

PTT Exploration and Production Public Company Limited

dbAccess Thailand Energy Day

25 March 2016



PTTEP

MEMBER OF

**Dow Jones
Sustainability Indices**

In Collaboration with RobecoSAM





Company & Financial Highlights

Strategy & Outlook



E&P Company of PTT Group



Government of
Thailand

66.0%²



Thailand's national energy company

65.3%¹



Plays a pivotal role in Thailand's oil and gas production³

Thailand's Oil and Gas
Demand

Crude Oil &
Condensate

~ 1.1m BOE/D

Imports

~ 79%

Domestic ~ 21%

Natural Gas

~ 0.9m BOE/D

Imports ~ 25%

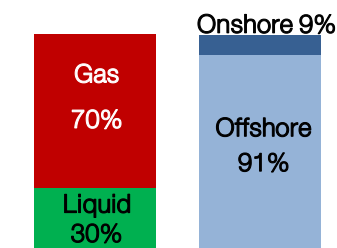
Domestic

~ 75%

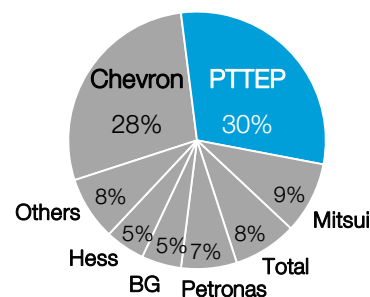
Domestic Production
(2015)

Midstream

% by Petroleum Type and Area



% Production by Company



Gas: operated by PTT

Transmission
Pipelines
Gas Separation
Plants

Oil: PTT participates
through subsidiaries

Refineries

Downstream

Petrochemicals
Oil and gas
marketing

Notes:

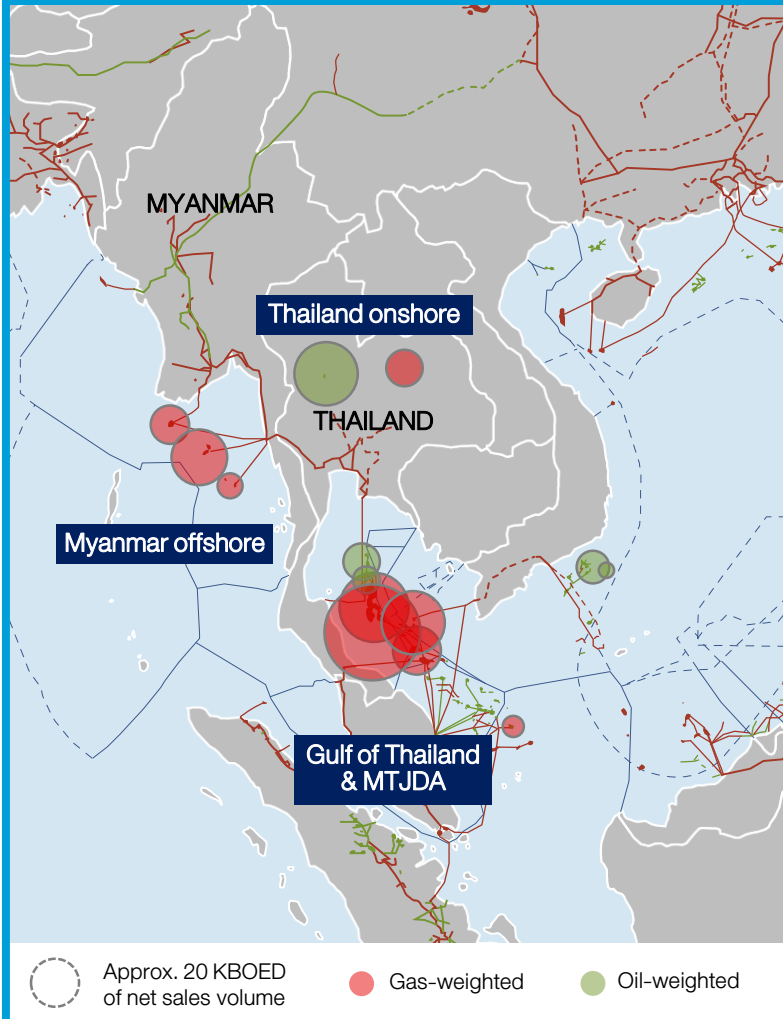
1. Ownership as of 12 February 2016

2. 51.1% is directly held by the Government of Thailand (Ministry of Finance), with the remaining 14.9% held by the state-controlled Vayupak Fund I

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



PTTEP's oil and gas operations in SEA...



...is uniquely positioned

- The largest oil and gas producers in Thailand and Myanmar
- Synergy with PTT's gas value chain through its dominant position in the regional gas market
- Opportunities to expand capability into regional investments

...with competitive operating performances in SEA

93 % of PTTEP's total sales volume

+99 % Reliability of plants and field facilities*

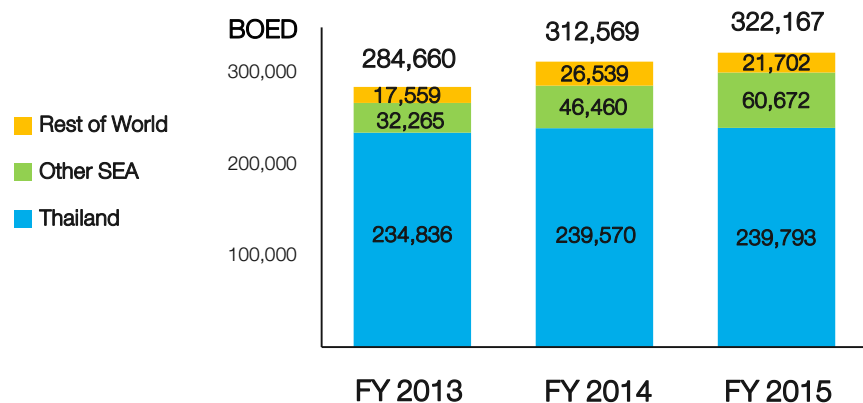
86 % of PTTEP's sales volume sold to PTT

15 ^{USD/BOE} Average regional cash cost in 2015

* of PTTEP-operated projects in Gulf of Thailand, exclude planned shutdown time

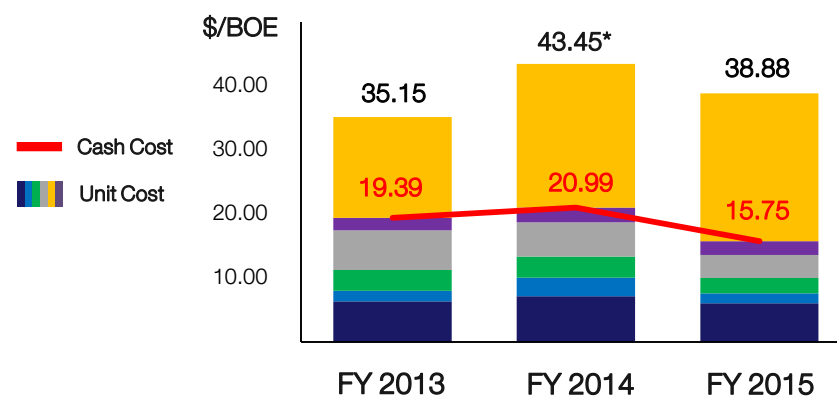


Sales Volume and Price



Gas (\$/MMBTU)	7.93	8.06	7.20
Liquid (\$/BBL)	99.97	94.82	50.05
Weighted Avg. (\$/BOE)	65.73	63.71	45.29
Avg. Dubai (\$/BBL)	105.54	96.60	50.91
Avg. HSFO (\$/BBL) (High Sulphur Fuel Oil)	97.52	86.74	44.86
Volume Mix (Gas:Liquid)	65 : 35	67 : 33	70 : 30
Revenue Mix (Gas:Liquid)	46 : 54	51 : 49	66 : 34

Unit Cost



DD&A	15.76	22.46	23.13
Finance Cost	1.93	2.27	2.14
Royalties	6.18	5.34	3.62
G&A	3.26	3.30	2.39
Exploration Expenses	1.66	2.92	1.56
Operating Expenses**	6.36	7.16	6.04
Lifting Cost	4.88	5.26	4.62
Drilling Success Ratio***	38 : 55	25 : 43	31 : 47

Remark: Sales Volume & Royalties: after reclassification of PSC royalty

* If exclude extra expense from Montara's Development well (H5): For 2014, Operating Exp: 6.73 \$/BOE / Unit cost: 43.02 \$/BOE

** Exclude diluent cost for blending bitumen in KKD Oil Sands project

*** Successful wells : Total wells (includes Exploration and Appraisal wells)



Demonstrate financial strength in 2015 ...

2.9 billion USD Operating cash flow

0.4 billion USD Net cash flow after interest and dividend

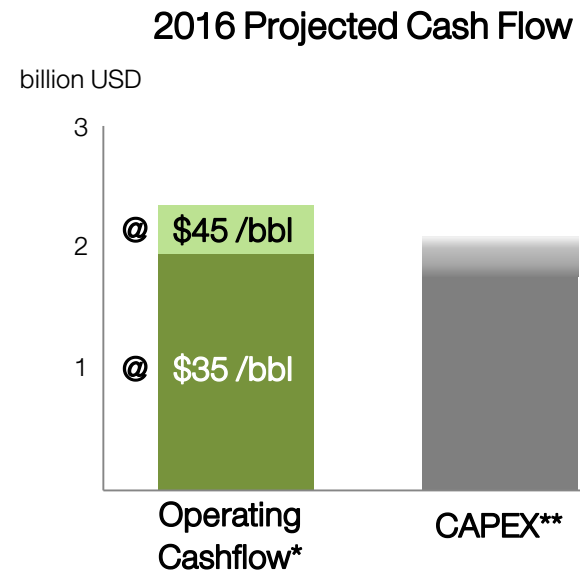
3.3 billion USD Cash on hand

0.27 x Total debt/equity ratio

3 Thai Baht per share Full-year dividend

...with expected strong liquidity in 2016

- Solid cash flow from operations
- No debt maturity in 2016/17



* assumes various operational assumptions and modelled on varying Dubai prices

** ranges from 1.9-2.1 billion USD based on the announced 2016 CAPEX and subsequent reduction target of 10%



Company & Financial Highlights

Strategy & Outlook



2016

2016 and beyond

RESET to Survive in the Low Oil Price Environment



- Focus on cost reduction and efficiency improvement
- Preserve cash and liquidity through the downturn

REFOCUS to Capitalize on the Upturn



- Assess and prioritize options for new investments and portfolio rationalization
- Continue to improve productivity to maximize incremental value



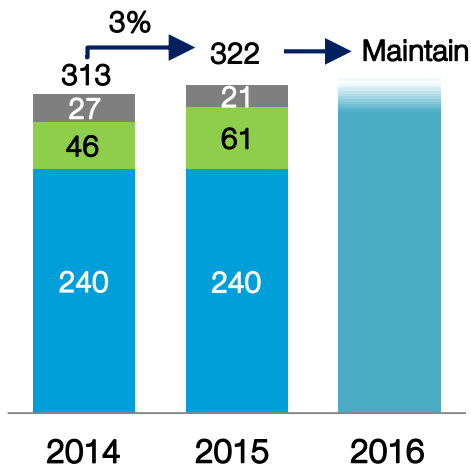
2016

2016 and beyond

Maintain Sales Volume

Unit : KBOED

SEA
Thailand
RoW

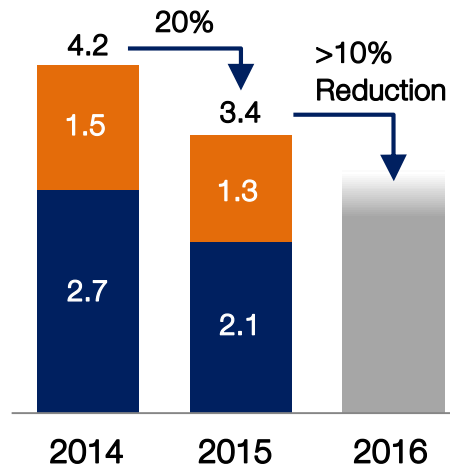


- ▶ Utmost compliance to safety
- ▶ Deliver domestic gas at DCQ
- ▶ Sustain field performance

Lower Expenditures

Unit : bn USD

CAPEX
OPEX

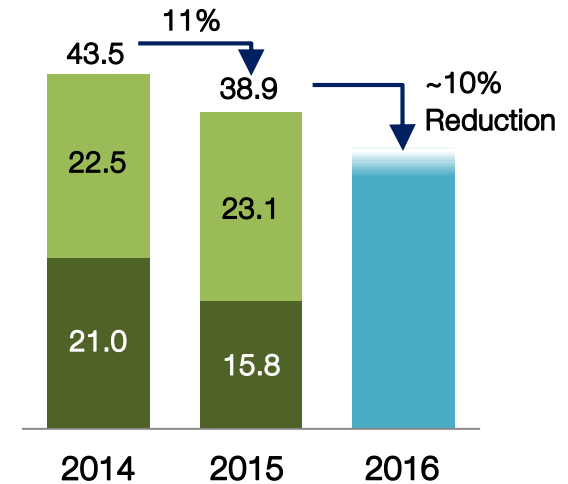


- ▶ Efficiency improvement and contract renegotiation
- ▶ Capital allocation prioritized for high quality assets

Bring Down Unit Cost

Unit : USD/BOE

Cash
Non-cash



- ▶ Further process streamline
- ▶ Disciplined G&A policies

Preserve liquidity and financial flexibility in near-term

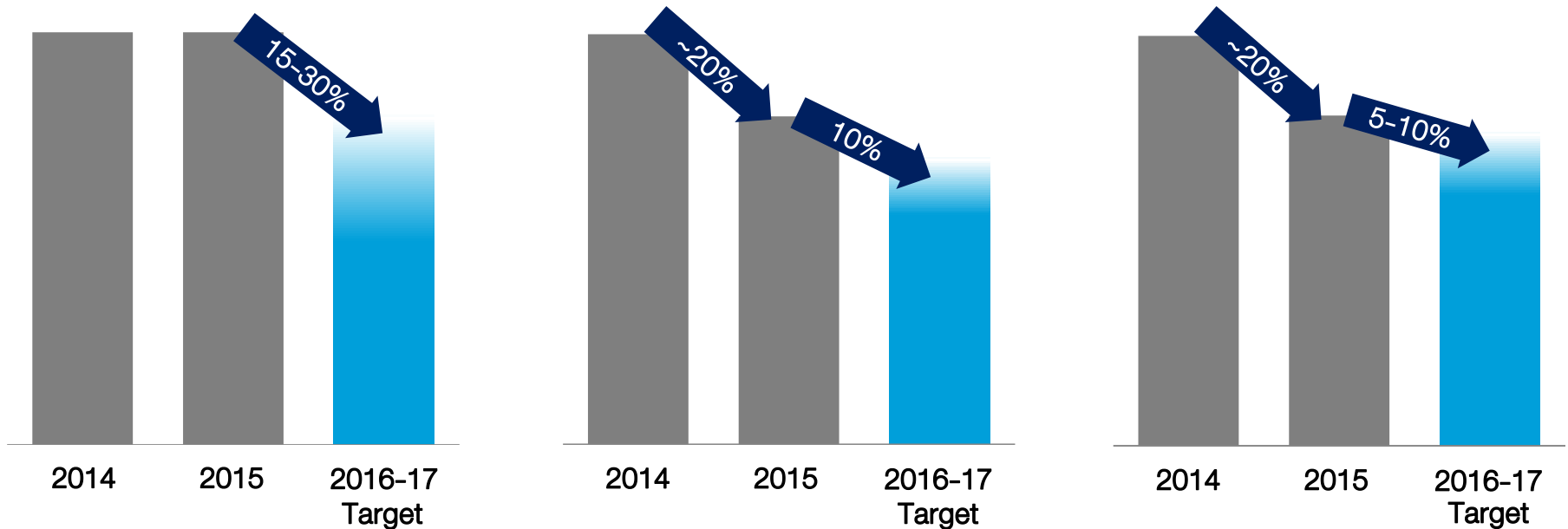


Cost Improvements Across Operations

Wellhead Platform Cost*

Average Cost Per Well**

OPEX and G&A Cost Per BOE



* Primarily applicable to PTTEP-operated projects in the Gulf of Thailand

** Primarily applicable to development wells in PTTEP-operated projects in Southeast Asia

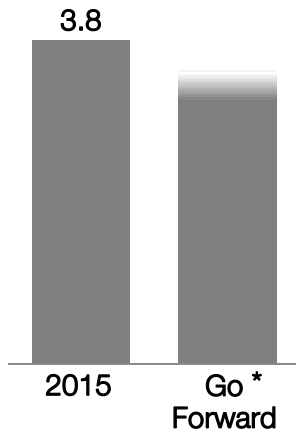


2016

2016 and beyond

Convert 2C resources...

Unit : bn BOE



...to P1+P2 reserves

Unit : bn BOE



Advancing with medium-term value contributors in portfolio...

Development Focus

Plan in place or revisited for further cost optimization

Commercial
Cost

Mozambique Rov. Offshore Area 1

Contract 4 (Ubon)
Algeria HBR Myanmar M3

Deferred for study / review

Cash/Maple
Mariana Oil Sands

...as well as through portfolio management opportunities



- Producing / near-producing assets primarily in SE Asia
- Synergic opportunities with PTT on LNG value chain
- Consideration of portfolio rationalization

* Go forward reserves and resources are illustrative and does not reflect the anticipated magnitude of conversion for any particular project



Uniquely positioned E&P company

- ✓ +90% of sales volume based in growing SE Asia oil and gas market
- ✓ Stable revenues from PTT for +80% of sales volume
- ✓ Strong ties with PTT / Thailand through direct / indirect ownership

Competitive operating performance

- ✓ Low cost operations in SE Asia contributory to ~70% EBITDA margin
- ✓ Demonstrated cost discipline with ~20% reduction in OPEX and G&A

Financially strong and flexible

- ✓ Well-positioned in downturn with ~3.3 bn USD liquidity available and a low-debt capital structure of 0.27x D/E ratio as of 2015
- ✓ A dividend-paying company for over 15 years

Ample growth opportunities

- ✓ Sufficient funding capacity available to capitalize on market upturn through organic and inorganic investments
- ✓ LNG value chain opportunities to support growing Thailand market





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



<http://www.pttep.com>



IR@pttep.com



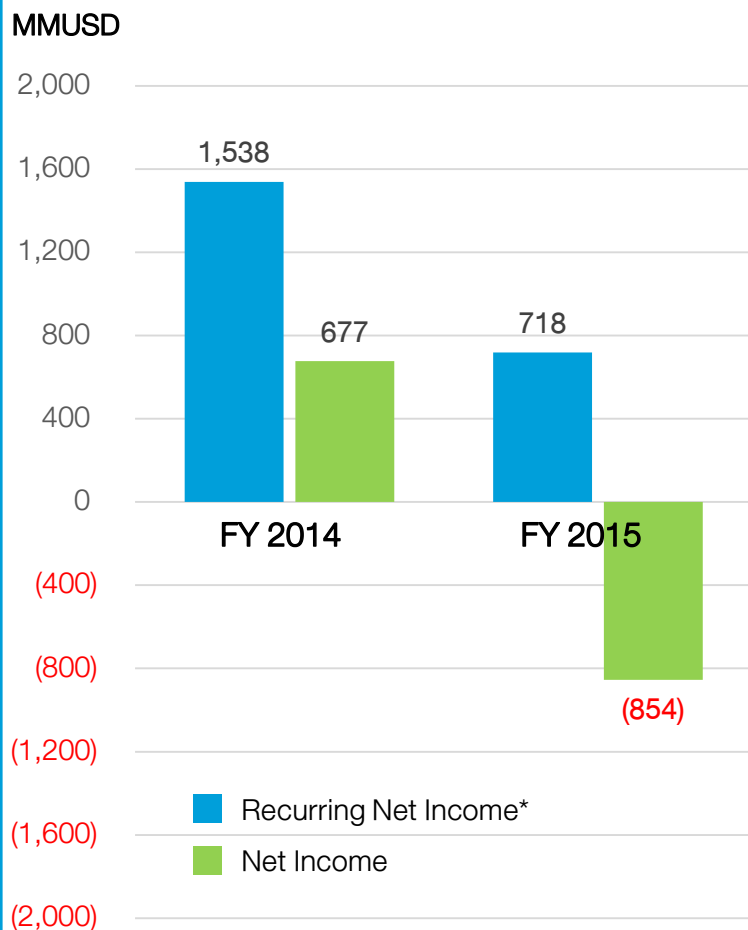
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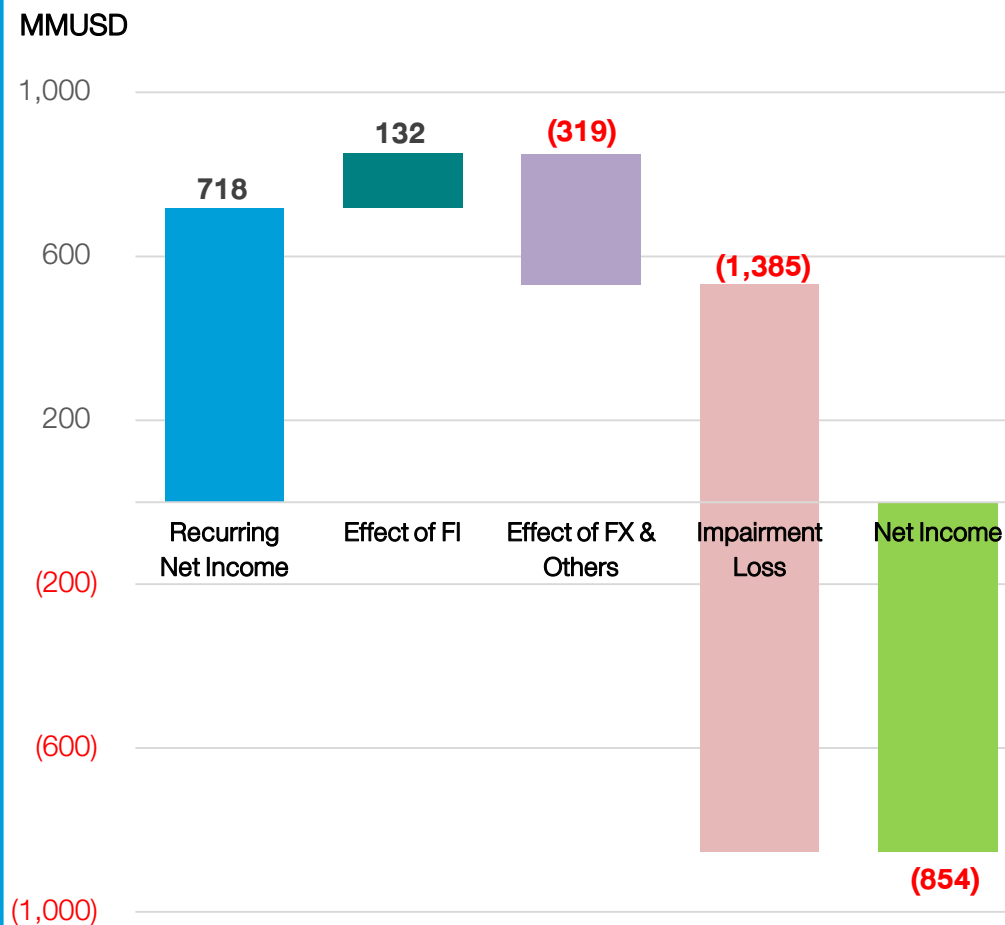
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Net Income Comparison



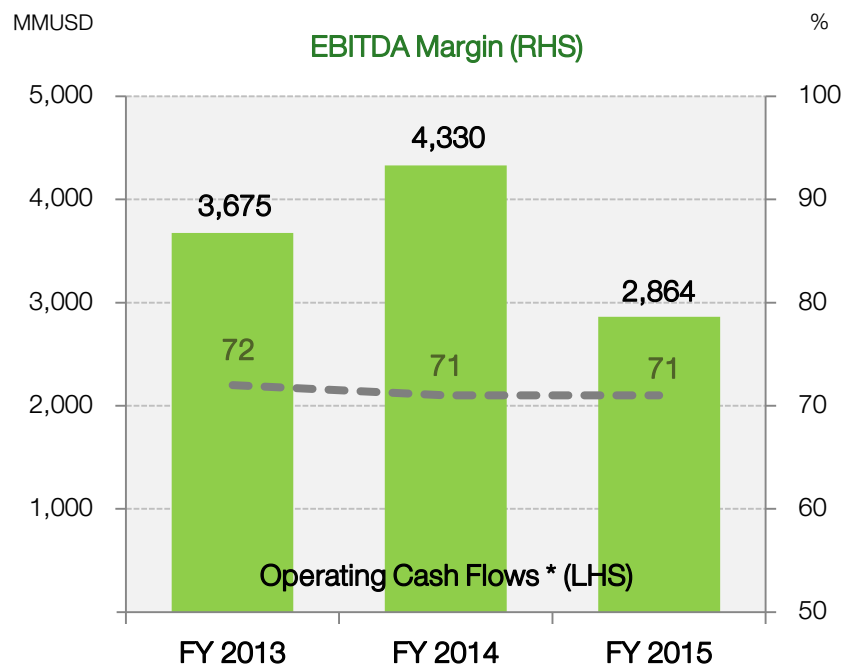
Net Income FY 2015



Remark: * 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.

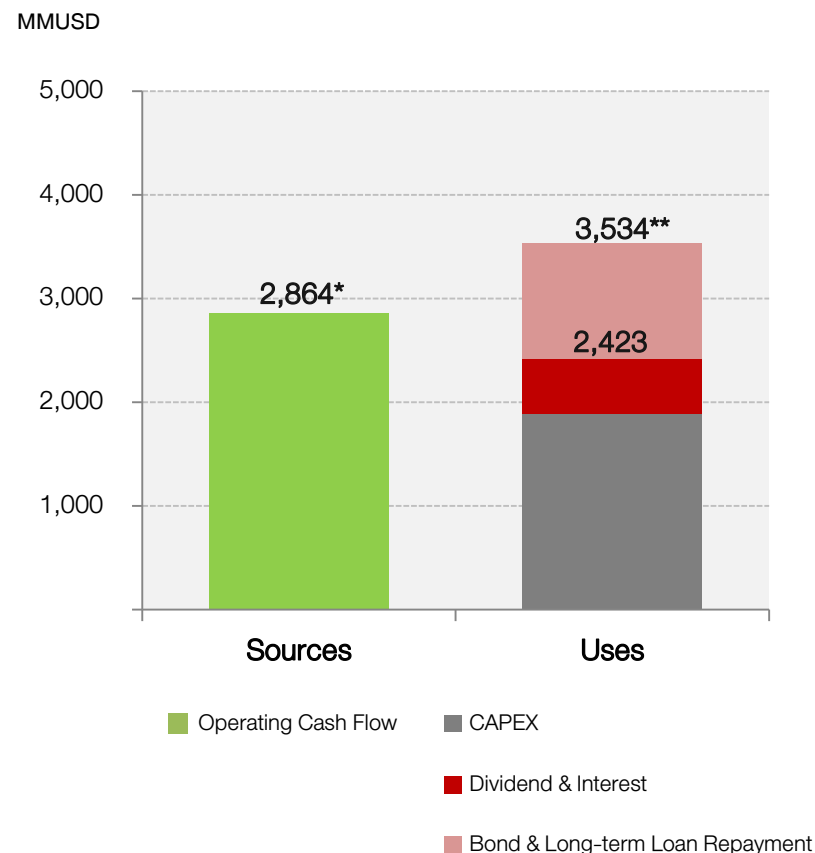


Cash Flow Performance



Net Income	1,847	677	(854)
Recurring Net Income***	2,114	1,538	718

Source & Use of Funds in FY 2015

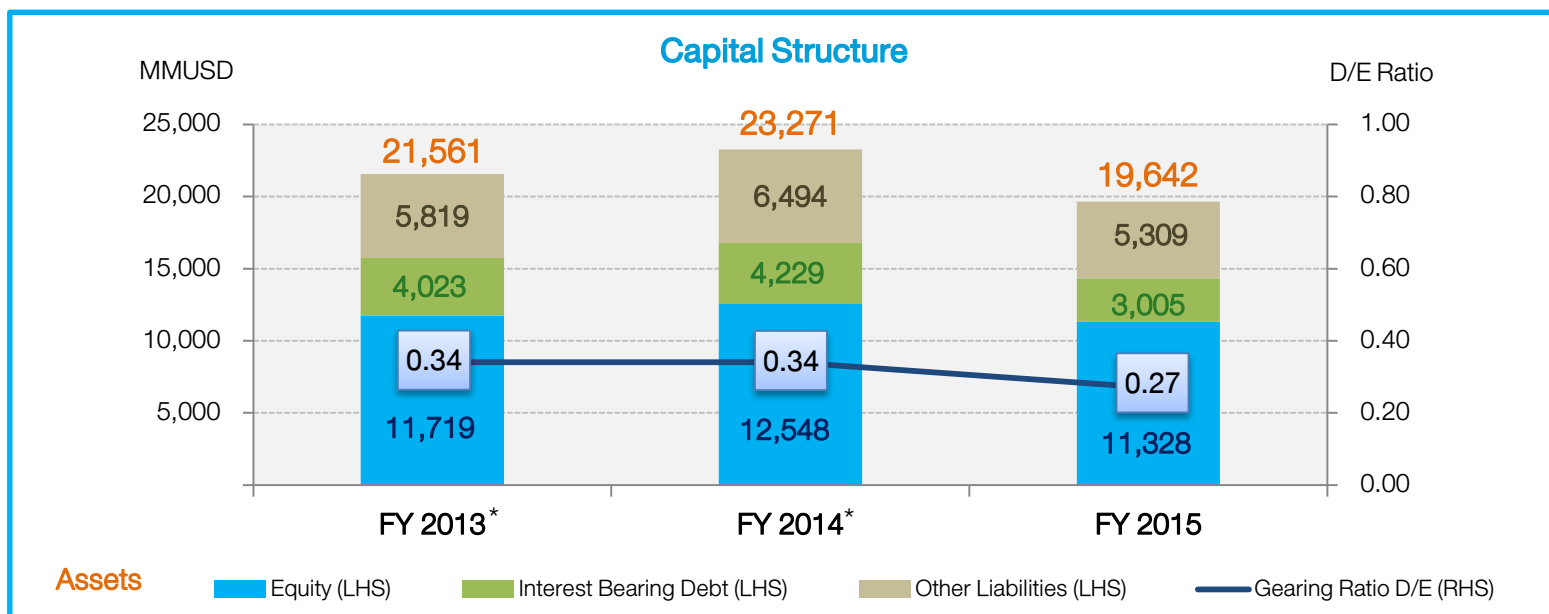


Remark: Sales Volume and sales revenue: after reclassification of PSC royalty

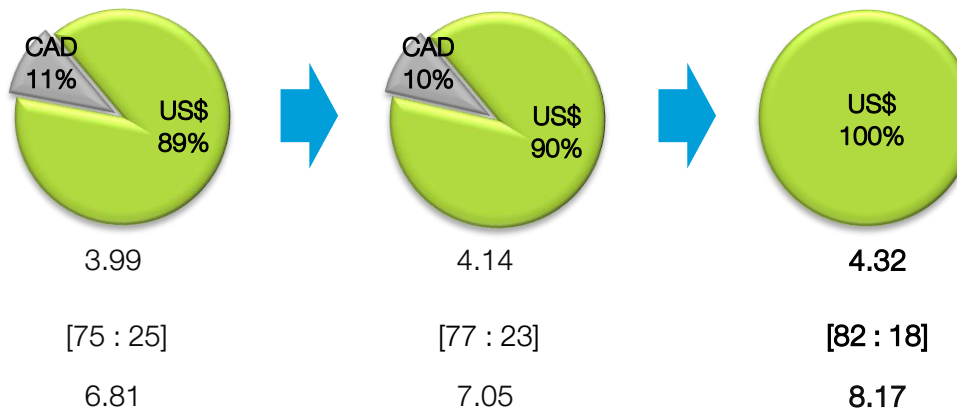
* Net of adjustment for the effect of exchange rate changes on cash and cash equivalents

** Excludes cash flows for investing in short-term investments (Fixed deposit > 3 months) of 782 MMUSD

*** 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 **

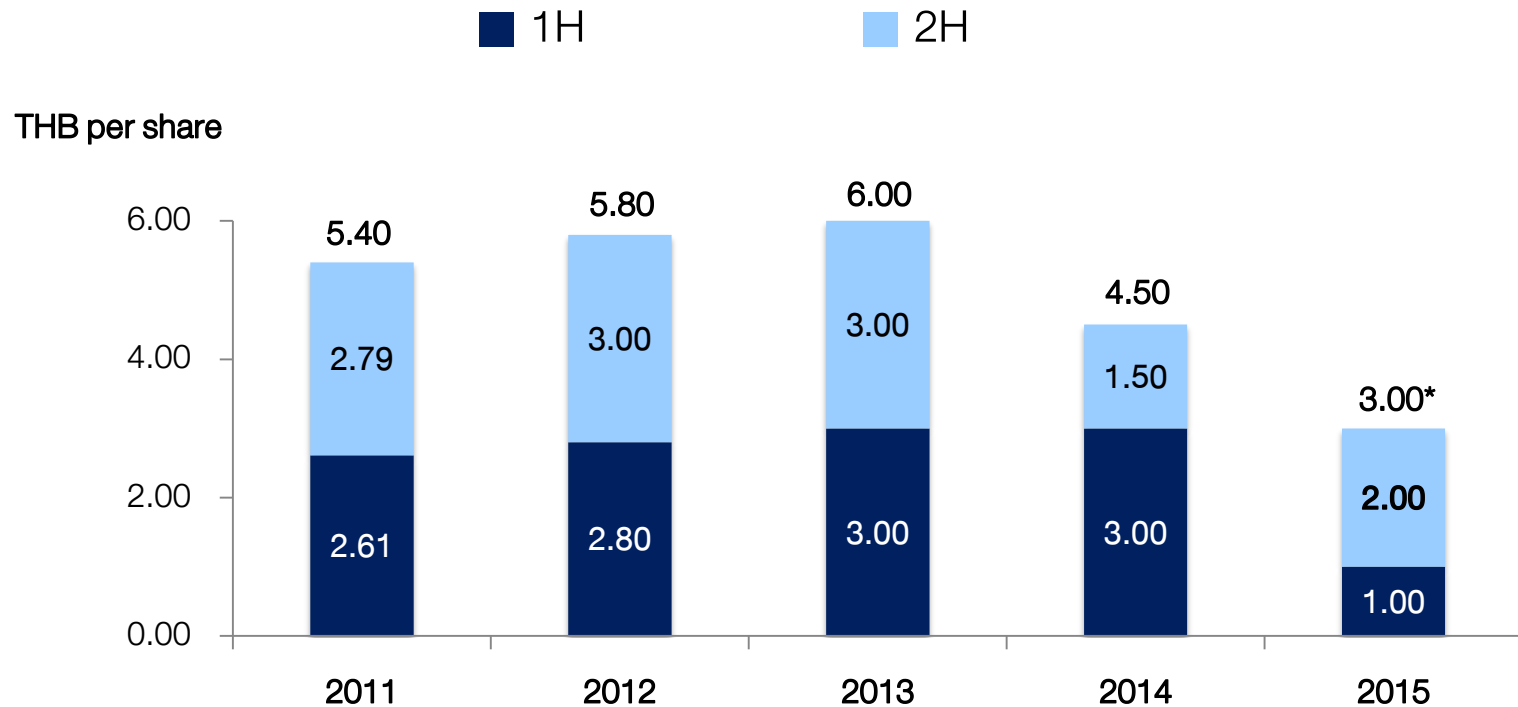


Remark: * Restated

** Excludes Hybrid bonds



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

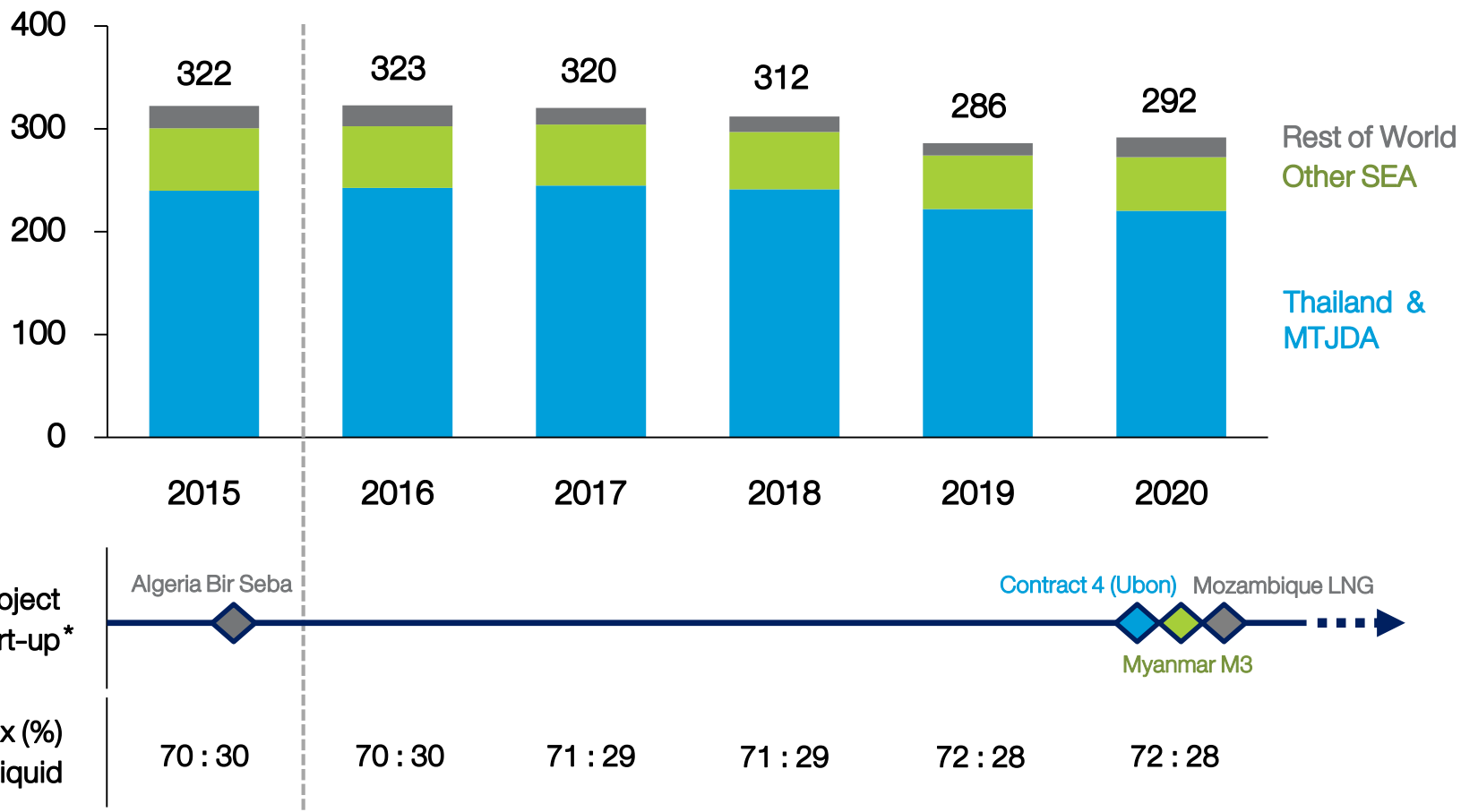


Payout Ratio (%)	40	38	40	82	N/A
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Remark: * Subject to the Annual General Shareholders' Meeting approval



Unit : KBOED



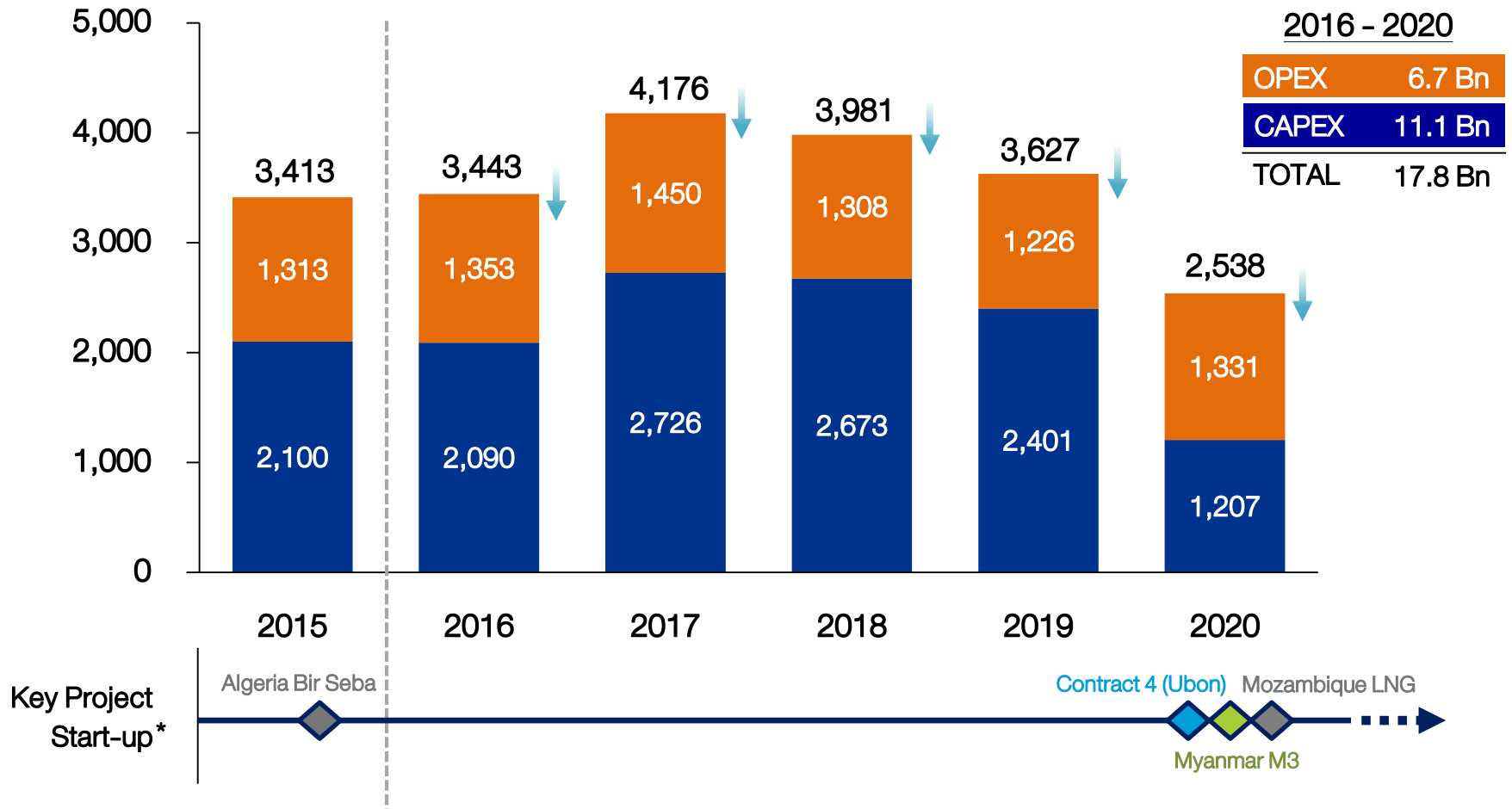
Note: Sales volume after reclassification of PSC royalty

* Subject to FID timing



Unit : MMUSD

Flexibility to lower investment from the announced plan

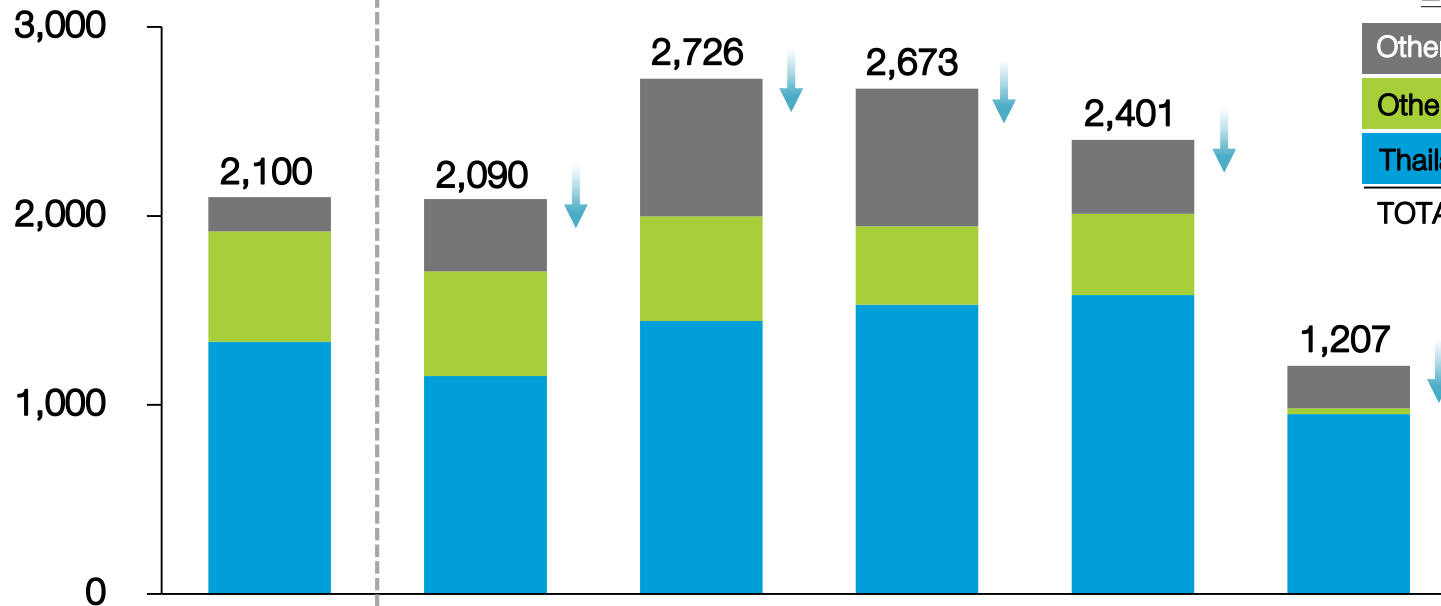


Note: * Subject to FID timing



Flexibility to lower CAPEX from the announced plan

Unit : MMUSD



2016 - 2020

Other regions	2.4 Bn
Other SEA	2.0 Bn
Thailand	6.7 Bn
TOTAL	11.1 Bn

2016 - 2020

By Activities :

Production	81%	82%	64%	53%	52%	65%	62%
New Project Development *	3%	15%	31%	45%	39%	35%	33%
Exploration and Others **	16%	3%	5%	2%	8%	1%	5%

Note: * Subject to FID

** Includes exploration and appraisal in all projects and HO CAPEX



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2015 DJSI Listed Company

Dow Jones Sustainability World Index
Oil & Gas Sector



Proven business integrity

NACC Integrity Awards
The National Anti-Corruption Commission

CG Awards
The ASEAN Capital Market Forum (ACMF)

CG Asia Recognition Awards
Corporate Governance Asia Magazine



**United Nations
Global Compact**

Advance Level Certification

United Nations Global Compact



Green driver to environment

Best Environmental Responsibility
Corporate Governance Asia

CDP's Climate A List
CDP

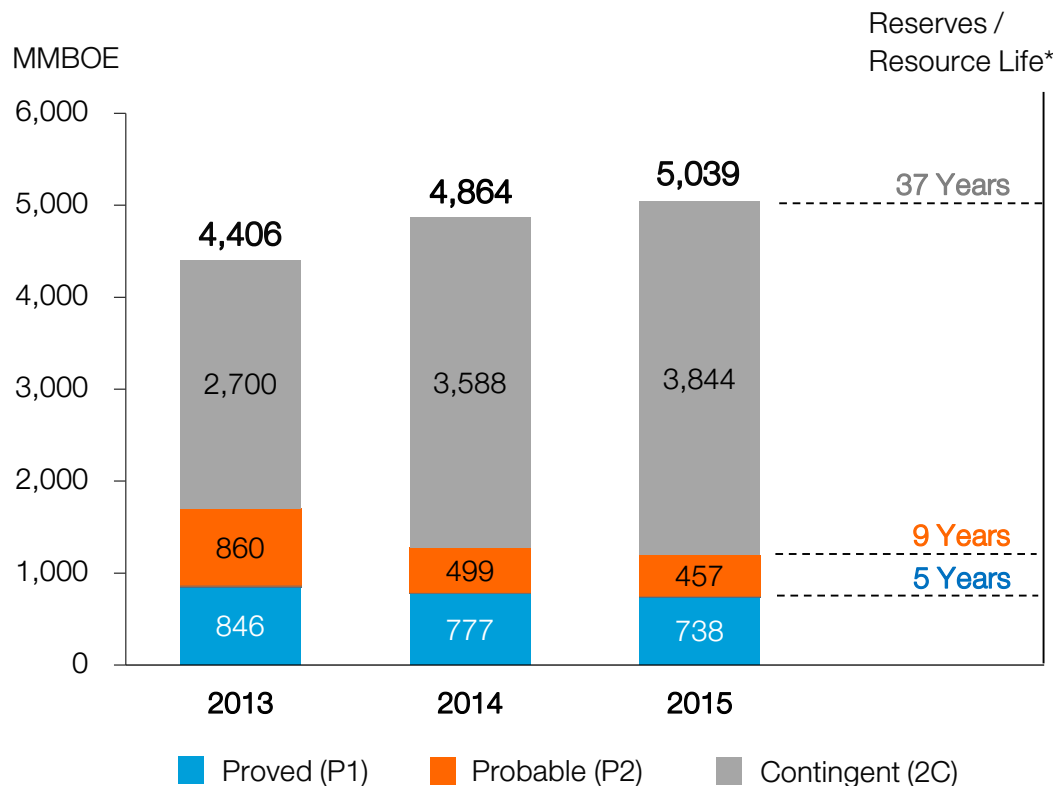
Participation in Thailand Voluntary Emission
Reduction Program (T-VER)

Exemplary social contributor

The Preservation and Development of Chan
Palace project in the area of S1 project
operation

The Learning Center (Phase 1) project at
the Songkla province

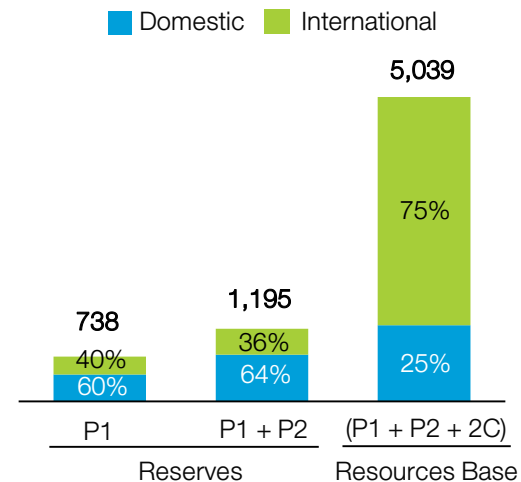
The reforestation for ecological study at the
Sri Nakhon Khuean Khan Park



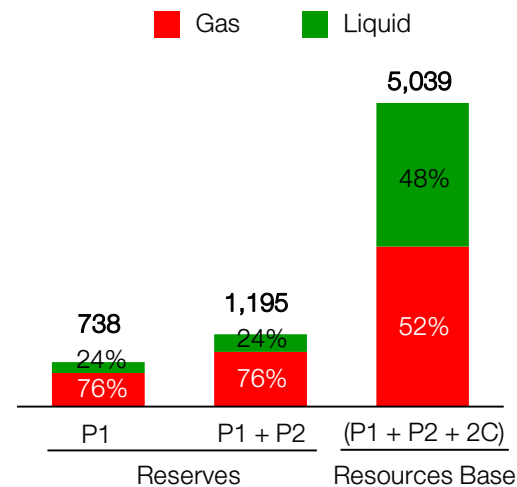
5-Year Average Proved Reserves Replacement Ratio (RRR)

2013	2014	2015
0.82x	0.45x	0.50x

2015 by Geography



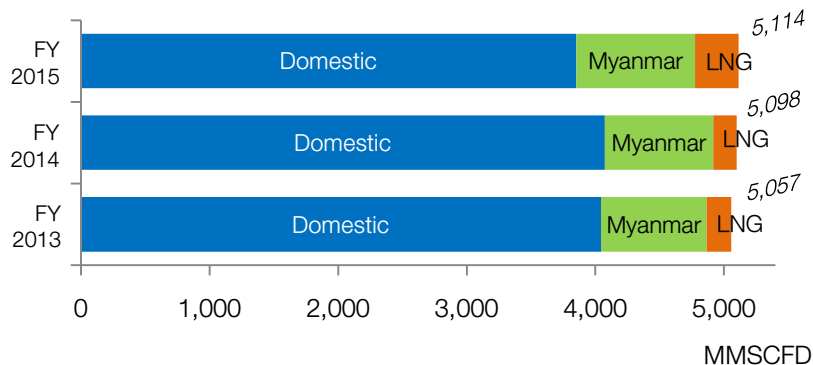
2015 by Product Type



* Based on total production of natural gas, condensate, and crude oil (including LPG) of 374 KBOED for the year ended December 31, 2015



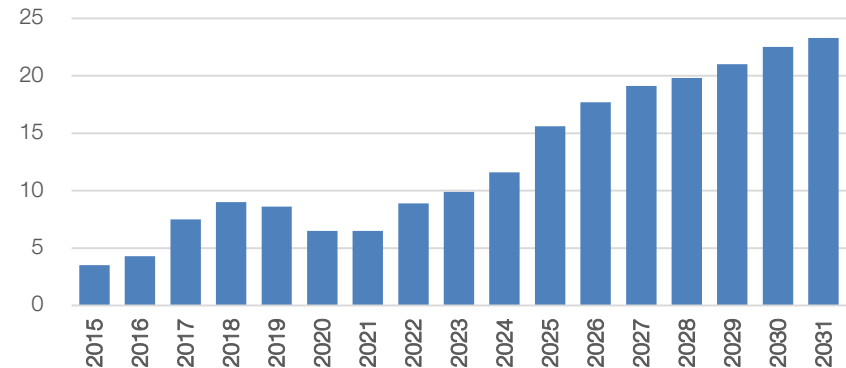
Thailand's Natural Gas Supply by Source



Source: EPPO

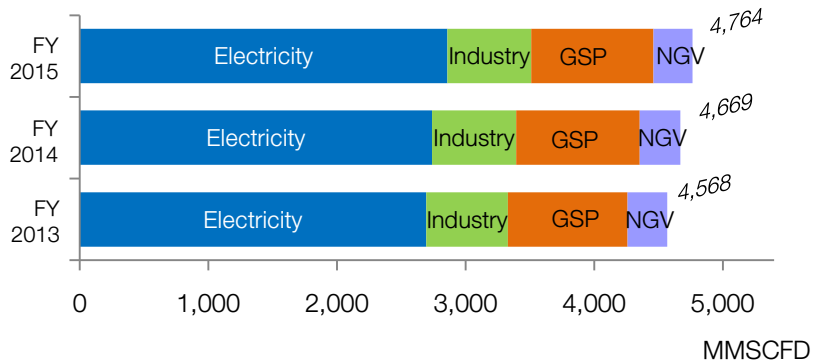
Domestic LNG Demand Projection

MMTPA



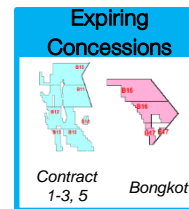
Source: Gas Plan 2015, EPPO

Thailand's Natural Gas Consumption by Sector

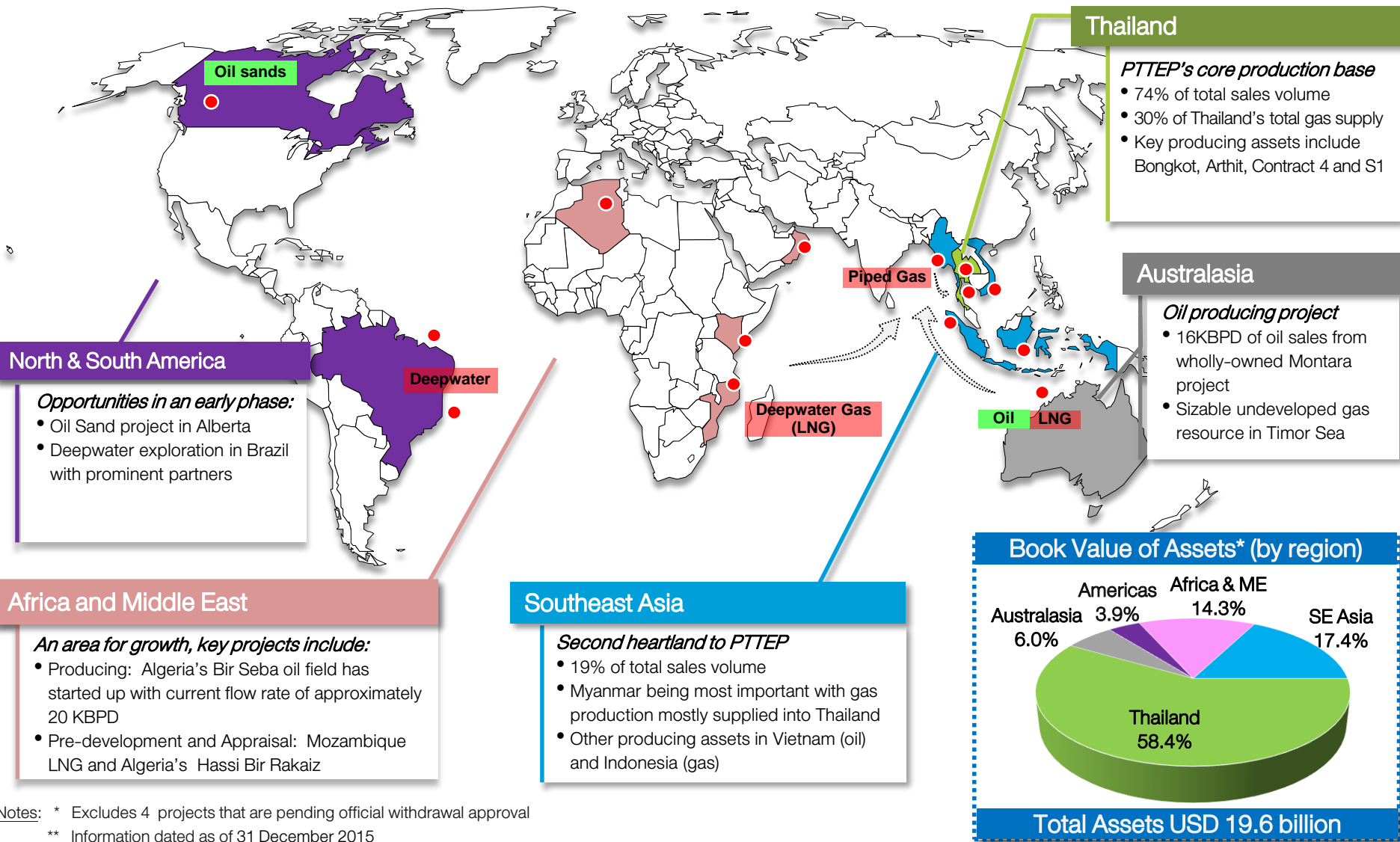


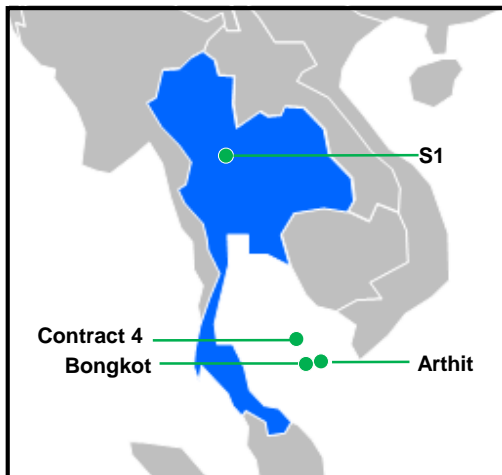
Source: EPPO

Upstream Energy Reform



- According to National Energy Policy Office meeting in May 2015, contractual management plan for expiring concessions to be concluded within one year
- Bidding round process could be resumed after amendments to Petroleum Act is finalized





● Production / Ramp-up Projects

Bongkot (44.4% interest)

- Bongkot's natural gas sales volume of 905 MMSCFD (2015) represents approximately 22% of Thailand's natural gas supply
- Average condensate sales volume was 27.68 KBPD in 2015

S1 (100% interest)

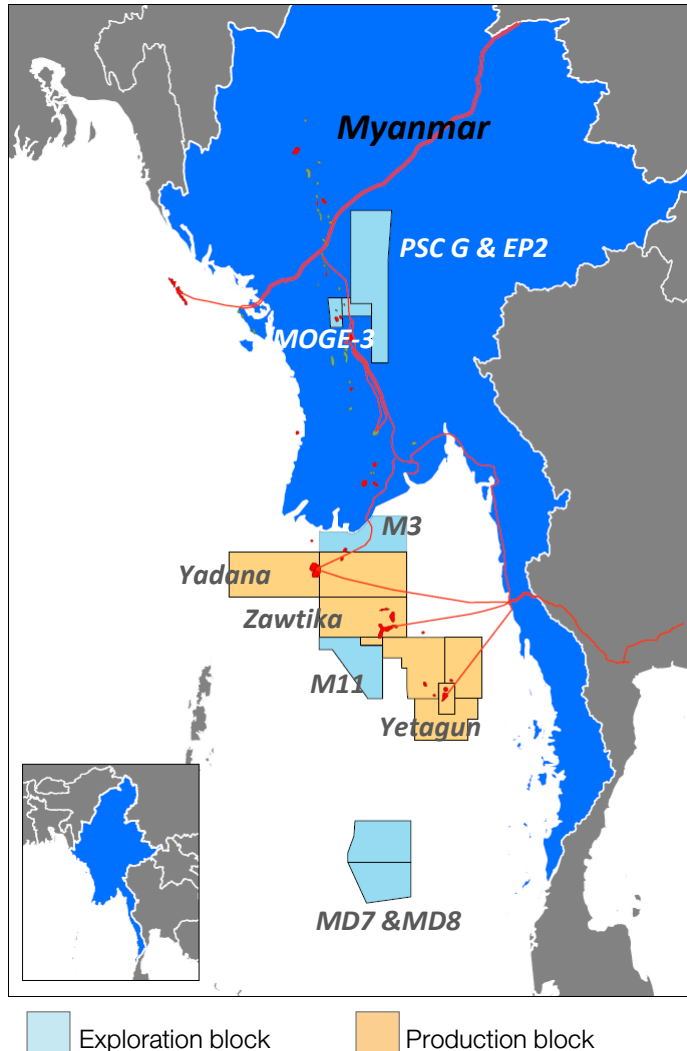
- S1 is the largest onshore crude oil production field in Thailand
- Average crude oil sales volume was 29 KBPD in 2015

Arthit (80% interest)

- Average sales volume in 2015 was 213 MMSCFD of natural gas and 9 KBPD of condensates

Acquisition of Hess Assets in Thailand

- PTTEP successfully acquired Hess Corporation's working interests in the Contract 4 project and Sinphuhorm project, and now holds 60% working interest in the Contract 4 project and 55% working interest in the Sinphuhorm project . PTTEP has also become the operator of the Sinphuhorm project
- The Contract 4 project had an average sales rate of 305 MMSCD for natural gas and 14 KBPD for condensate in 2015



- Participating in three producing gas fields which supply gas to both Thailand and Myanmar: Yadana, Yetagun, Zawtika
- Operate Zawtika project, brought online in August 2014. Deliver gas supply of 314 MMSCFD in 2015.
- Significant exploration acreage both onshore and offshore in the Moattama Basin

Project Status		
Producing	Appraisal	Exploration
<ul style="list-style-type: none"> • Yadana (25.5% WI) • Yetagun (19.3% WI) • Zawtika (80% WI) 	<ul style="list-style-type: none"> • M3 (80% WI) 	<ul style="list-style-type: none"> • PSC G & EP2 (70% WI) • MOGE-3 (75% WI) • M11 (100% WI)* • MD7 & MD8 (100% WI)

Note: WI – working interest

* New participating interest subject to government approval



Vietnam 16-1 (28.5% interest)

- Average crude oil sales volume of 31.3 KBPD in 2015
- Commissioned production platform in the H5 area to support current production level

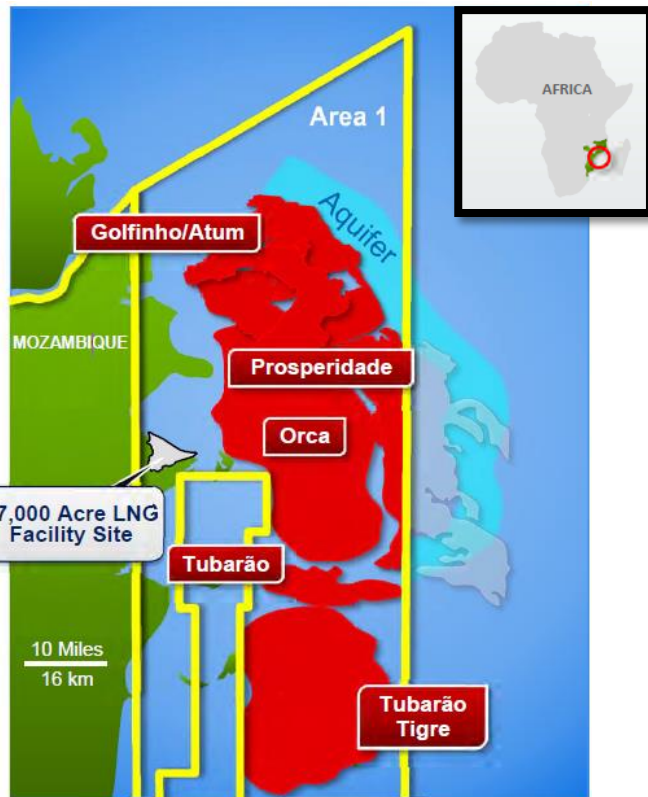
Natuna Sea A (11.5% interest)

- Average sales volume of natural gas was 213 MMSCFD, and average sales volume of crude oil was 1.4 KBPD in 2015



● Production / Ramp-up Projects

Source : Premier Oil



Location and Cost Advantage

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

Source: Anadarko

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

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 MTPA of non-binding HOAs

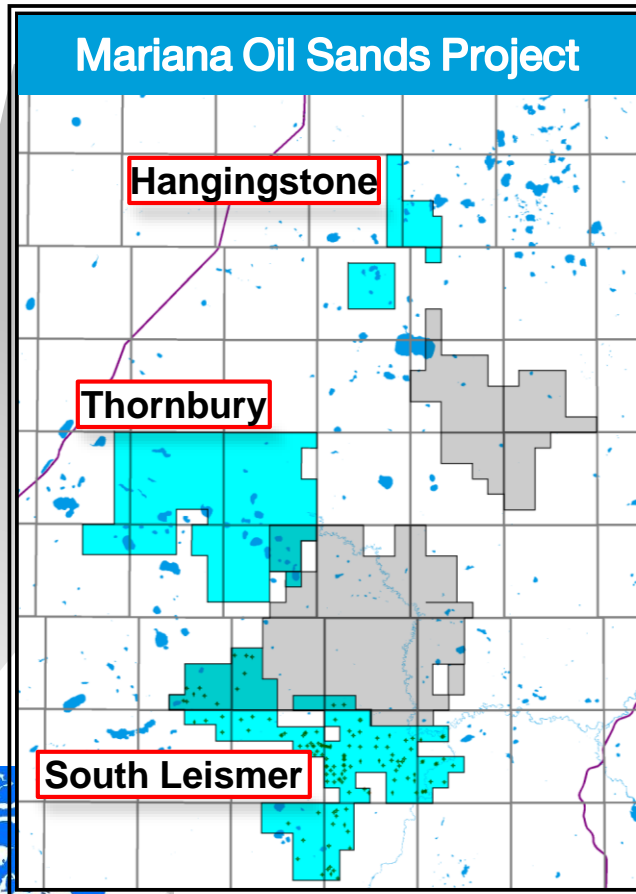
Regulatory

- ✓ Decree law ratified
- ✓ Substantial engagement with government to progress on remaining agreements and approvals to support investment

Financing

- ✓ Positive indications on project financing

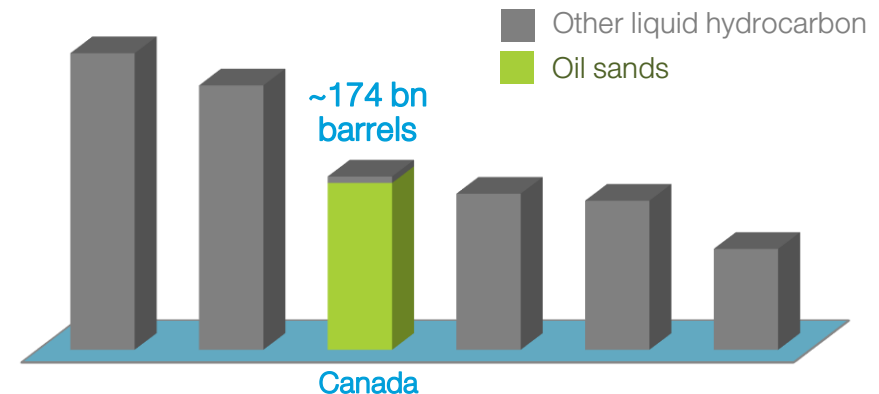
Onwards to initial phase of 12 MTPA



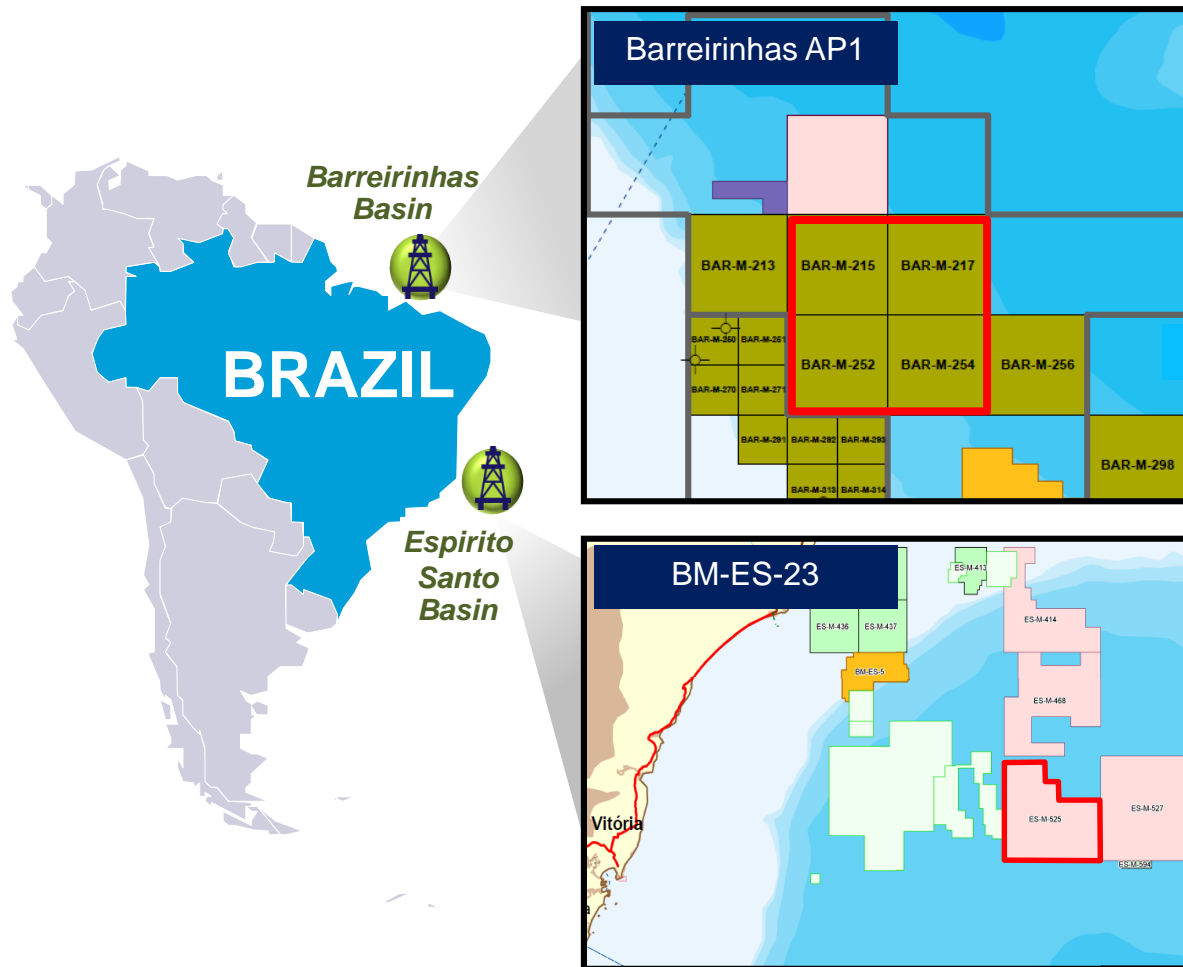
Project Overview

- 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
- Current focus on assessing cost reduction opportunity in light of low oil price environment.

Approximately 96% of the reserves in Canada, the world's 3rd 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 BG Group (75% interest)
- Four offshore exploration blocks: BAR-M-215, BAR-M-217, BAR-M-252 and BAR-M-254
- Currently preparing for seismic acquisition and conducting G&G studies

- Acquired 20% interest from Shell in Q3 2014
- Partnered with Petrobras (65%, operator) and INPEX (15%)
- Drilled 2 exploration wells in 2015

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



	Project	Status*	PTTEP's Share	Partners (as of 2015)	2015 Average Sales Volume **		2016 Key Activities	
					Gas	Oil and Other		
Production Phase								
Thailand and JDA								
1	Arthit	OP	80%	Chevron MOECO	16% 4%	213 MMSCFD	Condensate: 9.4 k BPD	<ul style="list-style-type: none">Ensure gas deliverability level at DCQ****Drill development wellsInstall wellhead platforms
2	B6/27	OP	60%***			N/A	N/A	<ul style="list-style-type: none">Subsurface study
3	B8/32 & 9A		25%	Chevron MOECO KrisEnergy PSTL	51.66% 16.71% 4.63% 2%	98 MMSCFD	Crude: 26 k BPD	<ul style="list-style-type: none">Drill development wellsPerform waterflood activities
4	Bongkot	OP	44.4445%	TOTAL British Gas	33.3333% 22.2222%	905 MMSCFD	Condensate: 28 k BPD	<ul style="list-style-type: none">Ensure gas deliverability level at DCQ****Drill Exploration / Appraisal / Development wellsInstall wellhead platforms
5	Contract 3 (Formerly Unocal III)		5%	Chevron MOECO	71.25% 23.75%	561 MMSCFD	Crude: 20 k BPD Condensate: 19 k BPD	<ul style="list-style-type: none">Drill exploration / appraisal / development wellsInstall wellhead platformsPerform waterflood activities
6	Contract 4 (Formerly Pailin)		60%	Chevron MOECO	35% 5%	305 MMSCFD	Condensate: 14 k BPD	<ul style="list-style-type: none">Ensure gas deliverability level at DCQ****Drill exploration / appraisal / development wellsInstall wellhead platformsReview development plan of Ubon field
7	E5		20%	ExxonMobil	80%	12 MMSCFD	-	
8	G4/43		21.375%	Chevron MOECO PSTL	51% 21.25% 6.375%	2 MMSCFD	Crude: 6.7 k BPD	<ul style="list-style-type: none">Drill development wellsPerform waterflood activities
9	G4/48		5%	Chevron MOECO	71.25% 23.75%	5 MMSCFD	Crude: 981 BPD	
10	L53/43 & L54/43	OP	100%			-	Crude: 297 BPD	<ul style="list-style-type: none">Drill exploration and development wells
11	PTTEP1	OP	100%			-	Crude: 386 BPD	<ul style="list-style-type: none">Drill development wellsPerform waterflood activities
12	S1	OP	100%			26 MMSCFD	Crude: 29 k BPD	<ul style="list-style-type: none">Drill exploration / appraisal / development wellsEnhance oil recovery program includes waterflooding and artificial lift
13	Sinphuhorm	OP	55%	Apico ExxonMobil	35% 10%	121 MMSCFD	Condensate: 460 BPD	<ul style="list-style-type: none">Drill development wells
14	MTJDA	JOC	50%	Petronas-Carigali	50%	326 MMSCFD	Condensate: 7.3 k BPD	<ul style="list-style-type: none">Drill development wellsInstall wellhead platforms
15	L22/43	OP	100%			-	Crude: 50 BPD	<ul style="list-style-type: none">Drill exploration / development wells

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

** Sales volume stated at 100% basis.

*** Pending the approval of the partner divestment from DMF

**** DCQ = Daily Contractual Quantity



	Project	Status*	PTTEP's Share	Partners (as of 2015)	2015 Average Sales Volume **		2016 Key Activities
					Gas	Oil and Other	
Production Phase							
Overseas							
16	Oman 44	OP	100%		22 MMSCFD	Condensate: 1.1 k BPD	<ul style="list-style-type: none">Maintain production operation
17	Vietnam 9-2	JOC	25%	PetroVietnam 50% SOCO 25%	13 MMSCFD	Crude: 4.8 k BPD	<ul style="list-style-type: none">Maintain production operationPerform reservoir management
18	Yadana		25.5%	TOTAL 31.24% Chevron 28.26% MOGE 15%	751 MMSCFD	-	<ul style="list-style-type: none">Drill exploration / development wellsAcquire 2D seismic reprocessingPerform reservoir management
19	Yetagun		19.3178%	Petronas-Carigali 30.00140% MOGE 20.4541% Nippon Oil 19.3178% PC Myanmar 10.90878% (Hong Kong)	286 MMSCFD	Condensate: 5.8 k BPD	<ul style="list-style-type: none">Drill development wellsPerform reservoir Management
20	Vietnam 16-1	JOC	28.5%	PetroVietnam 41% SOCO 28.5% OPECO 2%	16 MMSCFD	Crude: 31 k BPD	<ul style="list-style-type: none">Drill development wellsPerform reservoir managementReview feasibility for water handling facility upgrade
21	PTTEP Australasia (PTTEP AA)	OP	20%-100% (varied by permits)		-	Crude: 16 k BPD	<ul style="list-style-type: none">Maintain production operationAssess resource potential of exploration permits
22	Natuna Sea A		11.5%	Premier Oil 28.67% KUFPEC 33.33% Petronas 15% Pertamina 11.5%	213 MMSCFD	Crude: 1.4 k BPD	<ul style="list-style-type: none">Maintain production operation
23	Zawtika (M9 & a part of M11)	OP	80%	Myanma Oil and Gas Enterprise (MOGE) 20%	314 MMSCFD	-	<ul style="list-style-type: none">Maintain production rateDrill development wellsInstall wellhead platforms
24	Algeria 433a & 416b (Bir Seba)	JOC	35%	PetroVietnam 40% Sonatrach 25%	-	215 BPD	<ul style="list-style-type: none">Maintain production operationReview field development plan for possible capacity expansion

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

** Sales volume stated at 100% basis



	Project	Status*	PTTEP's Share	Partners (as of 2015)	2016 Key Activities
Exploration Phase					
Thailand and JDA					
25	G9/43	OP	100%		
Overseas					
26	Myanmar M3	OP	80%	MOECO 20%	• Access development options and commercial potential
27	Mozambique Rovuma Offshore Area 1		8.5%	Anadarko, Mitsui, ENH, Bharat Petroleum, BREML, OVL 26.5%, 20%, 15%, 10%, 10%, 10%	• Preparatory work for Final Investment Decision (FID) including LNG marketing and finalization of remaining commercial contracts
28	Algeria Hassi Bir Rekaiz	OP	24.5%	CNOOC Sonatrach 24.5% 51%	• Drill Appraisal wells
29	Myanmar M11	OP	100%**		
30	Vietnam B & 48/95		8.5%	PVN MOECO 65.88% 25.62%	• Negotiate a GSA with the Vietnamese government
31	Vietnam 52/97		7%	PVN MOECO 73.4% 19.6%	• Negotiate a GSA with the Vietnamese government
32	Myanmar PSC G and EP 2	OP	70%	WinPreciousResources MOECO Palang Sophon Offshore 10% 10% 10%	• Conduct G&G studies
33	Kenya L11A, L11B, L12		10%	Anadarko Total ENI 50% 30% 10%	• Conduct G&G studies

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

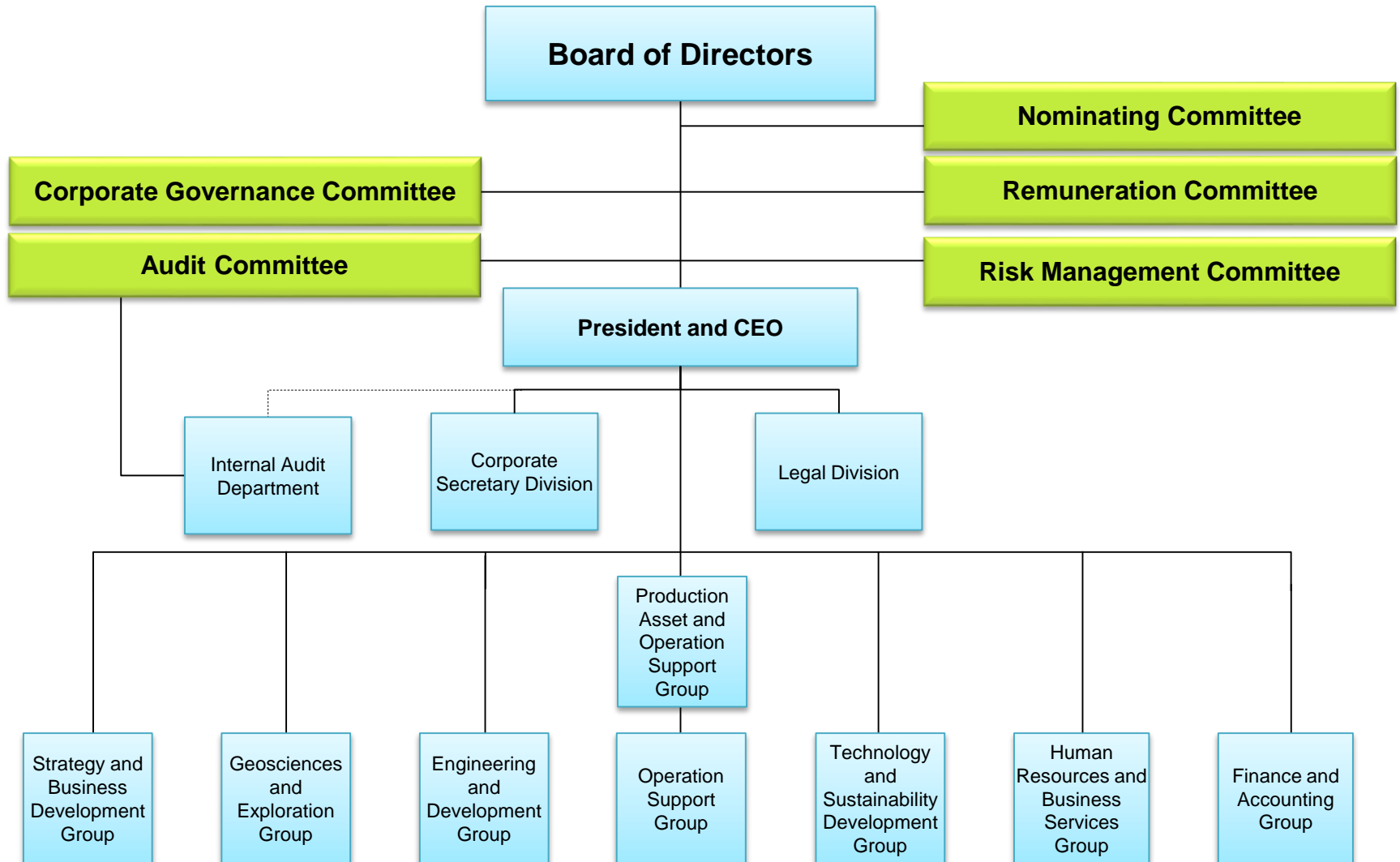
** New participating interest subject to government approval



	Project	Status*	PTTEP's Share	Partners (as of 2015)	2016 Key Activities
Exploration Phase					
Overseas (Cont'd)					
34	Myanmar MD 7 and MD 8	OP	100%		
35	Mariana Oil Sands	OP	100%		<ul style="list-style-type: none"> Assess development approach and cost reduction opportunity
36	Barreirinhas AP1		25%	BG Brasil 75%	<ul style="list-style-type: none"> Acquire 3D seismic
37	MOGE 3	OP	75%	Palang Sophon Offshore 10% MOECO 10% WinPreciousResources 5%	<ul style="list-style-type: none"> Acquire 3D seismic
38	Brazil BM-ES-23		20%	Petrobras 65% INPEX 15%	<ul style="list-style-type: none"> Drilling result and resource evaluation

Remarks: 38 projects exclude 5 projects that are pending official withdrawal approval

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





Ratio	Formula
Lifting Cost (\$/BOE)	$(\text{Operating Exp.}) / \text{Production Volume}$
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	$(\text{Trailing-12-month net income} + \text{Trailing-12-month Interest Expenses \& Amortise Bond Issuing Cost}) / (\text{Average shareholders' equity and average total debt between the beginning and the end of the 12-month period})$
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	$\text{Trailing-12-month EBITDA} / \text{Trailing-12-month Interest Expenses \& Amortize Bond Issuing Cost}$