

# PTT Exploration and Production Public Company Limited

Opportunity Day

Bangkok

18 November 2017



**PTTEP**

MEMBER OF

**Dow Jones  
Sustainability Indices**

In Collaboration with RobecoSAM





Safety Performance

Industry Highlights

Financial Performance

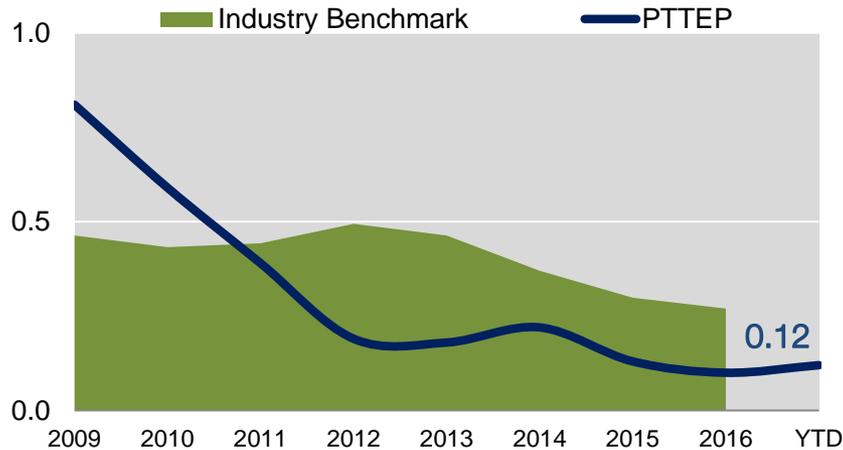
Operational Updates & Outlook



## Safety

Maintain high safety standard

# of incidents per million man hours  
(Lost time injury incident frequency, LTIF)



*Safety of PTTEP employees and contractors in every aspect of our operations is key to achieve the goal of "Target Zero"*

## Sustainability

Affirm our path to sustainable development

MEMBER OF  
**Dow Jones Sustainability Indices**  
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**FTSE4Good**




Member of the 2017 Dow Jones Sustainability Indices (DJSI) in the DJSI World Oil and Gas Upstream & Integrated Industry for its fourth consecutive year

Constituent of the FTSE4Good Emerging Index 2017 for a second consecutive year

"Excellence" level of recognition from the 2017 Corporate Governance Report of Thai Listed Companies, conducted by the Thai Institute of Directors (IOD) since 2001

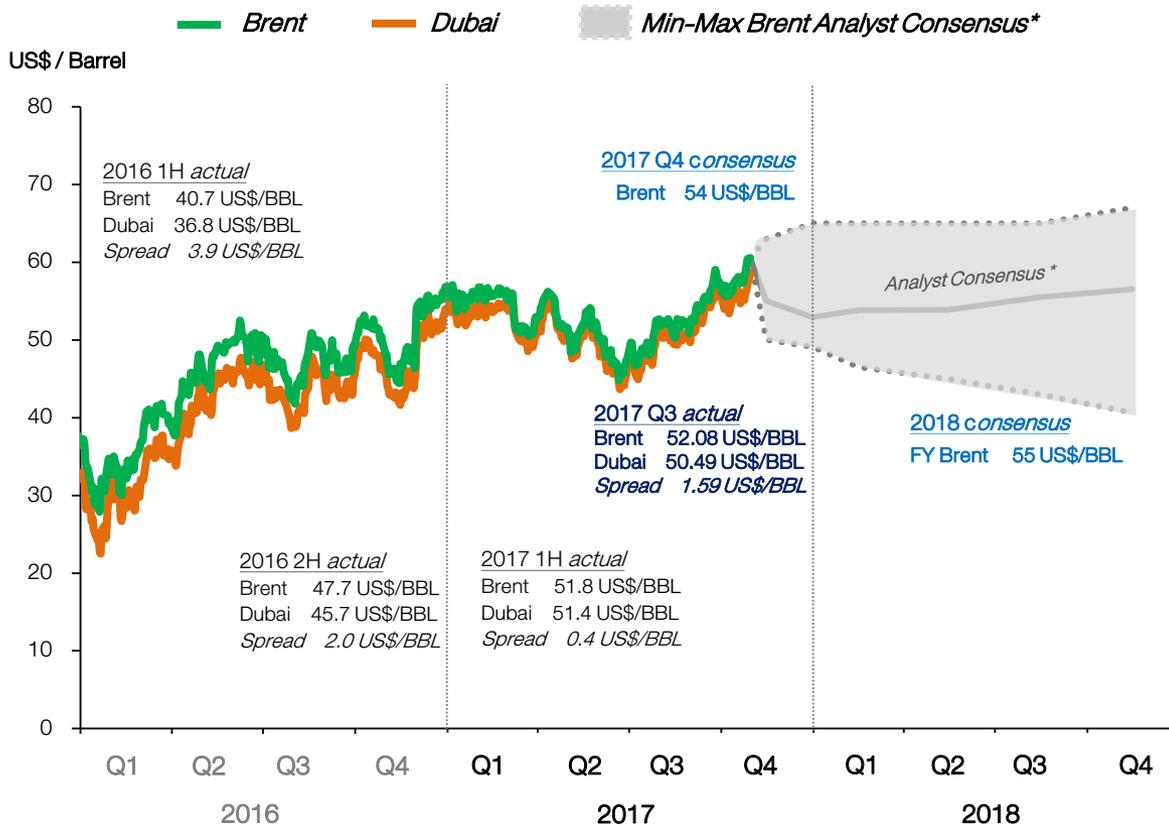


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### Q3 Highlights

- Decrease in US crude oil inventory due to higher demand from driving season
- Supply continued commitment led by Russia
- Incremental supply from Libya and Nigeria and high production level from the US shale
- Other pressures; tensions in North Korea, political tension between Iraq and Kurds, impacts from Hurricane in the US

### Outlook from the Remainder of 2017

- Production cut by OPEC and Non-OPEC and potential extension of supply cut agreement
- Additional supply from the US caused by improved crude oil price
- Continued growth in globally crude demand driven by India and OECD countries
- Other impacts including economic growth of China and economic policies of EU
- Possibility of intensified political tension between Iraq and Kurds

**Compliance Rate (Sep 17)**

<p><b>OPEC: 88% achieved</b></p> <p>OPEC supply decreased in September led by Saudi Arabia</p>	<p><b>Non-OPEC: 125% achieved</b></p> <p>Compliance exceeded mainly due to the planned maintenance season in Russia and production disruption in Mexico from hurricane and earthquake</p>
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Remark: \* Bloomberg Analyst Consensus (CPFC) as of 25 October 2017 and IEA (as of Oct 2017)



Safety Performance

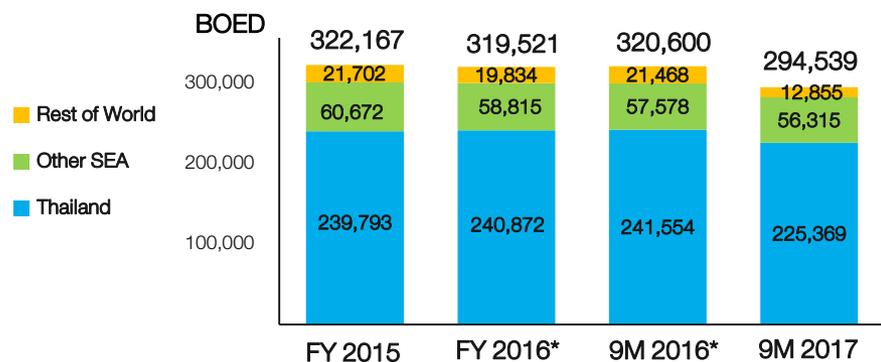
Industry Highlights

**Financial Performance**

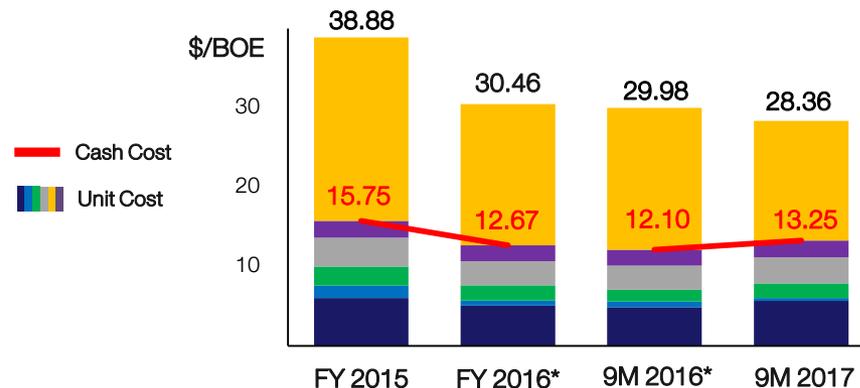
Operational Updates & Outlook



## Sales Volume and Price



## Unit Cost



Gas (\$/MMBTU)	7.20	5.60	5.75	<b>5.54</b>
Liquid (\$/BBL)	50.05	41.17	39.37	<b>49.87</b>
Weighted Avg. (\$/BOE)	45.29	35.91	36.00	<b>38.29</b>
Avg. Dubai (\$/BBL)	50.91	41.27	38.92	<b>51.06</b>
Avg. HSFO (\$/BBL) (High Sulphur Fuel Oil)	44.89	35.48	32.11	<b>47.79</b>
Volume Mix (Gas : Liquid)	70 : 30	69 : 31	70 : 30	<b>70 : 30</b>
Revenue Mix (Gas : Liquid)	66 : 34	65 : 35	66 : 34	<b>60 : 40</b>

DD&A	23.13	17.79	17.88	<b>15.11</b>
Finance Cost	2.14	2.01	2.01	<b>2.10</b>
Royalties	3.62	3.02	3.02	<b>3.30</b>
G&A	2.39	1.93	1.50	<b>1.81</b>
Exploration Expenses	1.56	0.63	0.71	<b>0.36</b>
Operating Expenses	6.04	5.08	4.86	<b>5.68</b>
Lifting Cost	4.62	4.18	4.05	<b>4.12</b>
Drilling Success Ratio**	31 : 47	6 : 8	5 : 7	<b>0 : 4</b>

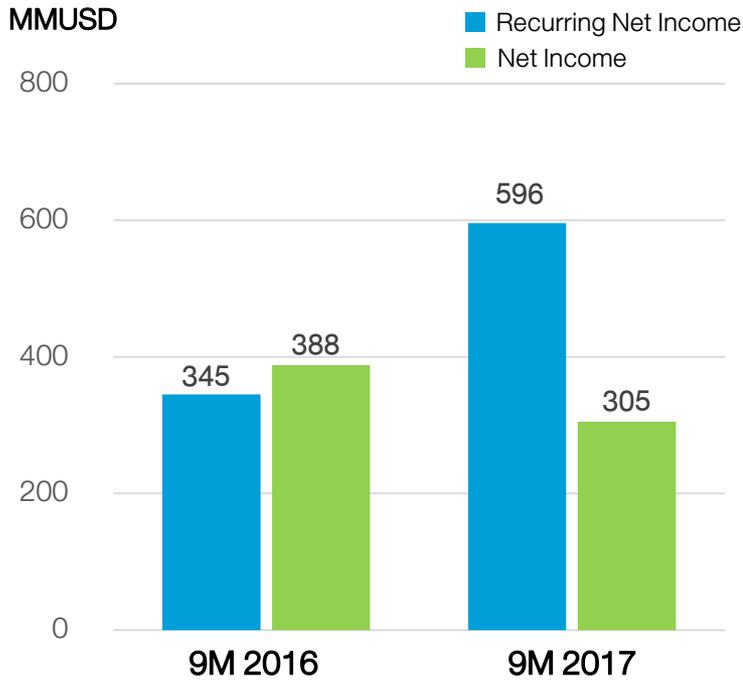
Note: \* Represented and includes discontinued operations until end of August 2016

\*\* Exploration and Appraisal Wells

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



## Net Income 9M Comparison



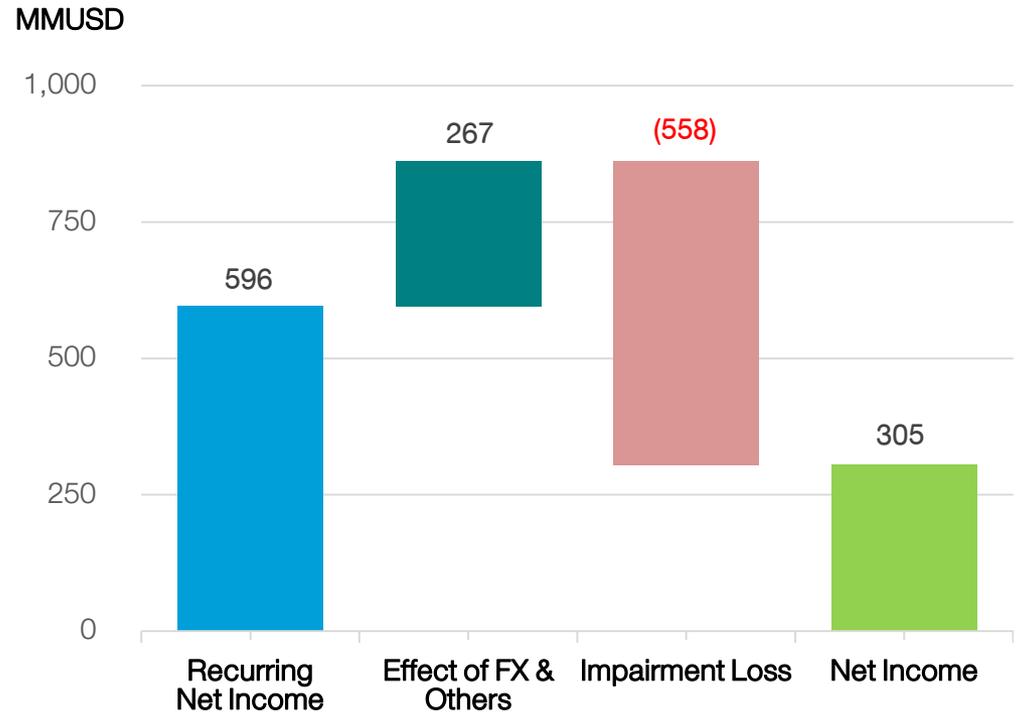
**Recurring Net Income**

Improved due to lower unit cost and better ASP

**Net Income**

Pressured by impairment loss net with higher gains from effect of FX and oil price hedging

## Net Income 9M 2017

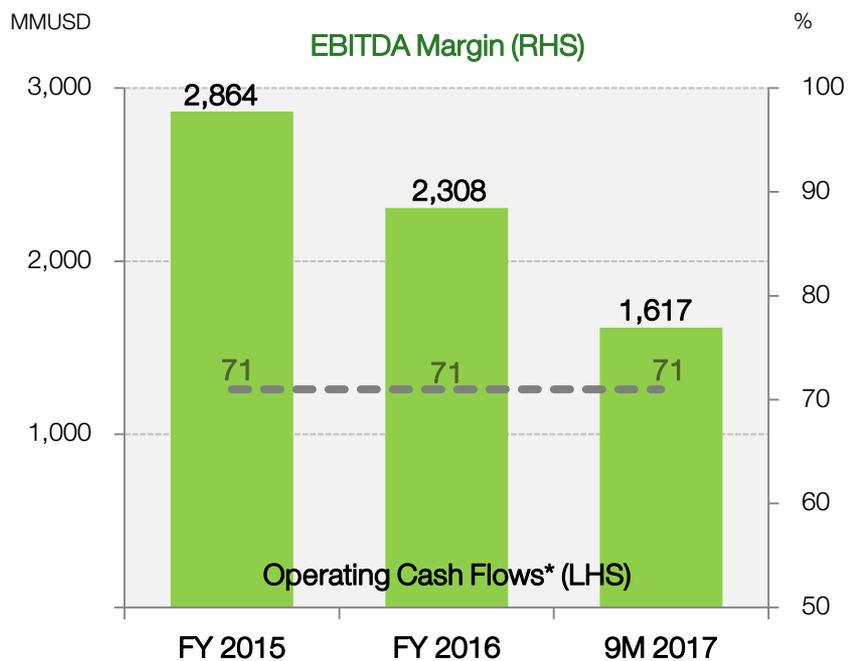


**Impairment Loss**

- Triggered by the revision of Mariana Oil Sands Project's development plan
- Impairment loss has no impact to cash flow

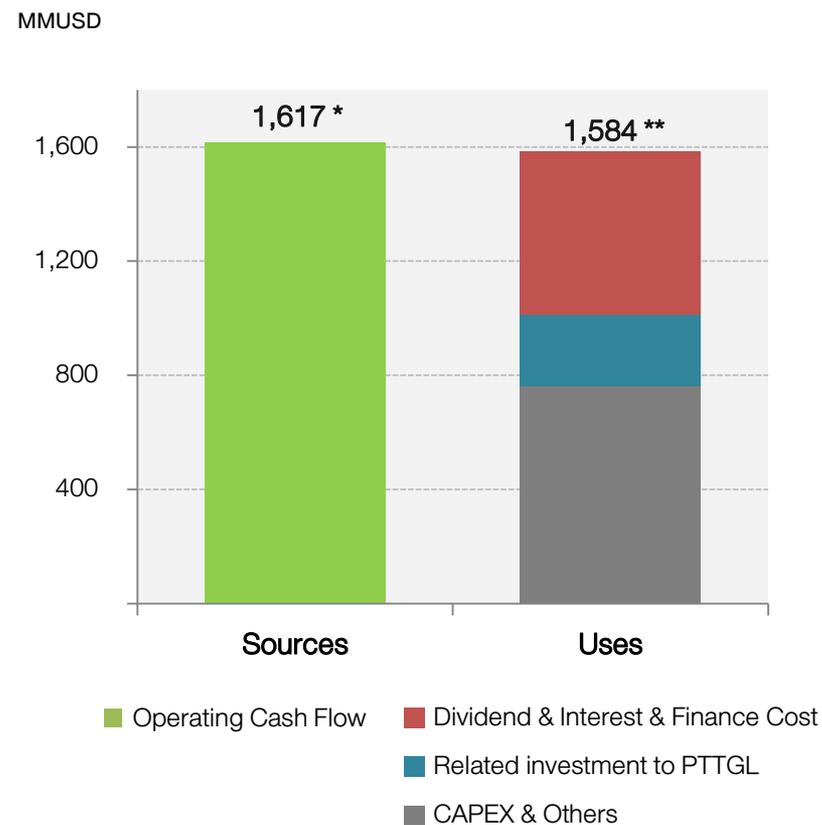


## Cash Flow Performance



Net Income	(854)	372	305
Recurring Net Income***	718	466	596

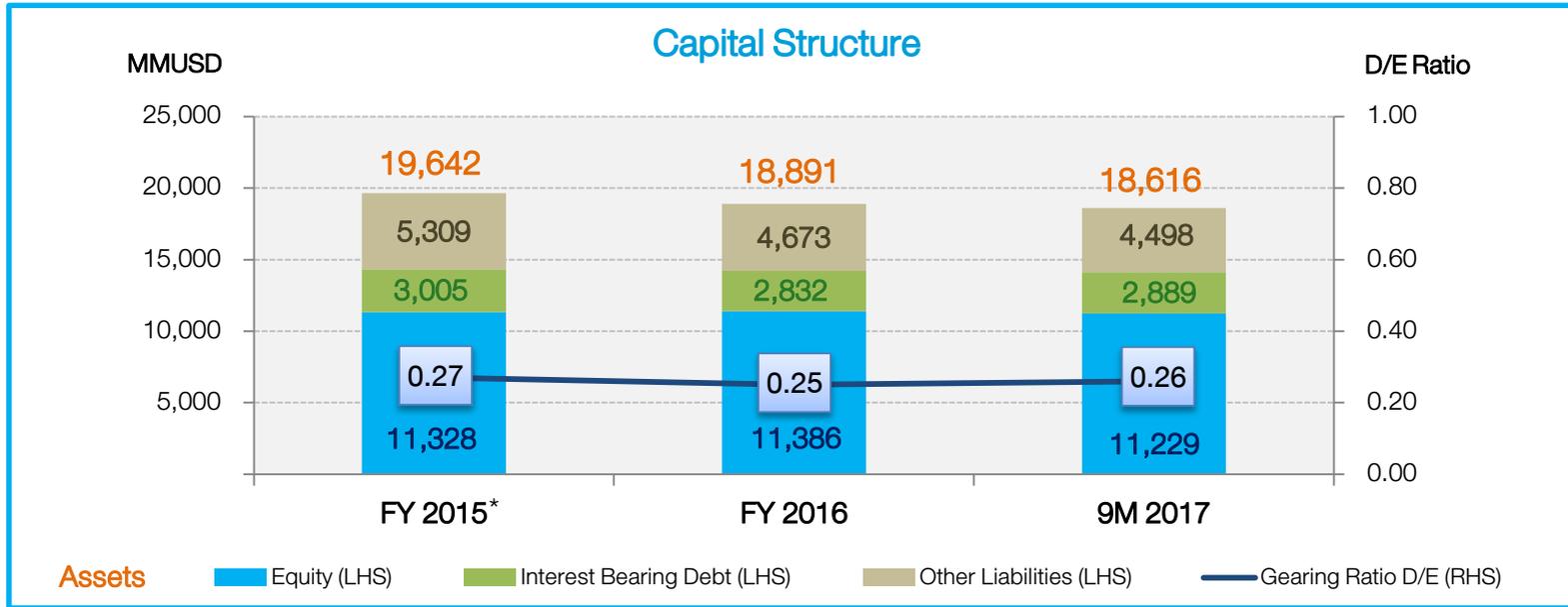
## Source & Use of Funds in 9M 2017



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.



### Debt Profile\*\*



Weighted Average  
Cost of Debt\*\* (%)

4.32

4.41

4.49

[Fixed : Floating]

[82 : 18]

[80 : 20]

[80 : 20]

Average Loan Life\*\* (Years)

8.17

8.15

7.40

Remark: \* Restated

\*\* Excludes Hybrid bonds



## Financial Outlook

FY 2017



Average Sales Volume

**~300**  
KBOED



Average Gas Price \*

**~5.6**  
USD/MMBTU



Unit Cost

**~29**  
USD/BOE



EBITDA Margin

**~70**  
% of sales revenue

\* Based on FY2017 Dubai oil price at 52 \$/BBL



Safety Performance

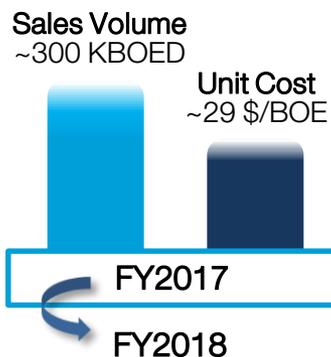
Industry Highlights

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## On track for FY2017 sales volume and unit cost targets



*aims to maintain sales volume and unit cost at similar level as FY2017*

## Initiatives to uplift production volume

Progress (as of Oct 2017)



Total initiatives ~7 KBOED

Total initiatives are already included in Sales volume guidance of ~300 KBOED

### S1 project

- Maximize crude production in current development areas and new discovery areas

### Myanmar projects

- Best endeavor to increase export and domestic gas
- Shutdown plan optimization

### Montara field

- Maximize crude production by facility reliability improvement and reservoir management

### Bongkot and Arthit projects

- Maximize condensate production by high yield well management

## Strong 2H 2017 sales volume outlook



### 2H 2017

- Improved situation on nomination of natural gas projects in Thailand
- Recovering volume from MTJDA project after resolving technical problem of Malaysian buyer's receiving plant
- Low maintenance shutdown activities
- Additional contribution from the company's initiatives



### Mozambique Rovuma Offshore LNG



**8.5%**  
*(operated by Anadarko)*

**Production**  
**12MMTPA**

**Expected Start-up**  
**2022/23**

- Received approval on marine concessions
- Under preparation for resettlement action plan which is to begin in Q4 2017
- Significant progress on SPA negotiation, especially with PTT – foundation buyer, and project finance is ongoing as planned

### Algeria HBR



**24.5%**  
*(operator)*

**Production**  
**50KBPD**

**Expected Start-up**  
**2023**

Submitting development plan in Q4 2017 and FID once government approval is received

### Ubon (Contract 4)



**60%**  
*(operated by CVX)*

**Production**  
**25-30KBPD**

**Expected Start-up**  
**2021**

Pursuing further cost rationalization

### Southwest Vietnam

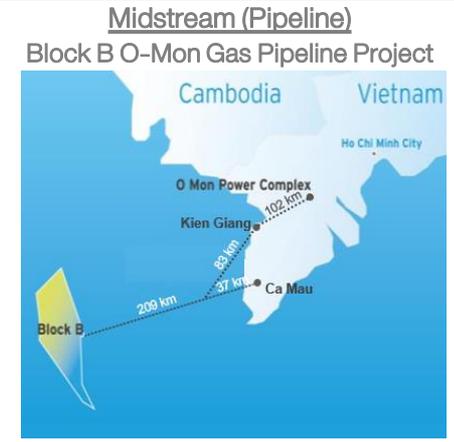
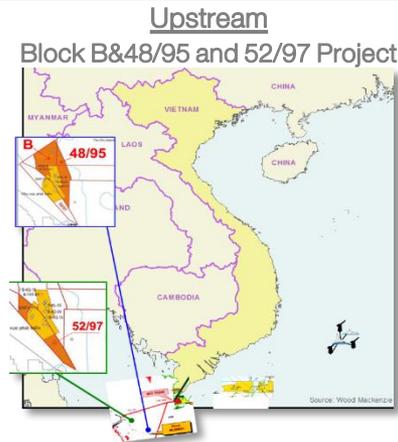


**Block B&48/95**   **Block 52/97**  
**8.5%**   **7.0%**  
*(operated by PetroVietnam)*

**Production**  
**490MMSCFD**

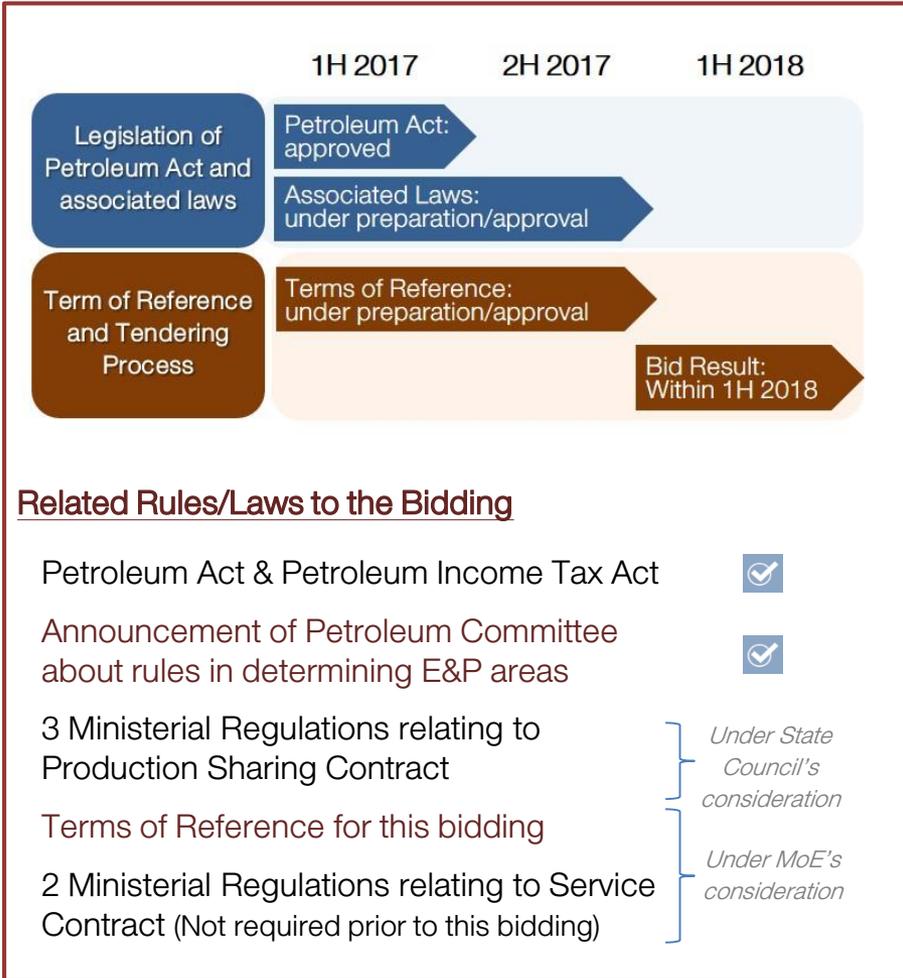
**Expected Start-up**  
**2021**

- Gas production will support domestic power plants through Block B O-Mon Gas Pipeline Project (PTTEP's WI 5.183%)
- Signed Letter of Agreement on gas price and pipeline tariff in Q3 2017
- Finalizing commercial agreements and FID once government approval on FDP is received





## Path to Retendering Process



## Related Rules/Laws to the Bidding

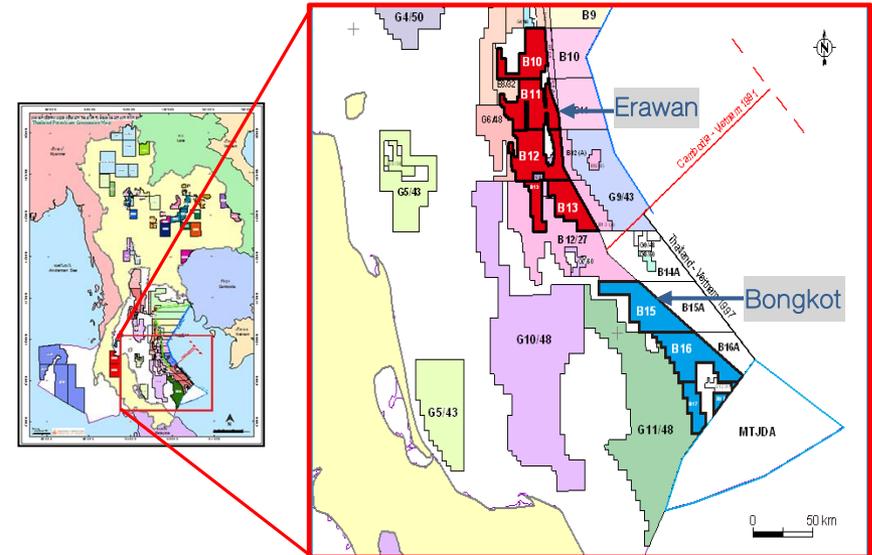
- Petroleum Act & Petroleum Income Tax Act
- Announcement of Petroleum Committee about rules in determining E&P areas
- 3 Ministerial Regulations relating to Production Sharing Contract } *Under State Council's consideration*
- Terms of Reference for this bidding } *Under MoE's consideration*
- 2 Ministerial Regulations relating to Service Contract (Not required prior to this bidding)

## With key objective to ensure energy security...



PTTEP is competitively positioned to continue as operator for Bongkot

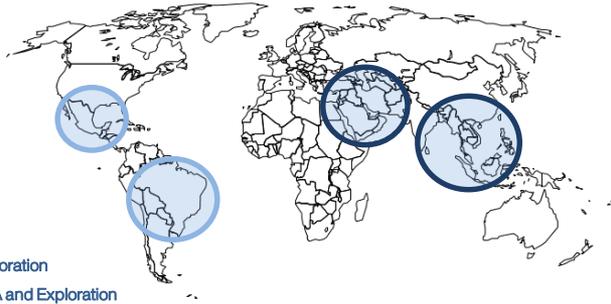
- *Experienced and reliable*
- *Operational efficiency*
- *Deep subsurface understanding*
- *Synergies in the Gulf of Thailand*



Note: indicative timeline and Progress as of 1 November 2017



## M&A and Exploration



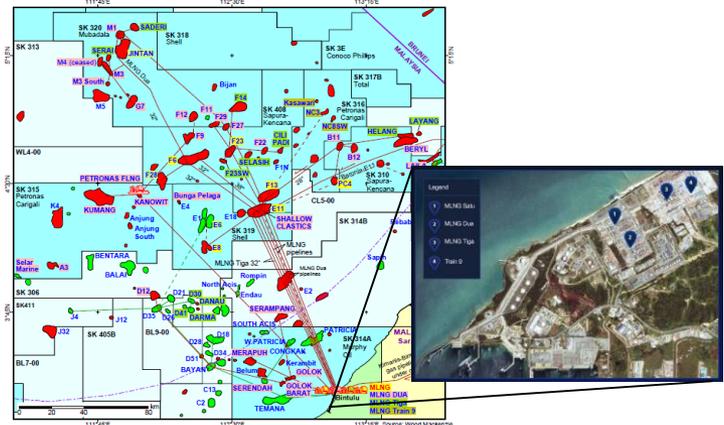
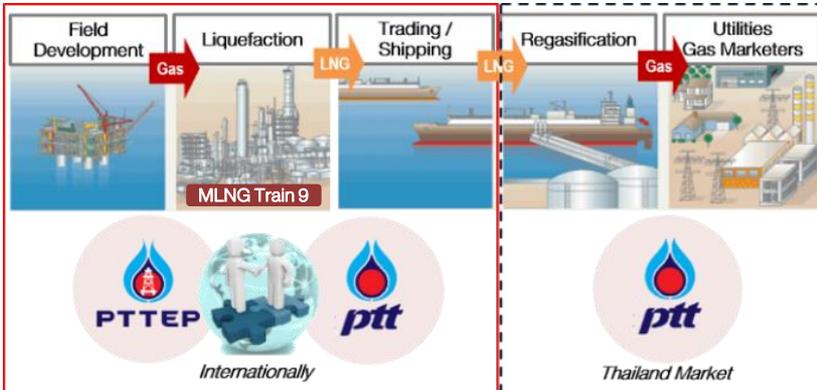
○ Exploration  
○ M&A and Exploration

- Geographical** • SEA and other potential areas
- M&A** • Focus on producing or near-producing
- Exploration** • Focus on prolific areas and quick commercialization
- Participating in bid rounds in potential areas

## Cooperation with PTT on LNG Value Chain



To capture opportunity from increasing LNG demand, while creating value from synergy with PTT in the LNG value chain



Recent 10% Investment in MLNG Train 9 in Malaysia marked as first step into midstream LNG business in strategic area and in vicinity of current and future upstream opportunities

Source – map of Offshore Sarawak: Woodmac



## Focused Portfolio with revenue stability

- +90% of sales volume concentrated in SEA
- Stable revenues from PTT +80% of sales volume via long term off-take contracts
- Gas-weighted portfolio to cushion oil price volatility and in line with global trend towards gas

## Competitive Cost base and strong margin

- Low cost operations in SEA with ~70% EBITDA margin amid the low oil prices
- Cost discipline and operation efficiency with over 30% Unit cost reduction

## Best Balance sheet and Capital Management

- \$4 Bn cash on hand and solid capital structure with low D/E ratio
- A consistent dividend-paying company for over 15 years

## Well positioned for future growth

- Organizational Restructuring to enhance operational efficiency
- Series of project developments in the pipeline and M&A
- Cooperation with PTT in LNG Value Chain investments with First Step into LNG midstream



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



<http://www.pttep.com>



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Q3 2017 Financial Results

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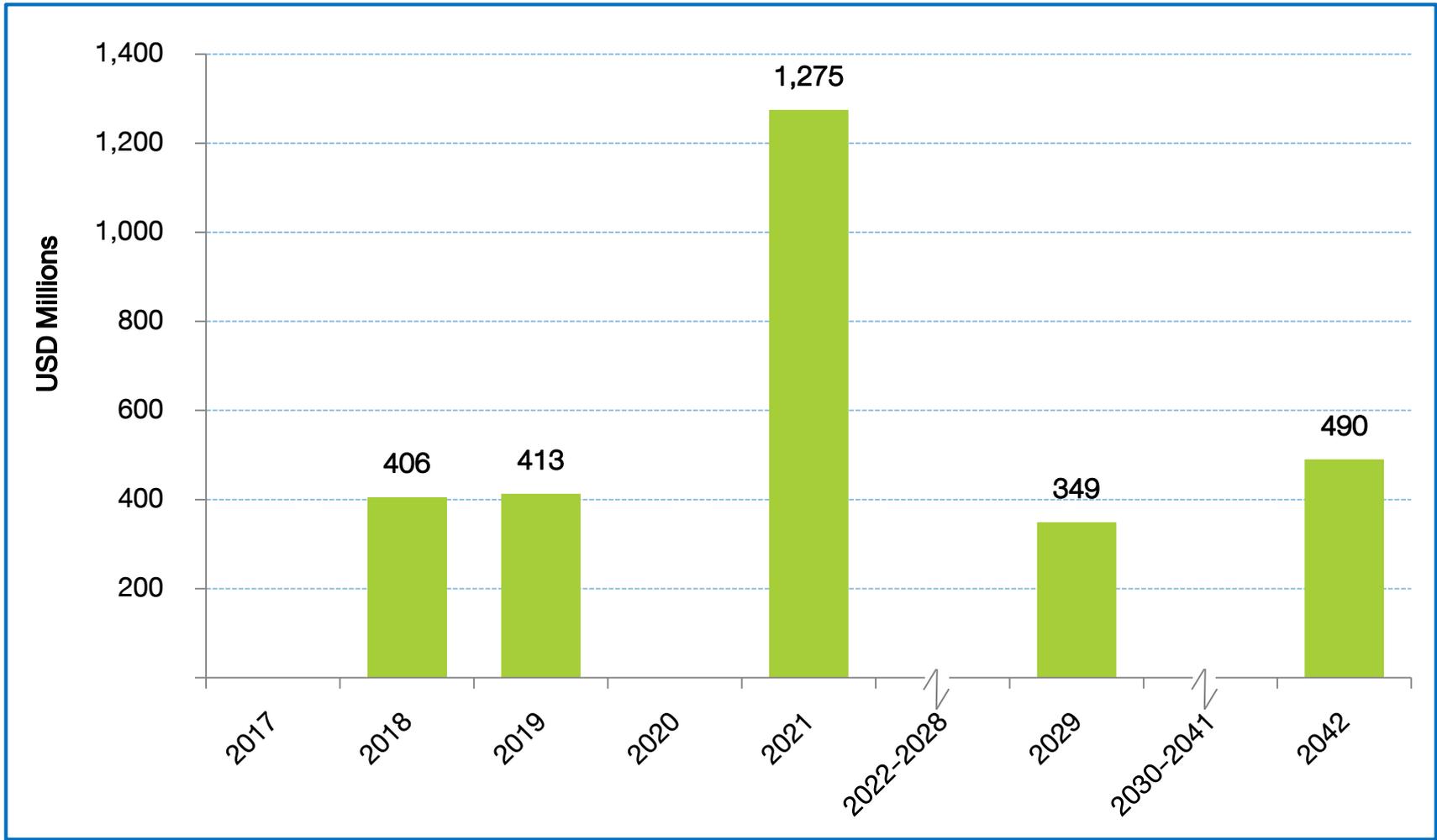
Unit : MMUSD

Statement of Income	Q2 17	Q3 17	% QoQ	Q3 16 *	% YoY	9M 17	9M 16 *	% YTD
<b>Total Revenues</b>	<b>1,032</b>	<b>1,134</b>	<b>10%</b>	<b>1,109</b>	<b>2%</b>	<b>3,252</b>	<b>3,281</b>	<b>(1%)</b>
Sales	975	1,064	9%	1,047	2%	3,079	3,152	(2%)
Others	57	70	23%	62	13%	173	129	34%
Sales Volume (BOED)	281,435	298,139	6%	311,386***	(4%)	294,539	320,600***	(8%)
Sales Price (USD/BOE)	38.08	38.78	2%	36.32	7%	38.29	36.00	6%
<b>Total Expenses</b>	<b>812</b>	<b>1,398</b>	<b>72%</b>	<b>953</b>	<b>47%</b>	<b>2,947</b>	<b>2,896</b>	<b>2%</b>
<b>Major Expenses:</b>								
Operating Expenses	153	162	6%	146	11%	457	415	10%
Exploration Expenses	19	9	(53%)	20	(55%)	29	61	(52%)
DD&A	381	413	8%	534	(23%)	1,214	1,570	(23%)
Impairment Loss on Assets	-	558	>100%	-	>100%	558	-	>100%
Income Tax Expense	67	57	(15%)	67	(15%)	116	152	(24%)
(Gain)/Loss on FX	(11)	(23)	(>100%)	(14)	(64%)	(37)	(27)	(37%)
<b>Net Income from Continuing Operations</b>	<b>220</b>	<b>(264)</b>	<b>(&gt;100%)</b>	<b>156</b>	<b>(&gt;100%)</b>	<b>305</b>	<b>385</b>	<b>(21%)</b>
<b>Profit (loss) from Discontinued Operations</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.27</b>	<b>(100%)</b>	<b>-</b>	<b>3</b>	<b>(100%)</b>
<b>Net Profit</b>	<b>220</b>	<b>(264)</b>	<b>(&gt;100%)</b>	<b>156</b>	<b>(&gt;100%)</b>	<b>305</b>	<b>388</b>	<b>(21%)</b>
Recurring Net Income	167	218	31%	75	>100%	596	345	73%
Non-Recurring **	53	(482)	(>100%)	81	(>100%)	(291)	43	(>100%)

Note: \* Represented

\*\* 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.

\*\*\* Sales volume includes discontinued operations

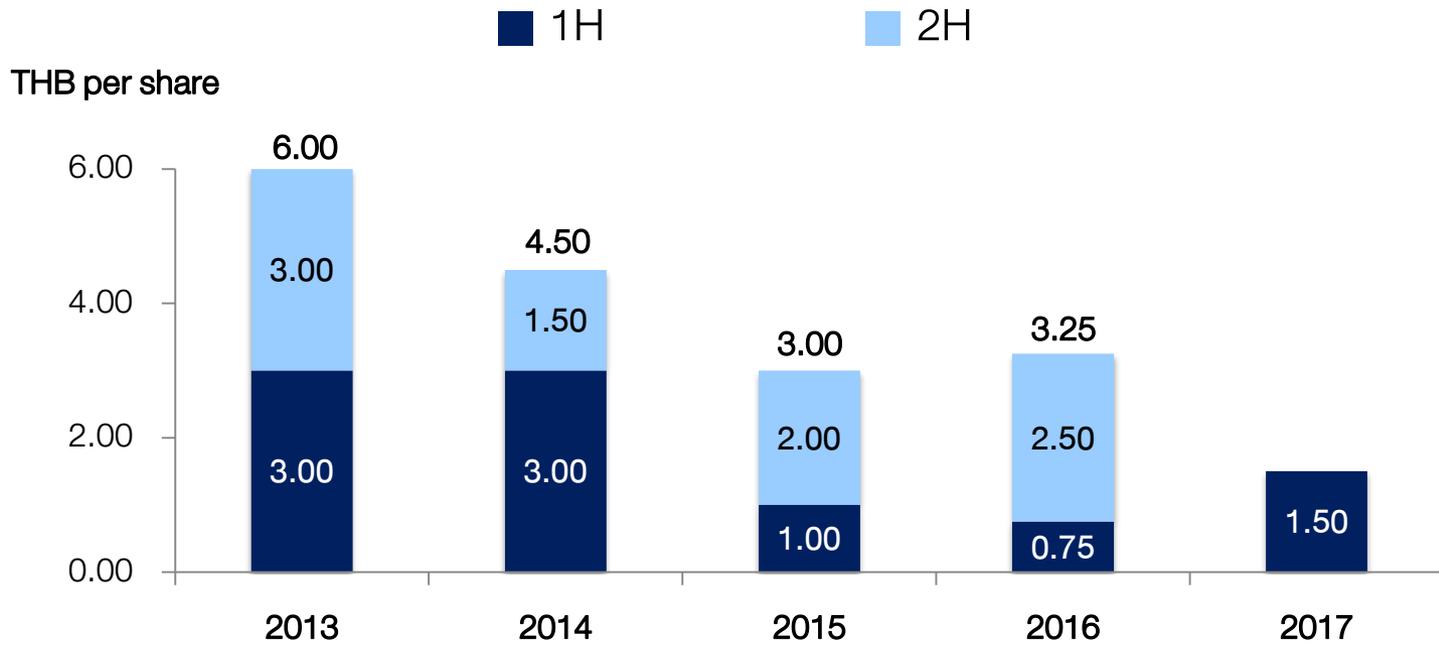


Note: Excludes Hybrid bonds

Unit: USD Millions or equivalent after cross currency swap



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



Payout Ratio (%)	2013	2014	2015	2016	2017
	40	82	N/A	98	31



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## 2017 DJSI Listed Company

PTTEP has been selected as a member of the 2017 Dow Jones Sustainability Indices (DJSI) in the DJSI World Oil and Gas Upstream & Integrated Industry for its fourth consecutive year.



## Proven business integrity

Outstanding Sustainability Report Award 2016  
*Thai Listed Companies Association*

Certified Member  
*Thailand's Private Sector Collective Action Coalition Against Corruption (CAC)*

CG Asia Recognition Awards  
*Corporate Governance Asia Magazine*



## FTSE4Good

## FTSE4Good Emerging Index 2017

PTTEP becomes a constituent of the FTSE4Good Emerging Index 2017 for a second consecutive year



## Exemplary social contributor

Platinum Award for SIOLA Project: Best Community Program  
*the 9<sup>th</sup> Annual Global CSR Summit 2017*

Bronze Stevie Award for SIOLA and Crab Hatchery Learning Center Project:  
*The Asia-Pacific Stevie Awards Program*

## Green driver to environment

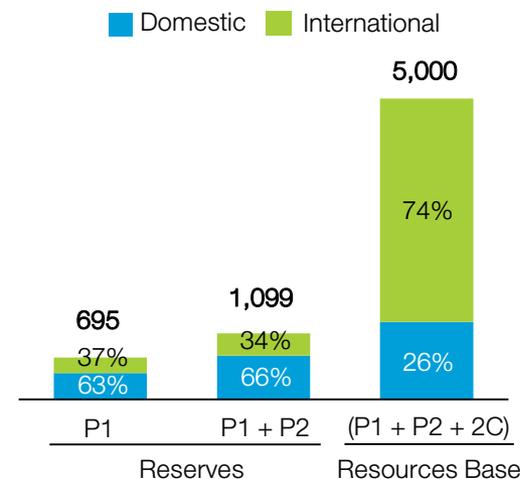
Asia's Best Environmental Responsibility Award  
*Corporate Governance Asia Magazine*

2017 LESS Award Letter of Recognition  
*Thailand Greenhouse Gas Management Organization*

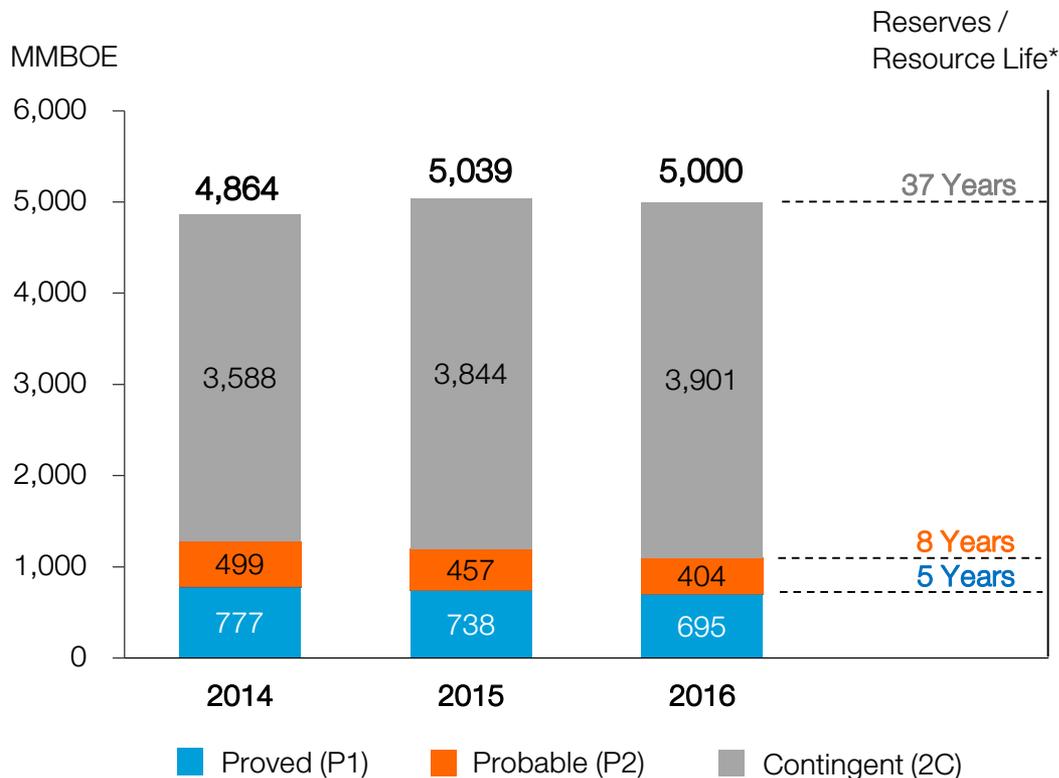
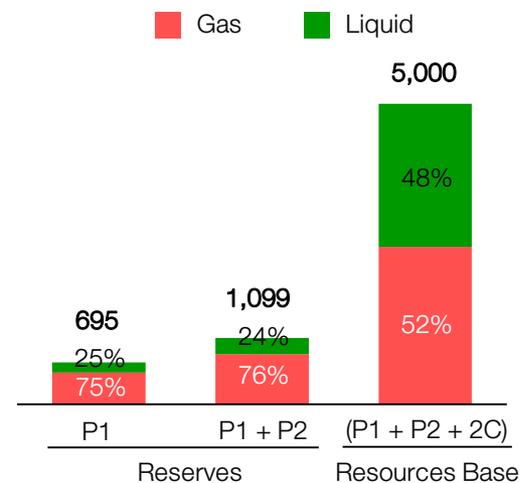
Thailand Occupational Safety and Health Awards  
*the Ministry of Labour*



### 2016 by Geography



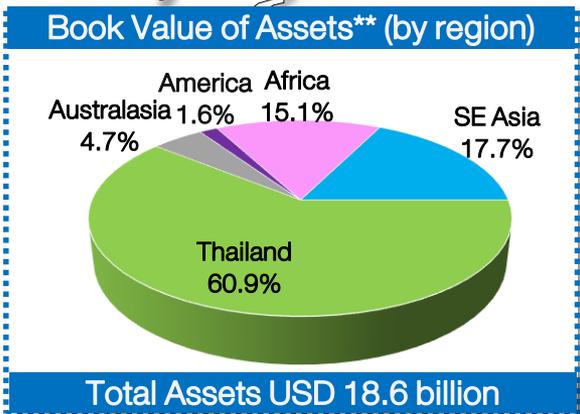
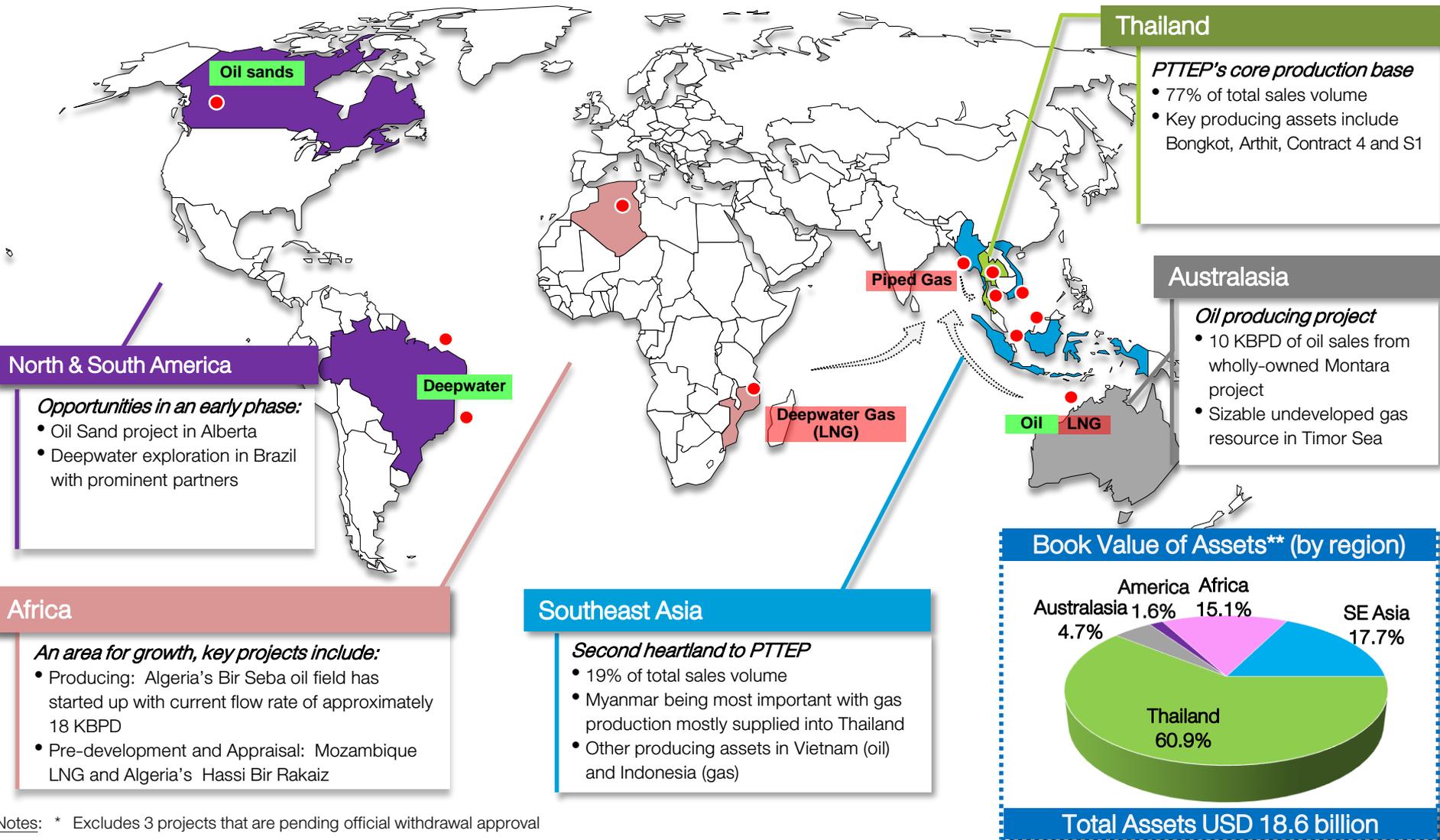
### 2016 by Product Type



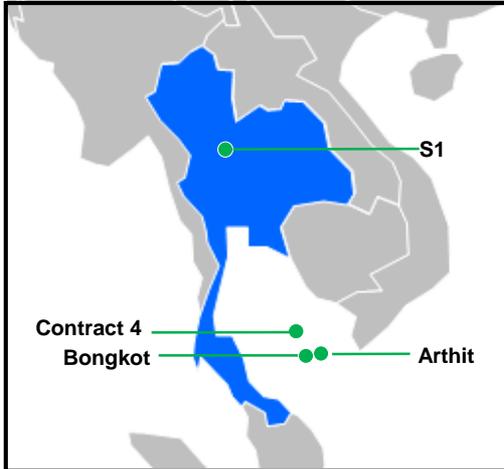
### 5-Year Average Proved Reserves Replacement Ratio (RRR)

Year	RRR
2014	0.45x
2015	0.50x
2016	0.57x

\* Based on total production of natural gas, condensate, and crude oil (including LPG) of 368 KBOED for the year ended December 31, 2016



Notes: \* Excludes 3 projects that are pending official withdrawal approval  
 \*\* Information dated as of 30 September 2017 (9M 2017)



● Production / Ramp-up Projects

### Bongkot (44.4445% interest)

- Bongkot's natural gas sales volume of 833 MMSCFD in 9M 2017
- Average condensate sales volume was 25 KBPD in 9M 2017

### S1 (100% interest)

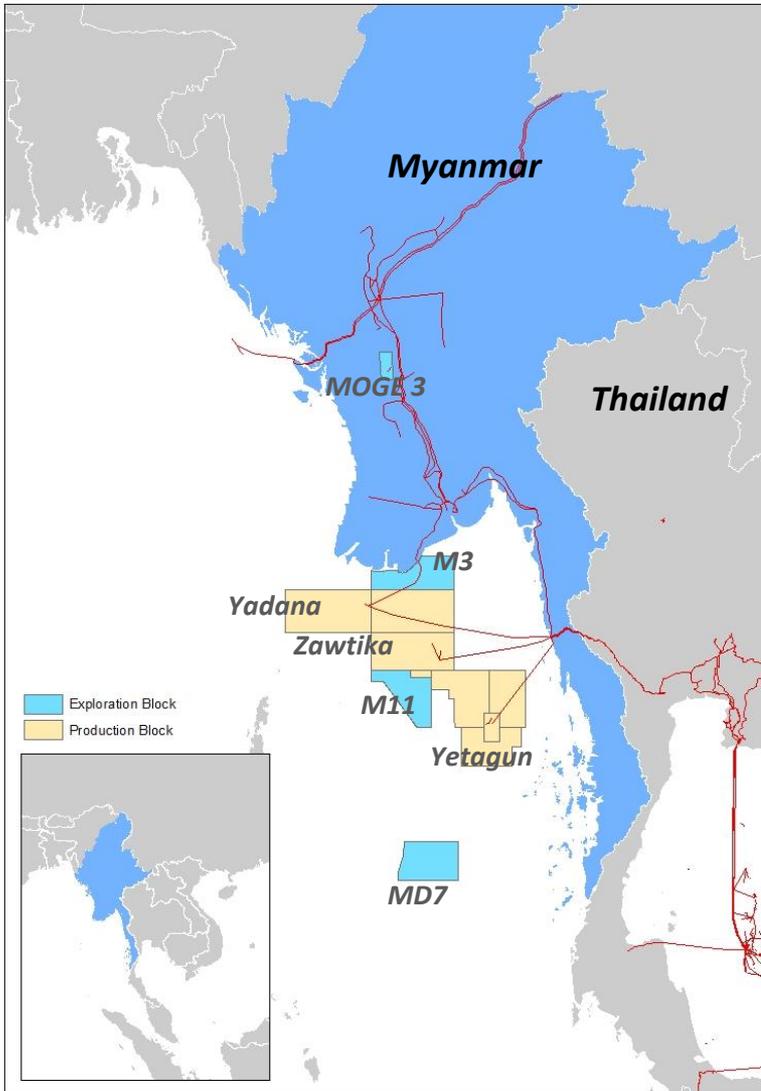
- S1 is the largest onshore crude oil production field in Thailand
- Average crude oil sales volume was 26 KBPD in 9M 2017

### Arthit (80% interest)

- Average sales volume in 9M 2017 was 215 MMSCFD of natural gas and 9.8 KBPD of condensates

### Contract 4 (60% interest)

- Acquired from Hess Corporation in 2014.
- The Contract 4 project had an average sales rate of 330 MMSCFD for natural gas and 15 KBPD for condensate in 9M 2017



- Participating in three producing gas fields which supply gas to both Thailand and Myanmar: Yadana, Yetagun, Zawtika
- Operate Zawtika project, brought online in March 2014 with current gas supply of 305 MMSCFD in 9M 2017.
- Significant exploration acreage both onshore and offshore in the Moattama Basin

Project Status		
<p><b>Producing</b></p> <ul style="list-style-type: none"> <li>• Yadana (25.5% WI)</li> <li>• Yetagun (19.3% WI)</li> <li>• Zawtika (80% WI)</li> </ul>	<p><b>Appraisal</b></p> <ul style="list-style-type: none"> <li>• M3 (80% WI)</li> </ul>	<p><b>Exploration</b></p> <ul style="list-style-type: none"> <li>• MOGE 3 (75% WI)</li> <li>• M11 (100% WI)</li> <li>• MD-7 (50% WI)</li> </ul>

Note: WI – working interest



**Vietnam 16-1**



● Production / Ramp-up Projects

**Natuna Sea A**



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

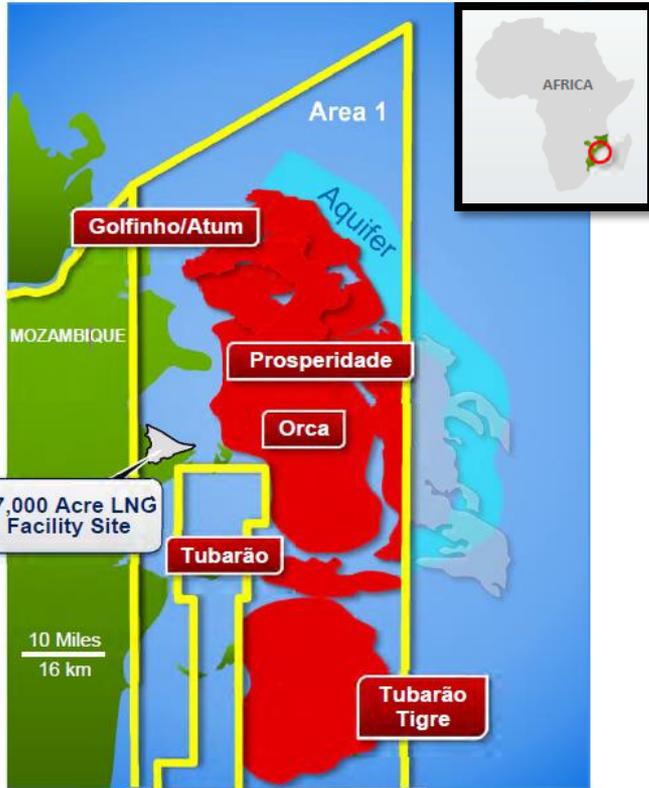
- Average crude oil sales volume of 21 KBPD in 9M 2017
- Commissioned production platform in the H5 area to support current production level

### Natuna Sea A (11.5% interest)

- Average sales volume of natural gas was 221 MMSCFD in 9M 2017



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



### Location and Cost Advantage

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

## Key Milestones to Final Investment Decision

### Technical

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

### Commercial

- ✓ Secured more than 8 MMTPA of non-binding HOAs

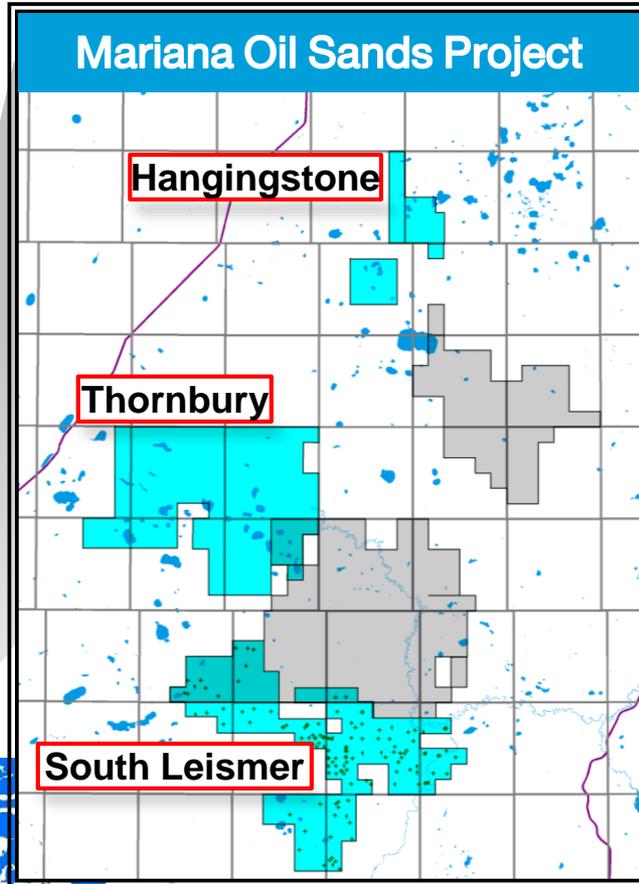
### Regulatory

- ✓ Received approval on marine concession
- ✓ Resettlement plan to begin in Q4 2017

### Financing

- ✓ On-going negotiation for project financing

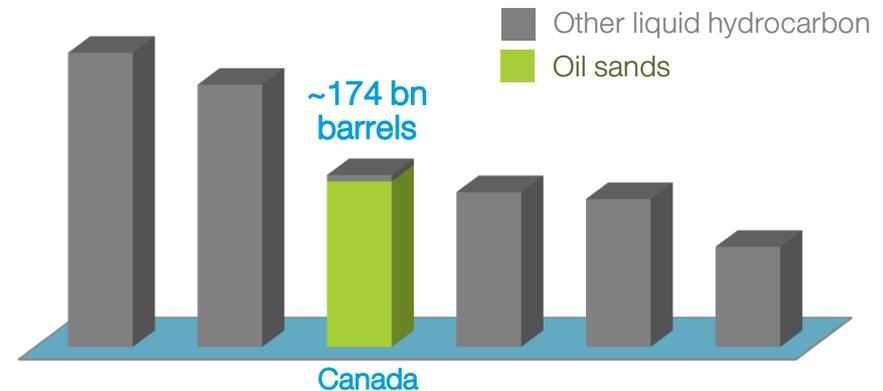
**Onwards to initial phase of 12 MMTPA**



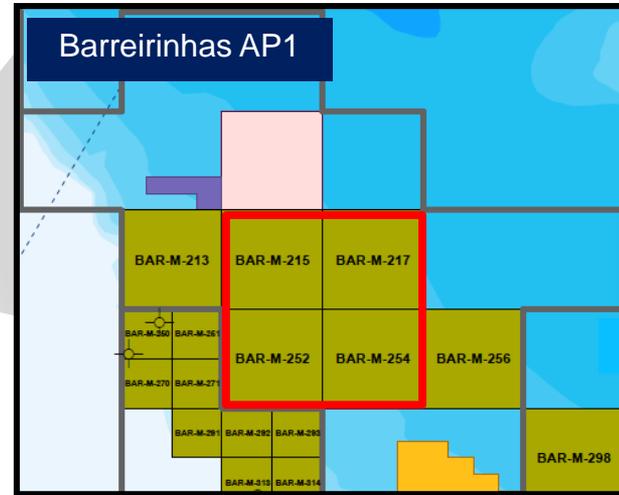
### Project Overview

- Operates 100% interest of the Thornbury, Hangingsstone 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

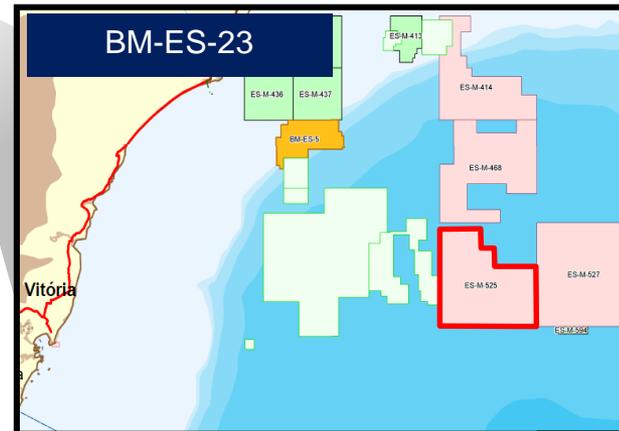
Approximately 96% of the reserves in Canada, the world’s 3<sup>rd</sup> largest oil reserves, is oil sands



Source: Company data, BP Statistical Review of World Energy 2014



- 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



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

Source : The National Agency of Petroleum, Natural Gas and Biofuels, Brazil (the ANP)



Project	Status*	PTTEP's Share	Partners (as of Q3 2017)	9M 2017 Average Sales Volume **		2017 Key Activities		
				Gas	Oil and Other			
<b>Production Phase</b>								
<b>Thailand and JDA</b>								
1	Arthit	OP	80%	Chevron MOECO	16% 4%	215 MMSCFD	Condensate: 9.8 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>Subsurface study</li> </ul>
3	B8/32 & 9A		25%	Chevron MOECO KrisEnergy PSTL	51.66% 16.71% 4.63% 2%	97 MMSCFD	Crude: 27 k BPD	<ul style="list-style-type: none"> <li>Drill development wells</li> <li>Perform waterflood activities</li> </ul>
4	Bongkot	OP	44.4445%	TOTAL Shell	33.3333% 22.2222%	833 MMSCFD	Condensate: 25 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> </ul>
5	Contract 3 (Formerly Unocal III)		5%	Chevron MOECO	71.25% 23.75%	548 MMSCFD	Crude: 21 k BPD Condensate: 20 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> </ul>
6	Contract 4 (Formerly Pailin)		60%	Chevron MOECO	35% 5%	330 MMSCFD	Condensate: 15 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>Review development plan of Ubon field</li> </ul>
7	E5		20%	ExxonMobil	80%	9.1 MMSCFD	-	
8	G4/43		21.375%	Chevron MOECO PSTL	51% 21.25% 6.375%	2.3 MMSCFD	Crude: 6.2 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%	6.0 MMSCFD	Crude: 1.4 k BPD	
10	L53/43 & L54/43	OP	100%			-	Crude: 664 BPD	<ul style="list-style-type: none"> <li>Drill exploration / appraisal / development wells</li> </ul>
11	PTTEP1	OP	100%			-	Crude: 278 BPD	<ul style="list-style-type: none"> <li>Drill development wells</li> <li>Perform waterflood activities</li> </ul>
12	S1	OP	100%			21 MMSCFD	Crude: 26 k BPD	<ul style="list-style-type: none"> <li>Drill exploration / development wells</li> <li>Enhance oil recovery program includes waterflooding and artificial lift</li> </ul>
13	Sinphuhorm	OP	55%	Apico ExxonMobil	35% 10%	81 MMSCFD	Condensate: 264 BPD	<ul style="list-style-type: none"> <li>Drill development wells</li> </ul>
14	MTJDA	JOC	50%	Petronas-Carigali	50%	235 MMSCFD	Condensate: 6.0 k BPD	<ul style="list-style-type: none"> <li>Drill development wells</li> <li>Install wellhead platforms</li> </ul>
15	L22/43	OP	100%			-	Crude: 164 BPD	<ul style="list-style-type: none"> <li>Drill development wells</li> </ul>

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

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

\*\*\* DCQ = Daily Contractual Quantity



	Project	Status*	PTTEP's Share	Partners (as of Q3 2017)	9M 2017 Average Sales Volume **		2017 Key Activities
					Gas	Oil and Other	
<b>Production Phase</b>							
<b>Overseas</b>							
16	Vietnam 9-2	JOC	25%	PetroVietnam 50% SOCO 25%	12 MMSCFD	Crude: 4.1 k BPD	<ul style="list-style-type: none"> <li>Maintain production operation</li> <li>Perform reservoir management</li> </ul>
17	Yadana		25.5%	TOTAL 31.24% Chevron 28.26% MOGE 15%	754 MMSCFD	-	<ul style="list-style-type: none"> <li>Ensure gas deliverability level at DCQ***</li> </ul>
18	Yetagun		19.3178%	Petronas-Carigali 30.00140% MOGE 20.4541% Nippon Oil 19.3178% PC Myanmar (Hong Kong) 10.90878%	219 MMSCFD	Condensate: 5.7 k BPD	<ul style="list-style-type: none"> <li>Drill appraisal / development wells</li> <li>Perform reservoir Management</li> </ul>
19	Vietnam 16-1	JOC	28.5%	PetroVietnam 41% SOCO 28.5% OPECO 2%	-	Crude: 21 k BPD	<ul style="list-style-type: none"> <li>Drill development wells</li> <li>Maintain production operation</li> </ul>
20	PTTEP Australasia (PTTEP AA)	OP	90%-100% (varied by permits)		-	Crude: 10 k BPD	<ul style="list-style-type: none"> <li>Drill development well in Montara</li> <li>Maintain production operation</li> <li>Acquire 3D seismic reprocessing</li> </ul>
21	Natuna Sea A		11.5%	Premier Oil 28.67% KUFPEC 33.33% Petronas 15% Pertamina 11.5%	221 MMSCFD	Crude: 1.3 k BPD	<ul style="list-style-type: none"> <li>Maintain production operation</li> </ul>
22	Zawtika (M9 & a part of M11)	OP	80%	Myanma Oil and Gas Enterprise (MOGE) 20%	305 MMSCFD	-	<ul style="list-style-type: none"> <li>Maintain production rate</li> <li>Drill development wells</li> <li>Install wellhead platforms</li> </ul>
23	Algeria 433a & 416b (Bir Seba)	JOC	35%	PetroVietnam 40% Sonatrach 25%	-	Crude: 2.9 k BPD (net entitlement)	<ul style="list-style-type: none"> <li>Maintain production operation</li> <li>Review field development plan for possible capacity expansion</li> </ul>

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

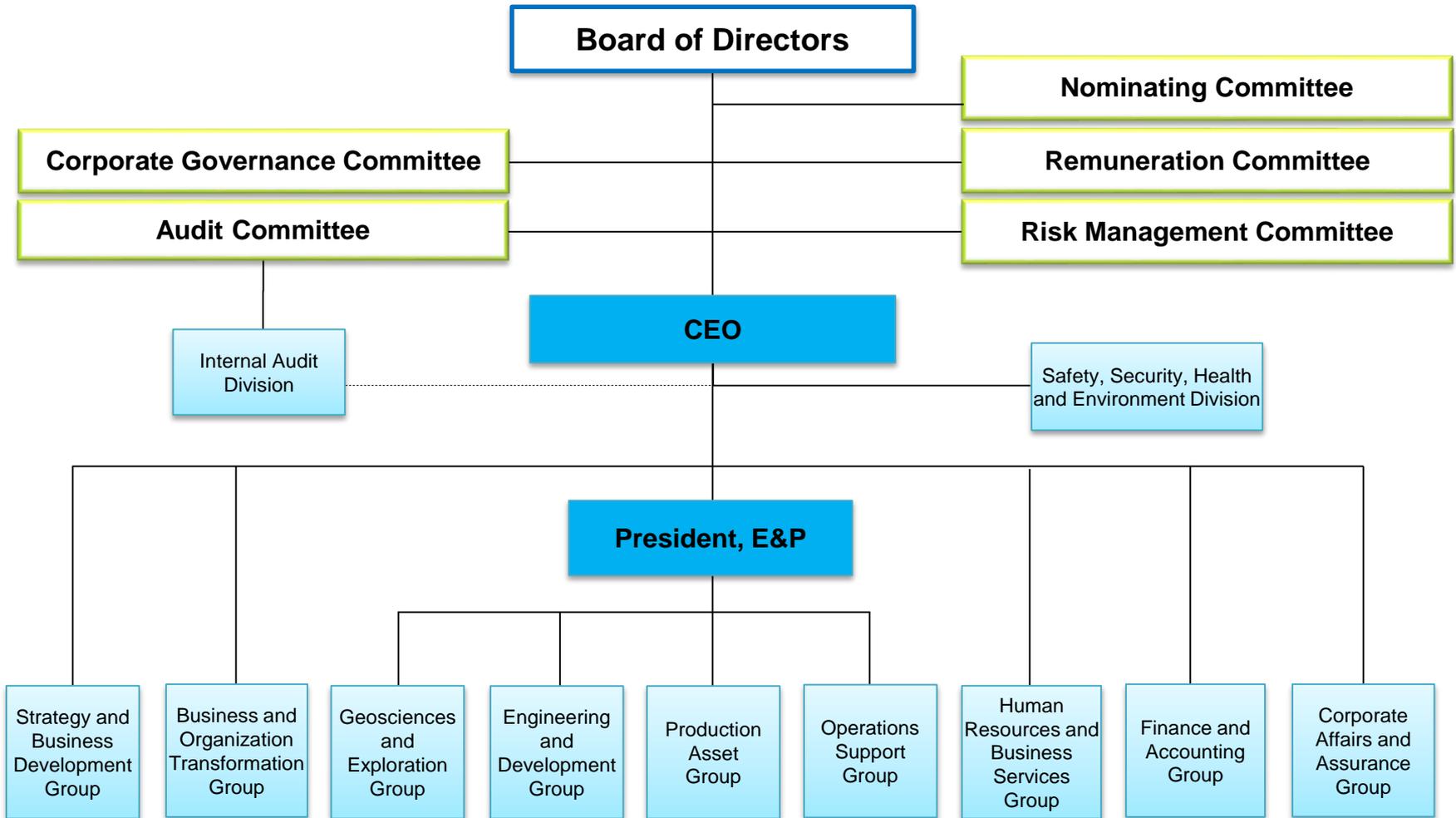
\*\*\* DCQ = Daily Contractual Quantity



	Project	Status*	PTTEP's Share	Partners (as of Q3 2017)	2017 Key Activities
<b>Exploration 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>Assess resource potential and commercial feasibility</li> </ul>
26	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>Preparatory work for Final Investment Decision (FID) including LNG marketing and finalization of remaining commercial contracts</li> </ul>
27	Algeria Hassi Bir Rekaiz	OP	24.5%	CNOOC 24.5% Sonatrach 51%	<ul style="list-style-type: none"> <li>Conduct pre-development study and prepare project development plan</li> </ul>
28	Myanmar M11	OP	100%		<ul style="list-style-type: none"> <li>Acquire 3D seismic</li> </ul>
29	Vietnam B & 48/95		8.5%	PVN 65.88% MOECO 25.62%	<ul style="list-style-type: none"> <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>Negotiate a GSA with the Vietnamese government</li> </ul>
31	Myanmar MD-7	OP	50%	TOTAL 50%	<ul style="list-style-type: none"> <li>Assess resource potential</li> </ul>
32	Mariana Oil Sands	OP	100%		<ul style="list-style-type: none"> <li>Assess development approach and cost reduction opportunity</li> </ul>
33	Barreirinhas AP1		25%	Shell Brasil 65% Mitsui E&P Brasil 10%	<ul style="list-style-type: none"> <li>Acquire 3D seismic</li> </ul>
34	Myanmar MOGE 3	OP	75%	Palang Sophon 10% MOECO 10% WinPreciousResources 5%	<ul style="list-style-type: none"> <li>Acquire 2D and 3D seismic</li> </ul>
35	Brazil BM-ES-23		20%	Petrobras 65% INPEX 15%	<ul style="list-style-type: none"> <li>Assess petroleum potential</li> </ul>
36	Sarawak SK410B	OP	42.5%	KUFPEC 42.5% PSCB 15%	<ul style="list-style-type: none"> <li>Acquire 3D seismic</li> </ul>

Remarks: 36 projects exclude 2 projects that are pending official withdrawal approval

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Ratio	Formula
Lifting Cost (\$/BOE)	$(\text{Operating Exp.} - \text{Transportation Cost} - \text{Stock Variation} - \text{Other expense not related to lifting}) / \text{Production Volume}$
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	$(\text{Trailing-12-month net income} + \text{Trailing-12-month Interest Expenses \& Amortization Bond Issuing Cost}) / (\text{Average shareholders' equity and average total debt between the beginning and the end of the 12-month period})$
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	$\text{Trailing-12-month EBITDA} / \text{Trailing-12-month Interest Expenses \& Amortization of Bond Issuing Cost}$