	<b>(264)</b>	<b>&gt;100%</b>	<b>851</b>	<b>305</b>	<b>&gt;100%</b>
Recurring Net Income	336	292	(13%)	218	34%	932	596	56%
Non-Recurring *	(223)	23	>100%	(482)	>100%	(81)	(291)	72%

Note:

\* Includes 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 and Balance Sheet

Sustained solid EBITDA margin with healthy balance sheet

Income Statement		Q2 18	Q3 18	Q3 17	9M 18	9M 17
	Sales and Revenue from Pipeline Transportation (MMUSD)	1,319	1,367	1,089	3,870	3,135
	EBITDA (MMUSD)	965	992	777	2,836	2,238
	Net Income (MMUSD)	113	315	(264)	851	305
	Recurring Net Income (MMUSD)	336	292	218	932	596
	Earning Per Share (USD)	0.03	0.07	(0.07)	0.20	0.06
Key Financial Ratios						
	EBITDA Margin (%)	73	73	71	73	71
	Return on Equity (%) (LTM)	5	10	3	10	3
	Return on Capital Employed (%) (LTM)	5	9	3	9	3
	Return on Equity (%) (LTM, Recurring Net Income)	9	10	6	10	6
	Return on Capital Employed (%) (LTM, Recurring Net Income)	8	9	6	9	6

Balance Sheet		YE 17	Q3 18
	Total Assets (MMUSD)	19,220	19,210
	- Cash & cash equivalents * (MMUSD)	4,468	3,804
	Total Liabilities (MMUSD)	7,703	7,433
	- Interest bearing debt (MMUSD)	2,907	1,947
	Equity (MMUSD)	11,517	11,777
Key Financial Ratios			
	Total Debt to Equity (X)	0.25	0.17
	Net Debt** to Equity (X)	(0.14)	(0.16)
	Total Debt to Capitalization (X)	0.20	0.14
	Total Debt to EBITDA (X)	0.95	0.66
	EBITDA Interest Coverage (X)	23	27

Note:

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

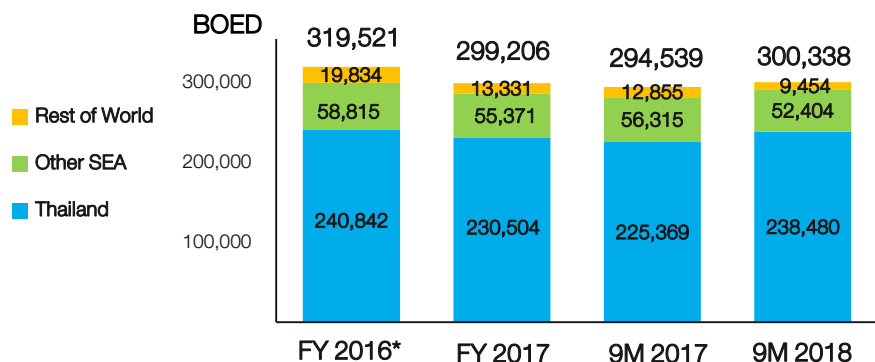
Net Debt = Total Debt less Cash & Cash Equivalents and Short-term Investments

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

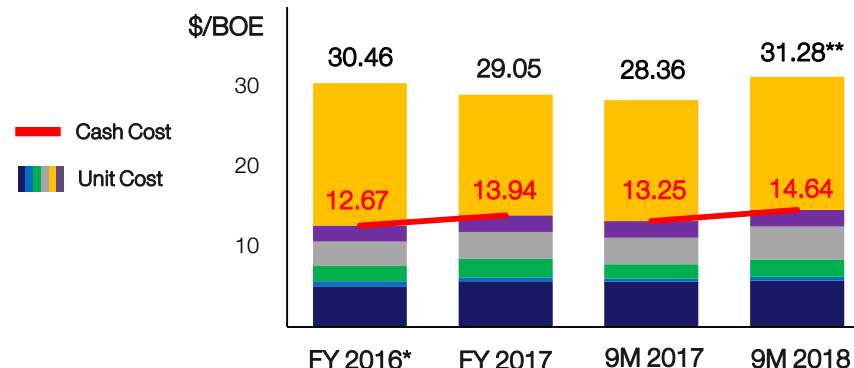
# Sales Volume & Unit Cost

Improved sales volume and selling price with continuous cost management effort

## Sales Volume and Price



## Unit Cost



Gas (\$/MMBTU)	5.60	5.59	5.54	<b>6.24</b>
Liquid (\$/BBL)	41.17	52.26	49.87	<b>67.85</b>
Weighted Avg. (\$/BOE)	35.91	39.20	38.29	<b>46.25</b>
Avg. Dubai (\$/BBL)	41.27	53.14	51.06	<b>70.10</b>
Avg. HSFO (\$/BBL)	35.48	49.64	47.79	<b>65.15</b>
(High Sulphur Fuel Oil)				
Volume Mix (Gas : Liquid)	69 : 31	70 : 30	70 : 30	<b>71 : 29</b>
Revenue Mix (Gas : Liquid)	65 : 35	60 : 40	60 : 40	<b>58 : 42</b>

DD&A	17.79	15.11	15.11	<b>16.64</b>
Finance Cost	2.01	2.07	2.10	<b>2.09</b>
Royalties	3.02	3.37	3.30	<b>4.10</b>
G&A	1.93	2.30	1.81	<b>2.19</b>
Exploration Expenses	0.63	0.48	0.36	<b>0.45</b>
Operating Expenses	5.08	5.72	5.68	<b>5.81</b>
Lifting Cost	4.18	4.19	4.12	<b>4.38</b>

Note: \* Represented and includes discontinued operations until end of August 2016

\*\* Exclude costs related to new business, If include, unit cost for 9M18 will be 31.35 \$/BOE.

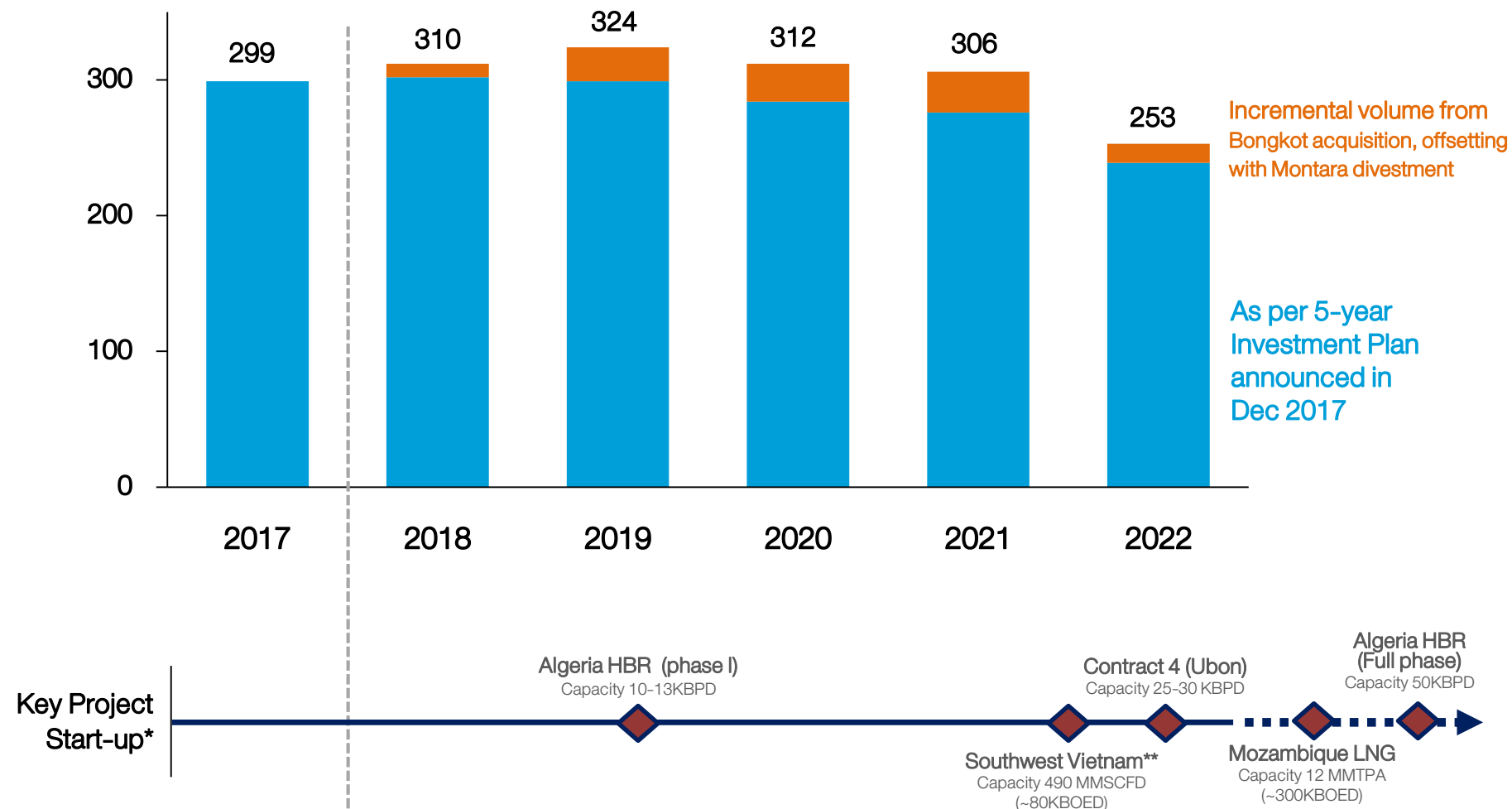
The formulas for calculating ratios are provided in the supplementary section for your reference

# Sales Volume

M&As and concession bidding remain key upside



Unit : KBOED

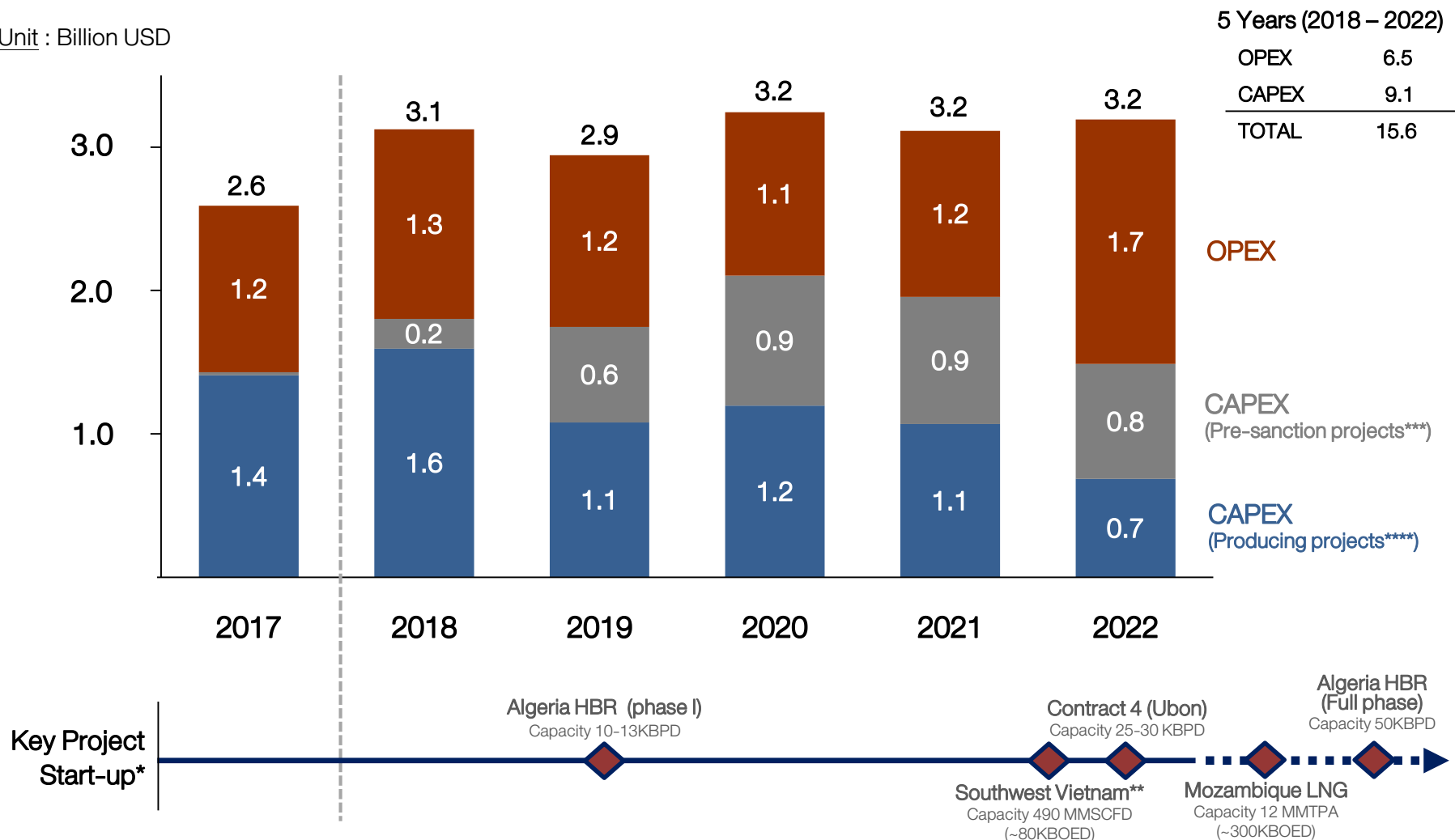


Note: \* Subject to FID timing  
\*\* Expected project start-up in late 2021

# Investment Plan (excluding Acquisition cost on M&As)

Disciplined spending on core assets for future production growth

Unit : Billion USD



Note: \* Subject to FID timing

\*\* Expected project start-up in late 2021

\*\*\* Pre-sanction projects include Mozambique LNG, Contract 4 (Ubon), Algeria HBR and Southwest Vietnam

\*\*\*\* Includes exploration and appraisal in all projects and head office CAPEX

# 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

Thailand's Strongest Adherence to Corporate Governance (ranked second)  
*Alpha Southeast Asia Magazine 2018*

Asia's Icon on Corporate Governance Award  
*Corporate Governance Asia Magazine*

Platinum Corporate Award  
*The Asset Corporate Awards 2017*



FTSE4Good

## FTSE4Good Emerging Index 2018

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



## Exemplary social contributor

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

Platinum and Gold Awards for 3 CSR Projects:  
Best Environmental Excellence and Community Program  
*The 10<sup>th</sup> Annual Global CSR Summit 2018*

Silver Award for Free Clinic and Waste to Energy Project  
*The 2018 Asia-Pacific Stevie Awards Program*

## Green driver to environment

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 Occupational Safety and Health Awards  
*The Ministry of Labour*

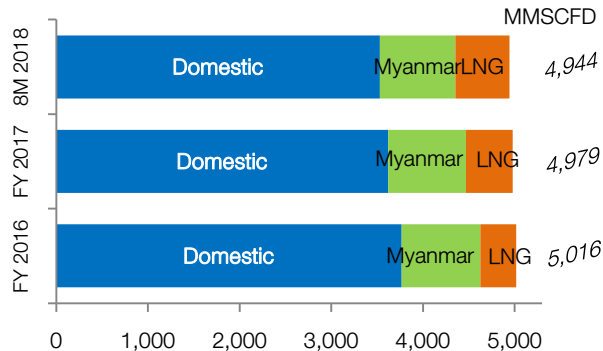


# Thailand Updates

Domestic gas volume suppressed by LNG import; Uncertainty on Thai Baht remains

## Thailand Energy Overview

### Natural Gas Supply



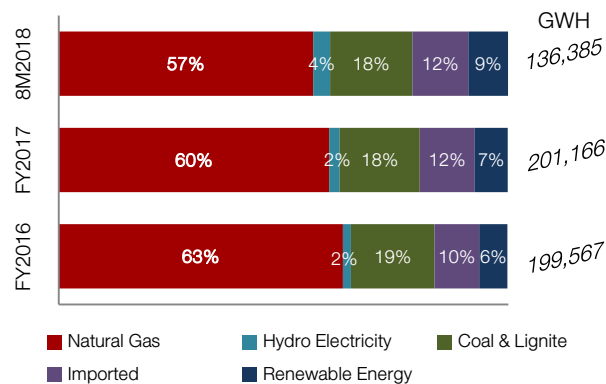
Slight decline in domestic production and Myanmar piped gas imports as a result of lower demands and growth in LNG import

### Natural Gas Consumption



Source: EPPO

### Electricity Generation



## Exchange Rate Movement (THB/USD)



Consensus on the exchange rate mostly depends on

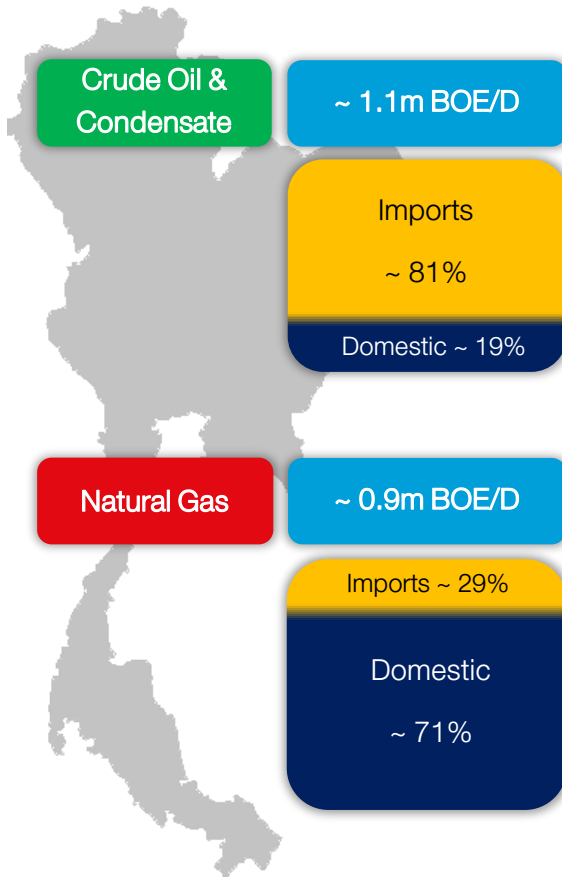
- Continued uncertainty around monetary policies of major global economies such as Europe
- Trade war between the US and China
- The political instability in several regions

Source: Bank of Thailand, Bloomberg  
Forecast based on Bloomberg Consensus as of 6 November 2018

# Thailand's Energy Value Chain

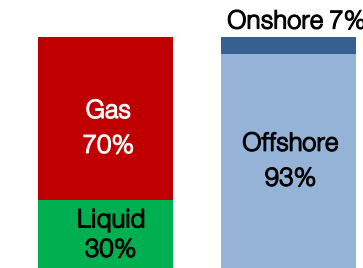
PTTEP contributes almost 1/3 of Thailand's petroleum production

## Thailand's Oil and Gas Demand

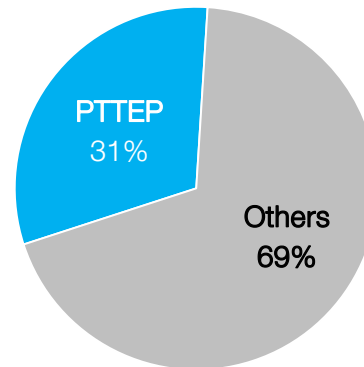


## Thailand Petroleum Production 9M2018

### % by Petroleum Type and Area



### % Production by Company



## Midstream

Gas: operated by PTT

Transmission Pipelines  
Gas Separation Plants

Oil: PTT participates through subsidiaries

Refineries

## Downstream

Petrochemicals  
Oil and gas marketing

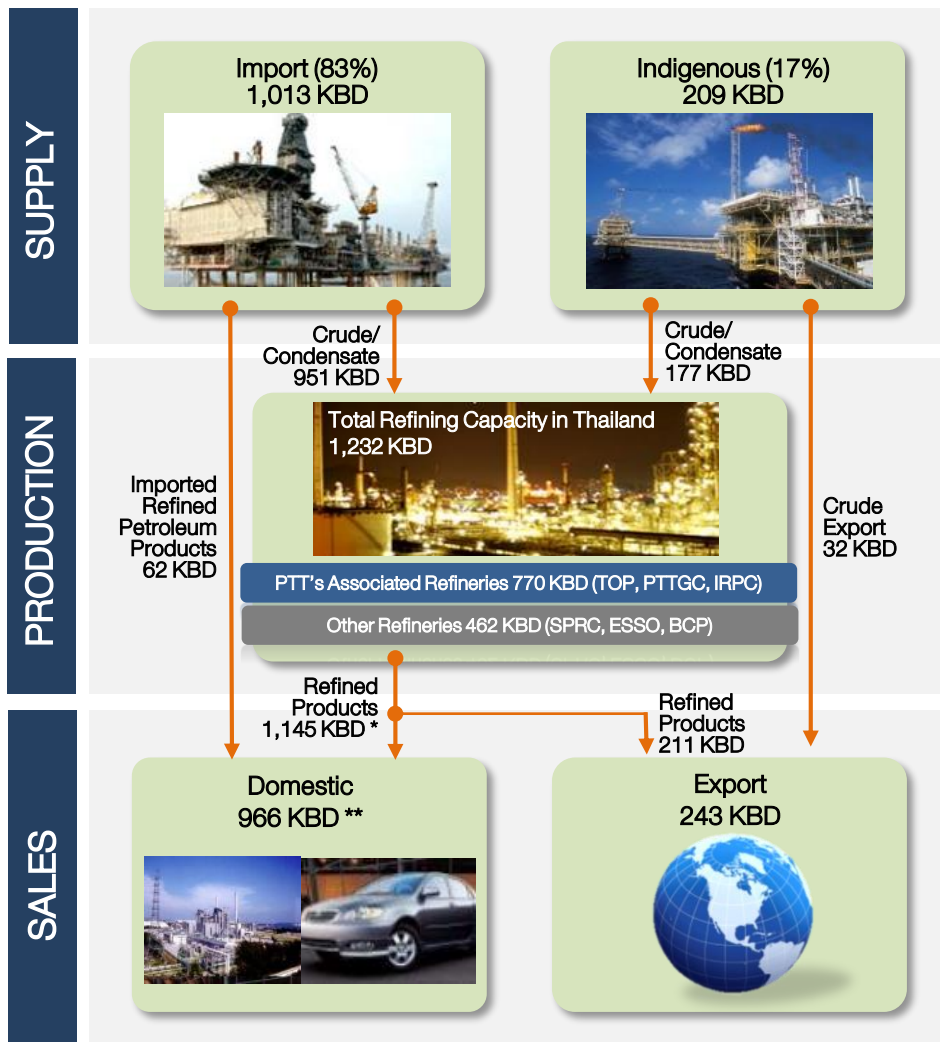
Source: Energy Policy and Planning Office (EPPO) and Department of Mineral Fuels (DMF)

# Thailand's Oil and Gas Balance

January – September 2018

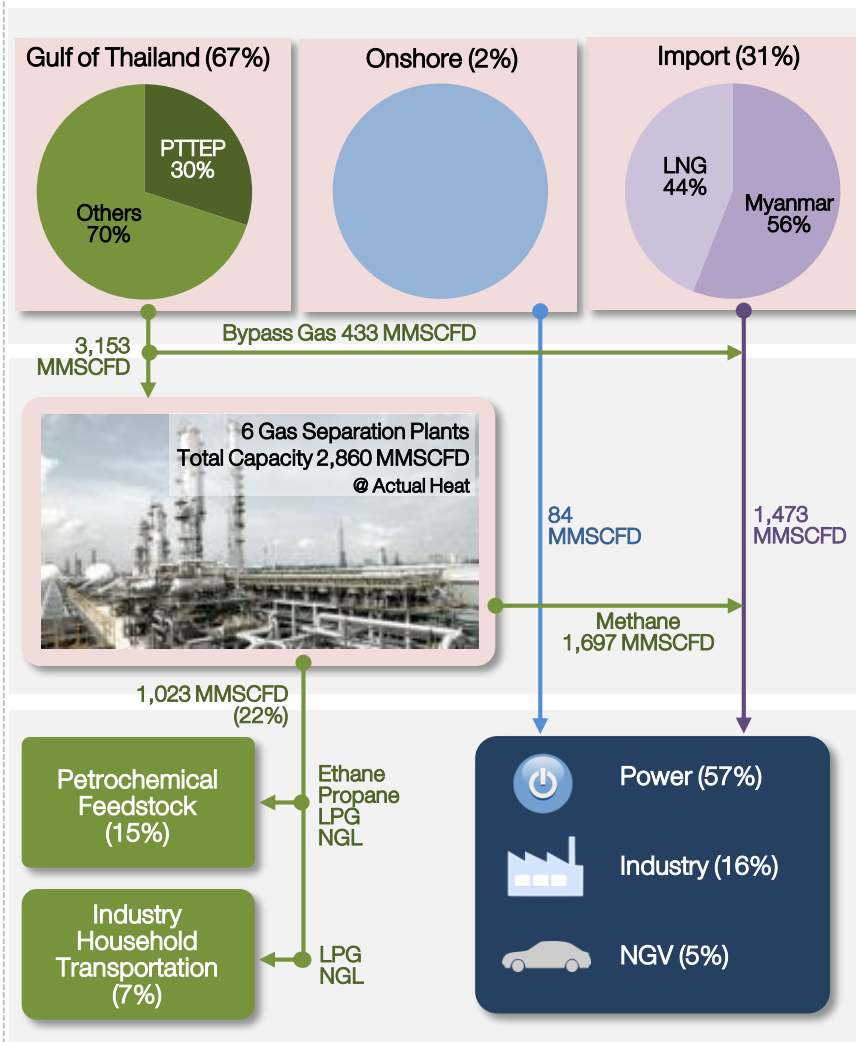
## Oil Balance

Maintains stability supply through adequate refining capacity



## Natural Gas Balance

Main driver of the Thailand economy



Source: PTIT

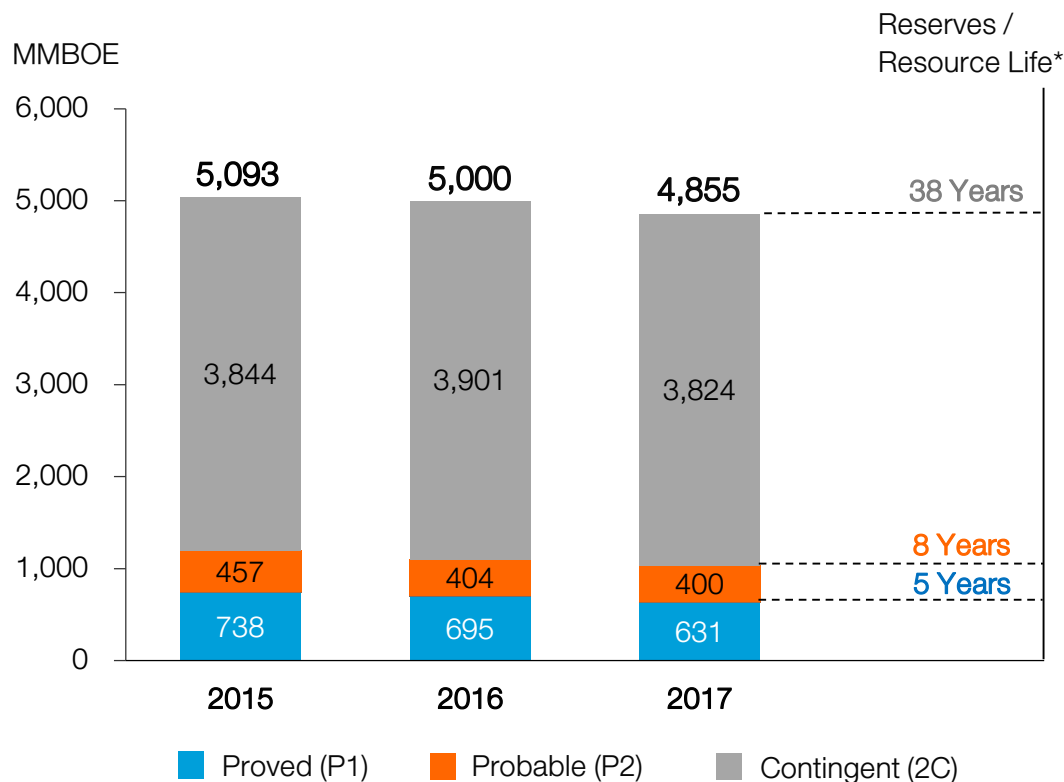
Remark: \* Refined product from refineries = 1,034 KBD, including domestic supply of LPG from GSPs and Petrochemical Plants = 111 KBD

\*\* Not included Inventory

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

# Reserves and Resources

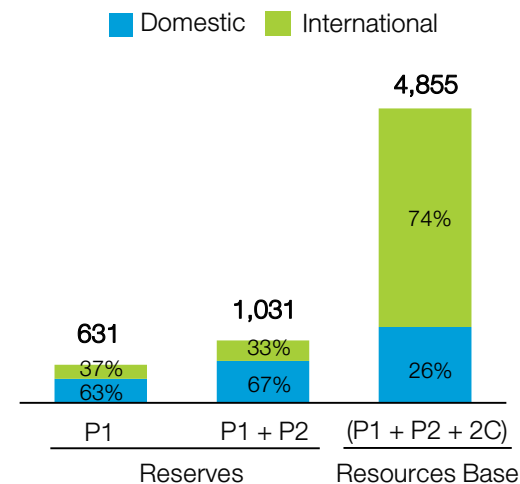
Maintained reserve life with majority of reserves base in SEA



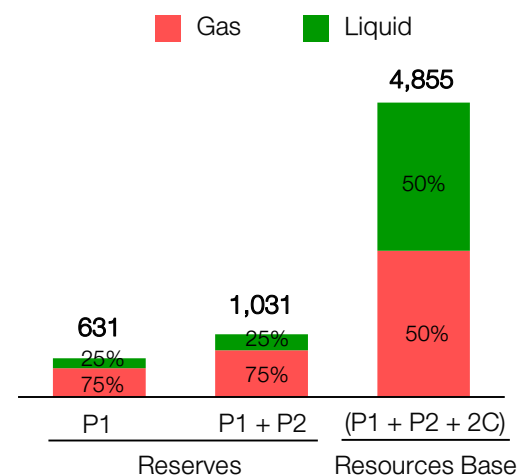
5-Year Average Proved Reserves Replacement Ratio (RRR)

2015	2016	2017
0.50x	0.57x	0.58x

## 2017 by Geography



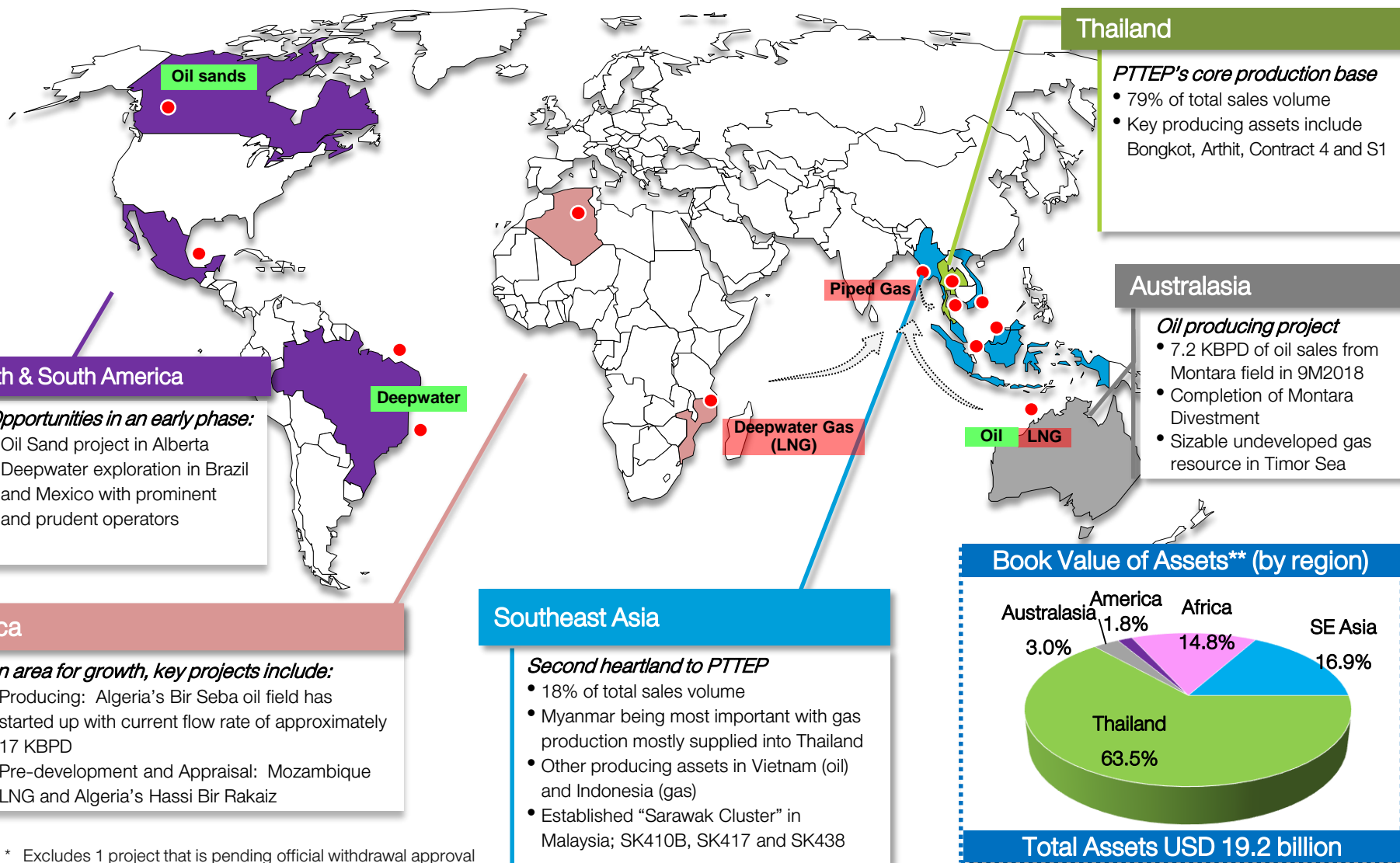
## 2017 by Product Type



\* Based on total production of natural gas, condensate, and crude oil (including LPG) of 347 KBOED for the year ended December 31, 2017

# Diversified international portfolio

Worldwide operations: 40 projects\* in 11 countries



Notes: \* Excludes 1 project that is pending official withdrawal approval

\*\* Information dated as of 9M 2018



# Thailand and other Southeast Asia

Strong base maintaining production plateau and significant contribution to growth

## Thailand

### Bongkot (66.6667% WI)

- Average natural gas and condensate sales volume of 739 MMSCFD and 25 KBPD in 9M2018

### S1 (100% WI)

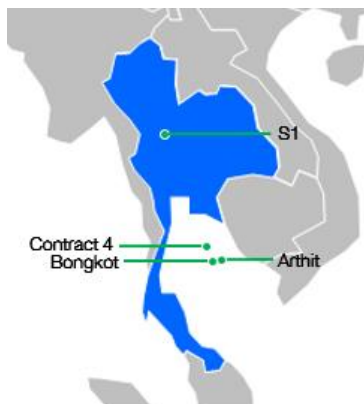
- The largest onshore crude oil production field in Thailand with 9M2018 average crude oil sales volume of 27 KBPD

### Arthit (80% WI)

- Average sales volume in 9M2018 was 206 MMSCFD of natural gas and 10 KBPD of condensates

### Contract 4 (60% WI)

- Average sales rate of 403 MMSCFD for natural gas and 17 KBPD for condensate in 9M2018



● 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 301 MMSCFD in 9M2018
- 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)

## Vietnam and Indonesia

“Reinforcing regional exposure through strategic partnerships”

### Natuna Sea A (11.5% WI)

- Average sales volume of natural gas was 222 MMSCFD in 9M2018



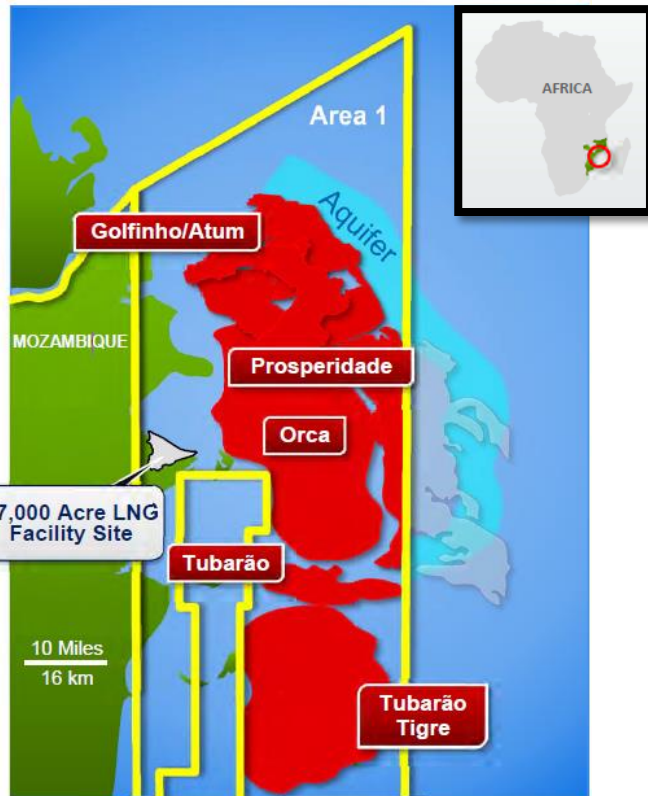
● Production / Ramp-up Projects

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

- Average sales volume of crude oil was 18 KBPD in 9M2018
- The project is preparing further production drilling plan aiming to maintain production plateau.

# East Africa: Mozambique

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



## Location and Cost Advantage

- Close proximity to shore
- High quality reservoirs
- Access to Asian markets

*Substantial recoverable resources of **70+ tcf** with scalable offshore development of **more than 6 LNG trains***

## Key Milestones to Final Investment Decision – targeting at 1H2019

### Technical

- ✓ Certified reserves to support initial trains
- ✓ Announced selection of contractor for onshore LNG facilities construction

### Commercial

- ✓ Recently signed SPA of 1.2 MTPA with EDF (French) and 0.28 MTPA signed with Tohoku Electric

### Regulatory

- ✓ Received approval on marine concession and development plan of Golfinho–Atum Field
- ✓ Commenced the resettlement plan in Q4 2017

### Financing

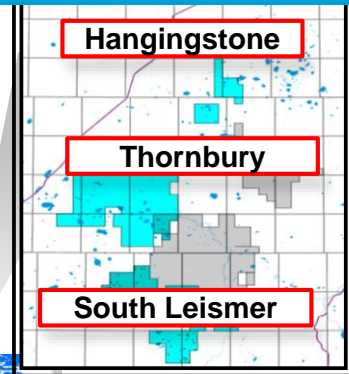
- ✓ On-going negotiation for project financing

**Onwards to initial phase of 12 MMTPA**

## Canada Oil Sands

*Flexibility to pursue long-term investment from the oil sands project*

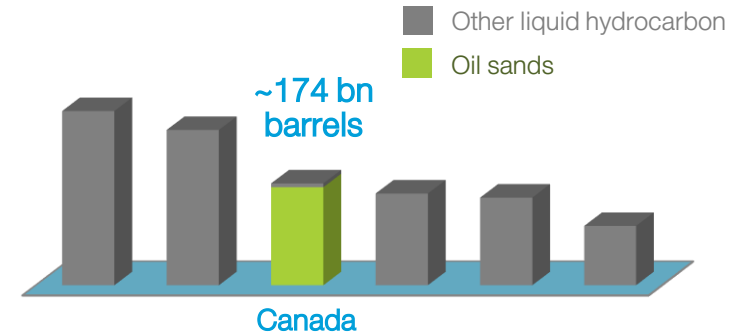
### Mariana Oil Sands Project



### 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

Approximately 96% of the reserves in Canada, the world's 3<sup>rd</sup> largest oil reserves, is oil sands

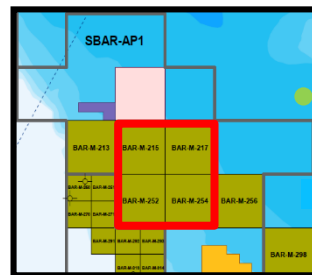


## Brazil Deepwater

*Entry into high potential petroleum province at exploration phase*

### Barreirinhas AP1

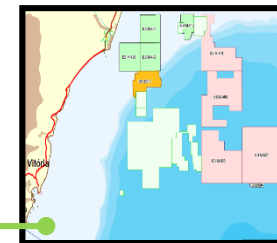
- Farm-in 25% from BG Group in 2014
- Operated by Shell Brasil (65% interest)
- Four offshore exploration blocks: BAR-M-215, BAR-M-217, BAR-M-252 and BAR-M-254
- Completed 3D seismic activities and is in the process of assessing the petroleum potential



### Barreirinhas Basin



### Espirito Santo Basin



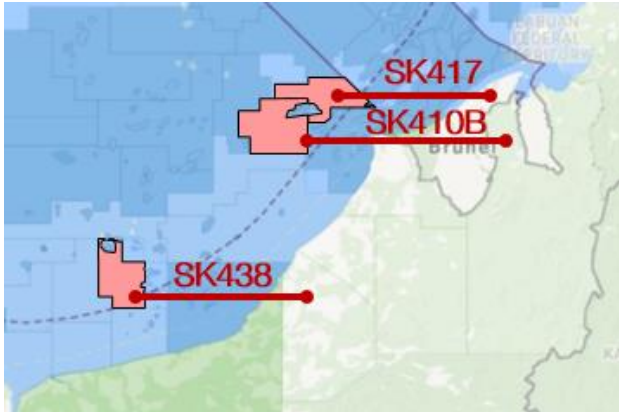
### BM-ES-23

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

# Unlocking the Exploration Potentials

Expanded portfolio in high prolific areas: Malaysia and Mexico

## Sarawak Basin, Malaysia



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

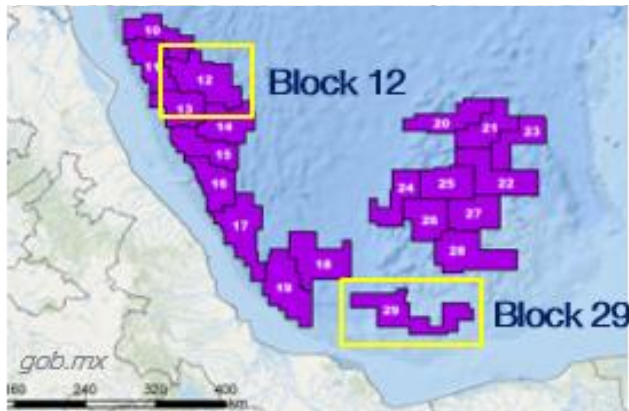
**Location:** Sarawak Basin, Malaysia

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

**Exploration Strategy:**

- Expect exploration drilling activities during 2018-2021
- "Cluster Model" synergy operations within basin to optimize costs
- In place production infrastructure in nearby area

## 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



# 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</div> <div>80%</div> </div> <div> <div>JX Nippon</div> <div>10%</div> </div> <div> <div>PTT Global LNG</div> <div>10%</div> </div>	  

## 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

# Project information 1/3

## Production phase: Thailand and JDA

	Project	Status*	PTTEP's Share	Partners <i>(as of Q3 2018)</i>		9M2018 Average Sales Volume **		2018 Key Activities
						Gas	Oil and Other	
Production Phase								
Thailand and JDA								
1	Arthit	OP	80%	Chevron MOECO	16% 4%	212 MMSCFD	Condensate: 10 k BPD	<ul style="list-style-type: none"><li>Ensure gas deliverability level at DCQ****</li><li>Drill development wells</li></ul>
2	B6/27	OP	100%			-	-	<ul style="list-style-type: none"><li>Prepare drilling plan</li></ul>
3	B8/32 & 9A		25%	Chevron MOECO KrisEnergy Palang Sophon	51.66% 16.71% 4.63% 2%	70 MMSCFD	Crude: 18 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%	739 MMSCFD	Condensate: 25 k BPD	<ul style="list-style-type: none"><li>Achieved production level as planned</li><li>Drill development wells</li><li>completed the acquisition of 22.2222% from shell</li><li>Submitted bid proposals as sole operator</li></ul>
5	Contract 3 <i>(Formerly Unocal III)</i>		5%	Chevron MOECO	71.25% 23.75%	604 MMSCFD	Crude: 23 k BPD Condensate: 21 k BPD	<ul style="list-style-type: none"><li>Drill exploration / appraisal / development wells</li><li>Install wellhead platforms</li><li>Perform waterflood activities</li><li>Partnering with Mubadala to bid for Erawan</li></ul>
6	Contract 4 <i>(Formerly Pailin)</i>		60%	Chevron MOECO	35% 5%	408 MMSCFD	Condensate: 17 k BPD	<ul style="list-style-type: none"><li>Ensure gas deliverability level at DCQ****</li><li>Drill development wells</li><li>Install wellhead platforms</li><li>In process of pre-development of Ubon field</li></ul>
7	E5		20%	ExxonMobil	80%	8.3 MMSCFD	-	
8	G4/43		21.375%	Chevron MOECO Palang Sophon	51% 21.25% 6.375%	1.4 MMSCFD	Crude: 4 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%	6 MMSCFD	Crude: 1.4 k BPD	
10	L53/43 & L54/43	OP	100%			-	Crude: 1.1 k BPD	<ul style="list-style-type: none"><li>Drill exploration / appraisal / development wells</li></ul>
11	PTTEP1	OP	100%			-	Crude: 263 BPD	<ul style="list-style-type: none"><li>Drill development wells</li><li>Perform waterflood activities</li></ul>
12	S1	OP	100%			15 MMSCFD	Crude: 27 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 waterflooding and artificial lift</li></ul>
13	Sinphuhorm	OP	55%	Apico ExxonMobil	35% 10%	69 MMSCFD	Condensate: 218 BPD	<ul style="list-style-type: none"><li>Drill development wells</li></ul>
14	L22/43	OP	100%			-	Crude: 29 BPD	<ul style="list-style-type: none"><li>Drill development wells</li></ul>
15	MTJDA	JOC	50%	Petronas-Carigali	50%	327 MMSCFD	Condensate: 6.8 k BPD	<ul style="list-style-type: none"><li>Drill development wells</li><li>Install wellhead platforms</li></ul>

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

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

\*\*\* DCQ = Daily Contractual Quantity

# Project information 2/3

## Production phase: Overseas

	Project	Status*	PTTEP's Share	Partners (as of Q3 2018)	9M2018 Average Sales Volume **		2018 Key Activities
					Gas	Oil and Other	
Production Phase							
Overseas							
16	Vietnam 9-2	JOC	25%	PetroVietnam 50% SOCO 25%	13 MMSCFD	Crude: 3.7 k BPD	<ul style="list-style-type: none"><li>Maintain production operation</li><li>Perform reservoir management</li></ul>
17	Vietnam 16-1	JOC	28.5%	PetroVietnam 41% SOCO 28.5% OPECO 2%	6.7 MMSCFD	Crude: 18 k BPD	<ul style="list-style-type: none"><li>Drill development wells</li><li>Maintain production operation</li></ul>
18	Natuna Sea A		11.5%	Premier Oil 28.67% KUFPEC 33.33% Petronas 15% Pertamina 11.5%	222 MMSCFD	Crude: 1.3 k BPD	<ul style="list-style-type: none"><li>Maintain production operation</li></ul>
19	Yadana		25.5%	TOTAL 31.24% Chevron 28.26% MOGE 15%	794 MMSCFD	-	<ul style="list-style-type: none"><li>Ensure gas deliverability level at DCQ***</li></ul>
20	Yetagun		19.3178%	Petronas-Carigali 30.00140% MOGE 20.4541% Nippon Oil 19.3178% PC Myanmar 10.90878% (Hong Kong)	154 MMSCFD	Condensate: 2.9 k BPD	<ul style="list-style-type: none"><li>Drill appraisal / development wells</li><li>Perform reservoir Management</li></ul>
21	Zawtika (M9 & a part of M11)	OP	80%	Myanma Oil and Gas Enterprise (MOGE) 20%	301 MMSCFD	-	<ul style="list-style-type: none"><li>Completed production drilling from 2 out of 4 production platforms in Phase 1C aiming to maintain output level</li><li>Drill development wells</li><li>Install wellhead platforms</li></ul>
22	PTTEP Australasia (PTTEP AA)	OP	90%-100% (varied by permits)		-	Crude: 7.2 k BPD	<ul style="list-style-type: none"><li>Completion of Montara field divestment to Jadestone on 28 Sep 18</li></ul>
23	Algeria 433a & 416b (Bir Seba)	JOC	35%	PetroVietnam 40% Sonatrach 25%	-	Crude: 2.3 k BPD (net entitlement)	<ul style="list-style-type: none"><li>Maintain production operation</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



# Project information 3/3

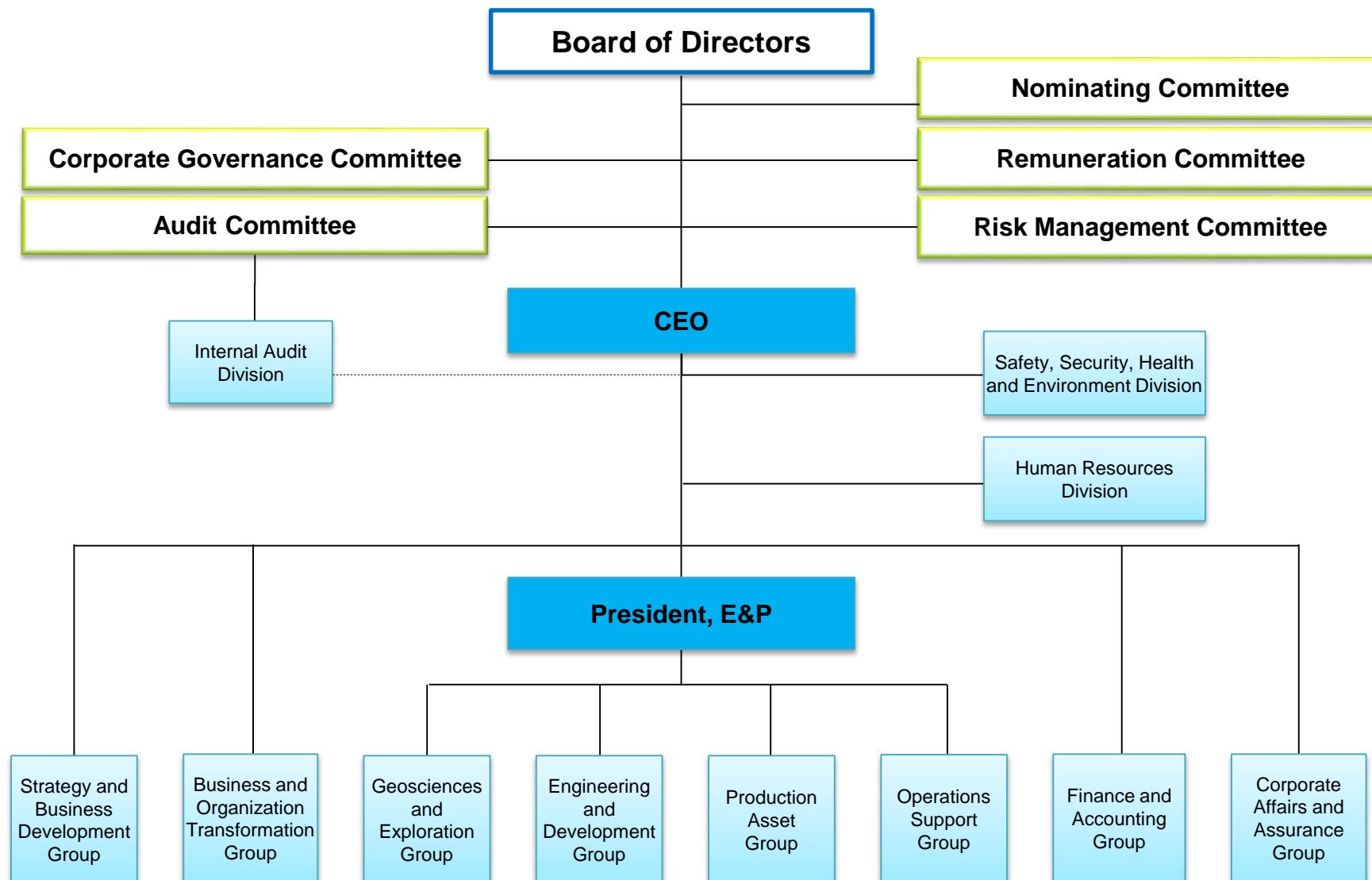
## Exploration/Development phase

	Project	Status*	PTTEP's Share	Partners (as of Q3 2018)	2018 Key Activities
<b>Exploration/Development Phase</b>					
<b>Thailand and JDA</b>					
24	G9/43	OP	100%		
<b>Overseas</b>					
25	Myanmar M3	OP	80%	MOECO 20%	<ul style="list-style-type: none"> <li>Negotiate the commercial framework with the Myanmar government</li> <li>Completed Pre-FEED study and expected to propose FDP in Q4/18</li> </ul>
26	Myanmar M11	OP	100%		<ul style="list-style-type: none"> <li>Preparation of exploration drilling plan and seeking partner to manage project's risk</li> </ul>
27	Myanmar MD-7	OP	50%	TOTAL 50%	<ul style="list-style-type: none"> <li>Under preparation of exploration drilling plan</li> </ul>
28	Myanmar MOGE 3	OP	75%	Palang Sophon 10% MOECO 10% WinPreciousResources 5%	<ul style="list-style-type: none"> <li>prepare exploration drilling well</li> </ul>
29	Vietnam B & 48/95		8.5%	PVN 65.88% MOECO 25.62%	<ul style="list-style-type: none"> <li>Got approval on FDP</li> <li>Negotiate a GSA with the Vietnamese government</li> </ul>
30	Vietnam 52/97		7%	PVN 73.4% MOECO 19.6%	<ul style="list-style-type: none"> <li>Got approval on FDP</li> <li>Negotiate a GSA with the Vietnamese government</li> </ul>
31	Sarawak SK410B	OP	42.5%	KUFPEC 42.5% Petronas-Carigali 15%	<ul style="list-style-type: none"> <li>Assess petroleum potential and prepare exploration drilling plan</li> </ul>
32	Sarawak SK417	OP	80%	Petronas-Carigali 20%	<ul style="list-style-type: none"> <li>Under preparation of exploration activities</li> </ul>
33	Sarawak SK438	OP	80%	Petronas-Carigali 20%	<ul style="list-style-type: none"> <li>Under preparation of exploration activities</li> </ul>
34	Mozambique Rovuma Offshore 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>Under negotiation on construction agreement of onshore LNG liquefaction plant</li> <li>Preparatory work for Final Investment Decision (FID) including LNG marketing and finalization of remaining commercial contracts</li> </ul>
35	Algeria Hassi Bir Rekaiz	OP	24.5%	CNOOC 24.5% Sonatrach 51%	<ul style="list-style-type: none"> <li>Got approval on FDP</li> </ul>
36	Mariana Oil Sands	OP	100%		<ul style="list-style-type: none"> <li>Assess appropriated development approach</li> </ul>
37	Barreirinhas AP1		25%	Shell Brasil 65% Mitsui E&P Brasil 10%	<ul style="list-style-type: none"> <li>Assess petroleum potential</li> </ul>
38	Brazil BM-ES-23		20%	Petrobras 65% INPEX 15%	<ul style="list-style-type: none"> <li>Assess petroleum potential</li> </ul>
39	Mexico block 12 (2.4)		20%	PC Carigali Mexico 60% Ophir Mexico 20%	<ul style="list-style-type: none"> <li>Under preparation of exploration plan with submission timeline to the Mexico National Commission Hydrocarbon within Q4/2018</li> </ul>
40	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>Under preparation of exploration plan with submission timeline to the Mexico National Commission Hydrocarbon within Q4/2018</li> </ul>

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

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