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

The background features a large, stylized globe on the left, composed of a grid of dots. Below the globe is a white silhouette of an industrial refinery with various towers and pipes. The entire scene is set against a dark grey background with a white curved line at the bottom.

# Thai Oil Public Company Limited

## Q1/2017 Opportunity Day Presentation

### 31 May 2017

Time : 11.20 – 12:35 hrs.

Venue : Stock Exchange of Thailand, Building B, Room 603

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**Some statements made in this material are forward-looking with relevant assumptions, which are subject to uncertainties, which may cause the actual result/performance to be materially deviated from any future result/performance implied by such forward-looking statements. Please note that the company and management/staff are not capable to control and guarantee if these forward-looking statements will be accurately materialized, they are subject to various risks and uncertainties.**

<p><b>VISION</b></p>	<p><b>A LEADING FULLY INTEGRATED REFINING &amp; PETROCHEMICAL COMPANY IN ASIA PACIFIC</b></p>
<p><b>MISSION</b></p>	<ul style="list-style-type: none"> <li>• To be in top quartile on performance and return on investment</li> <li>• To create a high-performance organization that promotes teamwork, innovation and trust for sustainability</li> <li>• To emphasis good Corporate Governance and commit to Corporate Social Responsibility</li> </ul>
<p><b>VALUES</b></p>	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;"> <p><b>Professionalism</b></p> <p>Ownership &amp; Commitment</p> <p><b>Social Responsibility</b></p> </div> <div style="text-align: center;">  <p><b>Integrity</b></p> </div> <div style="text-align: right;"> <p><b>Excellent Striving</b></p> <p>Vision Focus</p> <p><b>Initiative</b></p> </div> </div> <p style="text-align: center;"><b>Teamwork &amp; Collaboration</b></p>

# Corporate Governance

## Corporate Governance Policy

The board of directors, management and all staff shall commit to moral principles, equitable treatment to all stakeholders and perform their duties for the company's interest with dedication, integrity, and transparency.

## Anti-Corruption Policy

The Board, the management, and employees must not corrupt or accept corruption of all forms in any circumstances, covering the business of the Company in every country and in every relevant agency. The Company defines guidelines, operating measures, and roles and duties of responsible persons, as well as regularly monitoring and reviewing the implementation of the anti-corruption policy in compliance with changes in businesses, rules, regulations, and relevant laws.

## Roles and Responsibilities for Stakeholders

- Truthfully report company's situation and future trends to all stakeholders equally on a timely manner.
- Shall not exploit the confidential information for the benefit of related parties or personal gains.
- Shall not disclose any confidential information to external parties.

## Whistle-Blowing Channels

Should you discover any ethical wrongdoing that is not compliance to CG policies or any activity that could harm the Company's interest, please inform:



Chairman of the Board or  
Chairman of the CG Committee or  
Chairman of the Audit Committee or  
CEO/President or Company Secretary



[cgcoordinate@thaioilgroup.com](mailto:cgcoordinate@thaioilgroup.com)



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+66-0-2797-2973



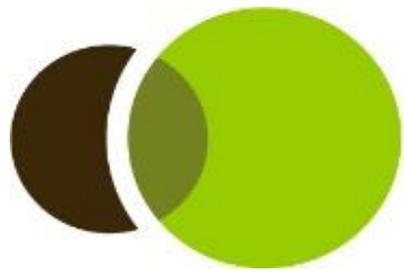
CG  
Manual

<http://www.thaioilgroup.com>

Thai Oil Public Company Limited  
555/1 Energy Complex Building A  
11F, Vibhavadi Rangsit Road,  
Chatuchak, Bangkok 10900

# Our Achievement in Sustainable Development

**The World Most Sustainable Oil & Gas Refining and Marketing Company**  
(from 28 invited companies in oil & gas refining and marketing industry)

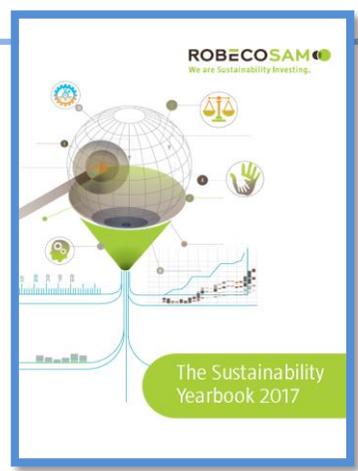



**ROBECOSAM**  
Sustainability Award  
Gold Class 2017

For **4** consecutive years

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

For 4 consecutive years



**60 industries**  
**3,420 companies invited**  
**2,473 companies assessed\***  
\*cover companies outside DJSI invitation

**TOP GROUP OVERVIEW**

**Q1/17 KEY HIGHLIGHTS**

**Q1/17 PERFORMANCE ANALYSIS**

**2H-17 & 2017 MARKET OUTLOOK**



# TOP GROUP OVERVIEW



# Thai Oil Group Business Structure



Core Business      Value Enhancement      Earning Stability      Marketing / IT Support

## Net Profit Contribution

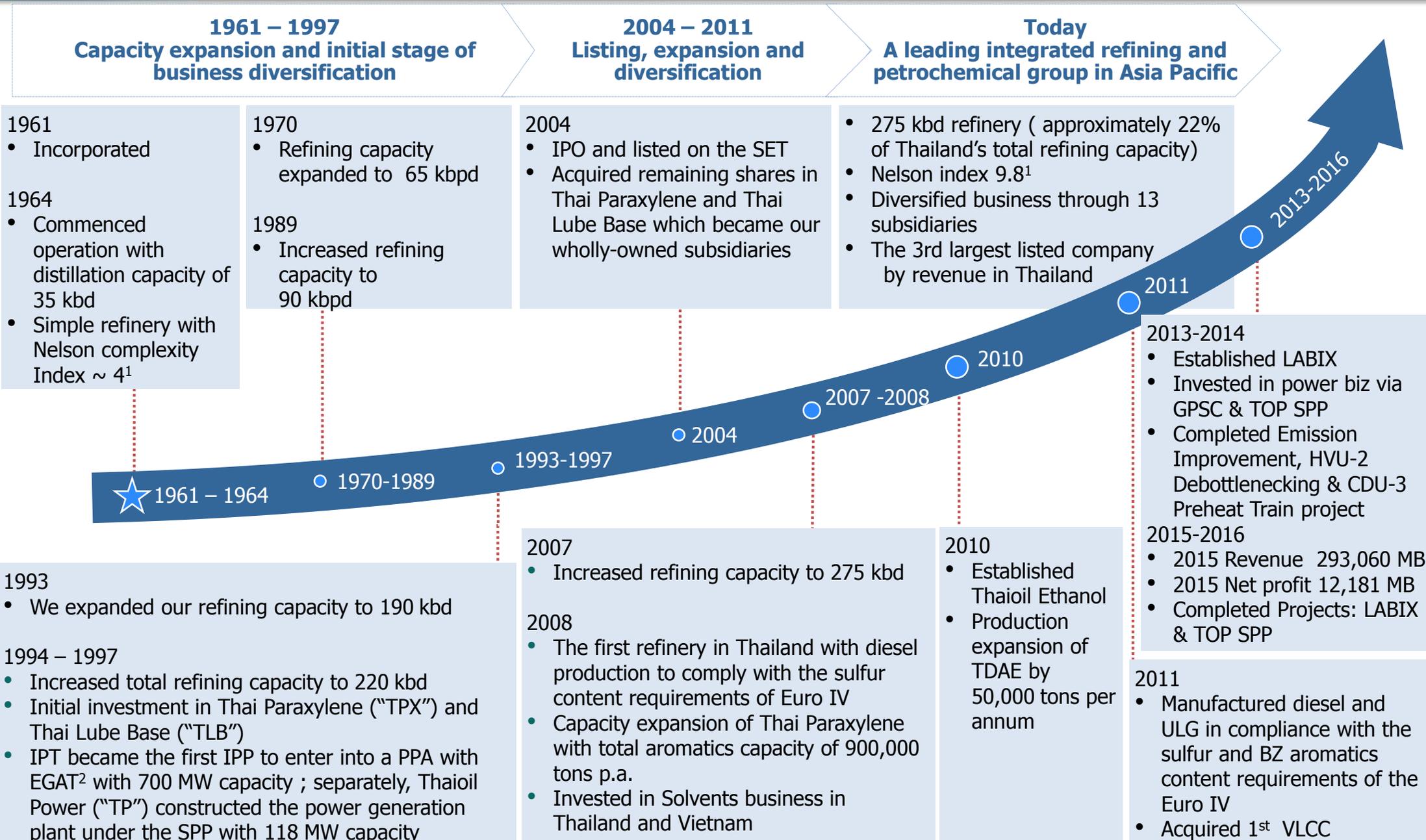


- Refinery
- Aromatics
- Lube Base
- Others

(Avg. from 2006 – Q1/17)

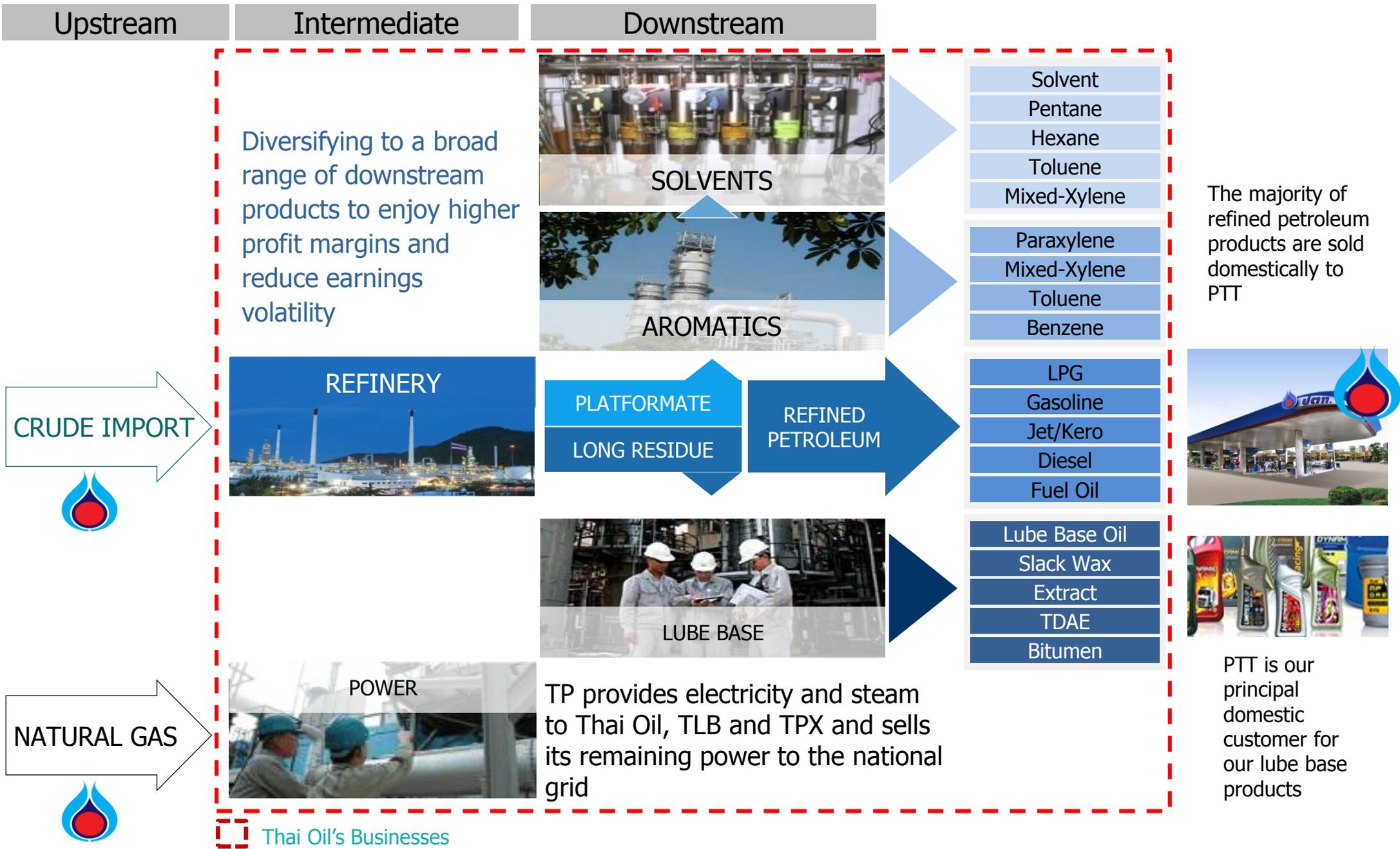


# Key Milestones: 55 Years, A Long Track Record of Success



Note 1. Based on our internal estimates using the methodology of the Nelson Complexity Index 2. The Electricity Generating Authority of Thailand ("EGAT") is the national grid

# TOP Group Synergy & Strategic Role in PTT Group Value Chain





# Q1/17 KEY HIGHLIGHTS



# Q1/17 Key Market Drivers Highlights

## Refinery



- **Strong Market GRM** supported by **1) lower crude premium** following narrowing light-heavy crude price differential from abundant light crude supply **2) strong gasoline spread from supply tightness in Asia & Middle East**
- **Lower crude price Mar/17 compared to Dec/16** pressured by recorded-high U.S. crude stock during U.S. refineries maintenance season and higher U.S. crude production

## Implication

- ➕ **Improved Mkt GRM at 6.5 \$/bbl<sup>1)</sup>**  
(Q4/16 = 6.0 \$/bbl)  
*<sup>1)</sup> Include Profitability Improvement*
- ➖ **(0.2) \$/bbl inventory loss<sup>2)</sup>**  
(from stock gain 3.5 \$/BBL in Q4/16)  
*<sup>2)</sup> Based on refinery intake*

## Aromatics & LAB



- **Better Aromatic spreads** driven by **1) strong downstream demand** i.e. polyester and SM **2) tight BZ & SM supplies in U.S.** from unplanned shutdown **3) delayed supply addition from India.** Moreover additional contribution from LAB added GIM contribution.

- ➕ **Strong Aromatics & LAB Margins<sup>3)</sup>**  
(GIM contribution to 2.1 \$/bbl from 1.6 \$/bbl in Q4/16)  
*<sup>3)</sup> Aromatic contribution including LAB*

## Lube Base



- **Improving Base Oil & Bitumen spread** supported by **tight supplies** from planned/unplanned shutdown in Asia and **strong buying interests**, particularly in China, ahead peak refineries maintenance in Q2

- ➕ **Higher Lube Base Contribution**  
(GIM contribution 0.9 \$/bbl from 0.5 \$/bbl in Q4/16)

**Refinery + Aromatics & LAB + Lube Base**

\$/BBL	Q1/17	Q4/16
Market GIM	↑ 9.4	8.0
Inventory Gains / (Loss)	(0.1) <sup>4)</sup>	3.5
Accounting GIM	↓ 9.3	11.5

<sup>4)</sup> Based on integrated intake

# Q1/17 Robust Performance Driven by Strong GIM & Operation

## Key Achievements Q1/17

### Operational Excellence



### Growth & Profitability Improvement



### Sustainability & Awards



#### Maintain high reliable production

	Q1/17	Q4/16
Refinery	111 %	110 %
Aromatic	90 %	82 %
Base Oil	88%	88 %

#### Capture high local & Indochina sales of petroleum products

	Q1/17	Q4/16
Local	87 %	87 %
Indochina	8 %	8 %
Other exports	5 %	5 %

#### Competitive group Cash Cost at 1.9 \$/bbl (1.4\$/bbl operating cash cost, 0.5 \$/bbl net interest expense)

#### Successful COD Lorry Expansion Project in Mar'17 Benefit Guidance of ~ 0.10 – 0.15 \$/bbl from more local & Indochina volume

#### Profitability Improvement activities at 1,201 MB

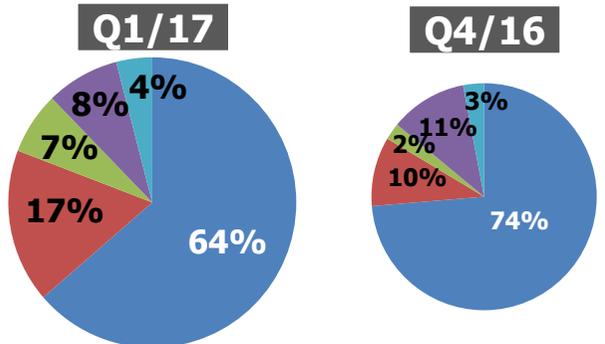
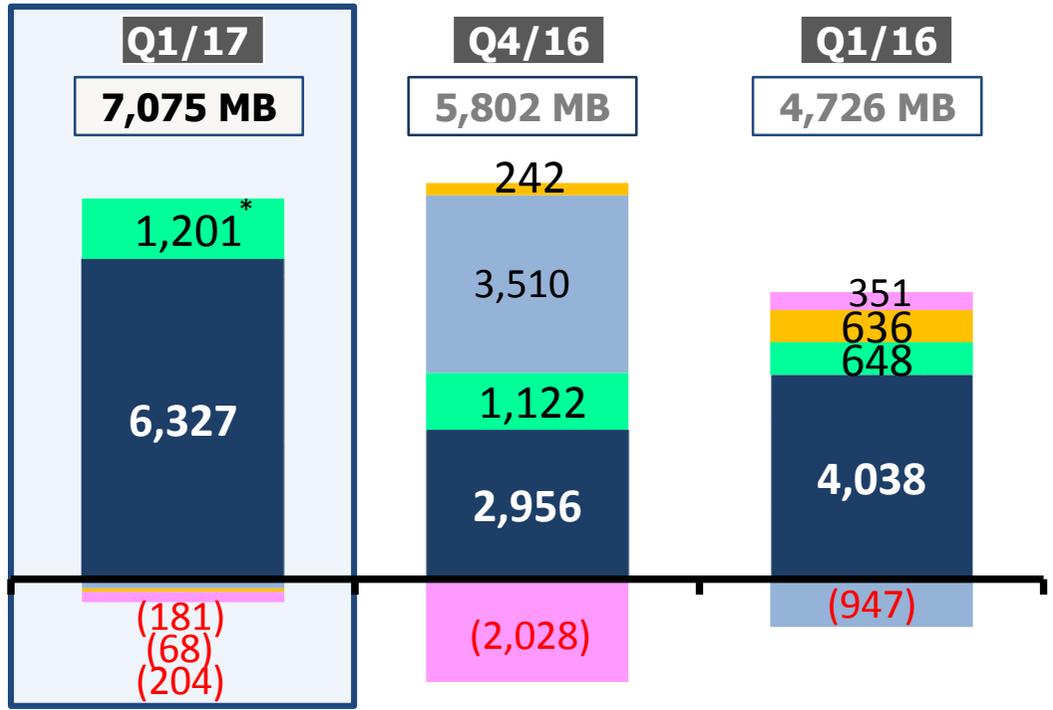
- Affirmed credit rating by**
  - S&P BBB (Stable Outlook)
  - Fitch AA-(Tha) (Stable Outlook)

#### Asian Excellence Award 2017 Asia's Best CEO (IR) & Best IR Company in Thailand

## TOP Group Net Profit

Unit : million THB (MB)

- Net Operating Profit (before tax)
- Stock G/(L) (before tax)
- Others i.e. FX G/(L), Hedging G/(L), tax expense etc.
- Profitability Improvement
- Reversal of NRV /(NRV) (before tax)



- Refinery
- Aromatic & LAB
- Lube Base
- Power
- Others

\* Compared with Corp. plan

# Q1/17 Profitability Improvement (VS Corporate Plan)

## Margin Improvement

(Supply & Marketing / Hydrocarbon Management /



✓ LP Upgrading Model , Process Improvement



✓ Higher domestic/ CLMV petroleum sale



✓ New crude processing



✓ Product pricing & value management



✓ Energy improvement



✓ Plant optimization



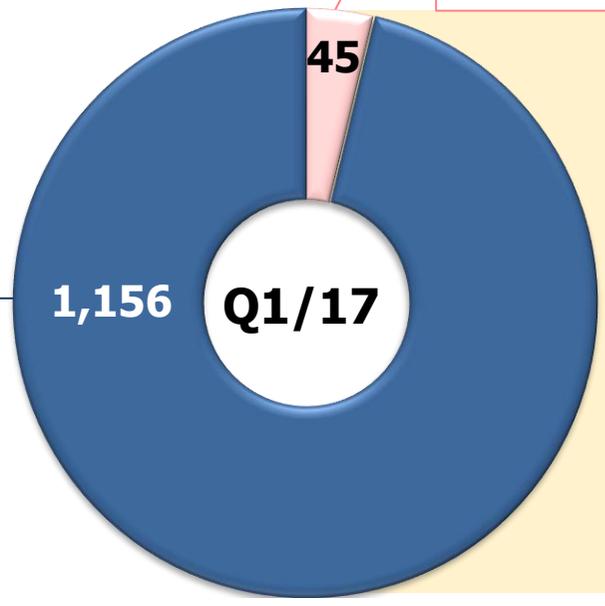
✓ Optimized crude cargo arrangement & Product co-loading to save freight cost



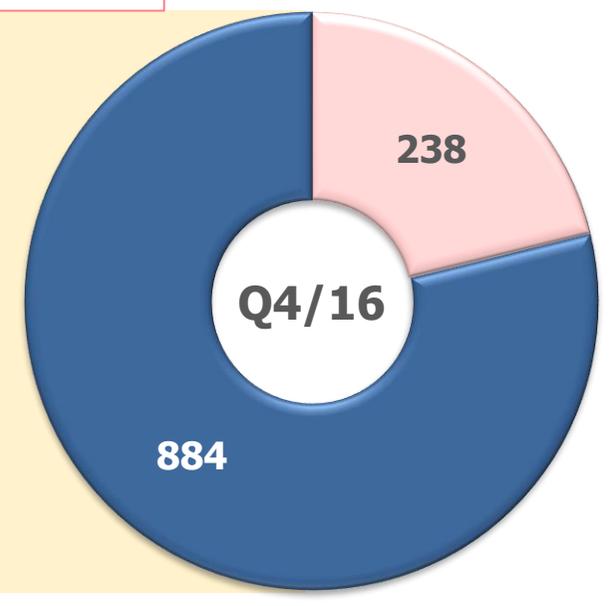
## Cost Management



✓ General & Admin , Procurement & warehouse , Operation & Maintenance , Project & Manpower management



**THB 1,201 mn\***



**THB 1,122 mn**

Unit: million THB

\* Compared with Corp. plan



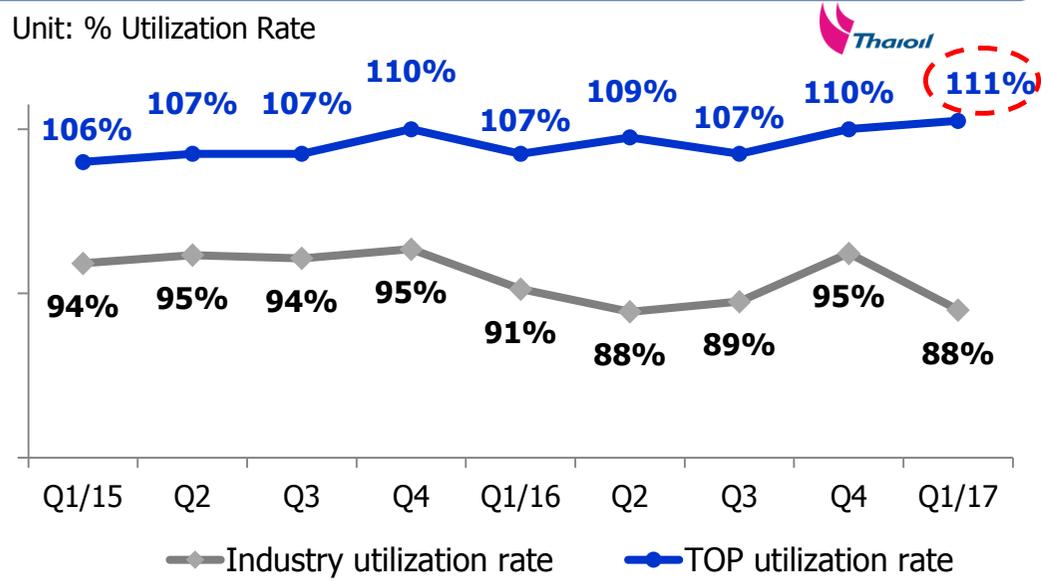
# Q1/17 PERFORMANCE ANALYSIS



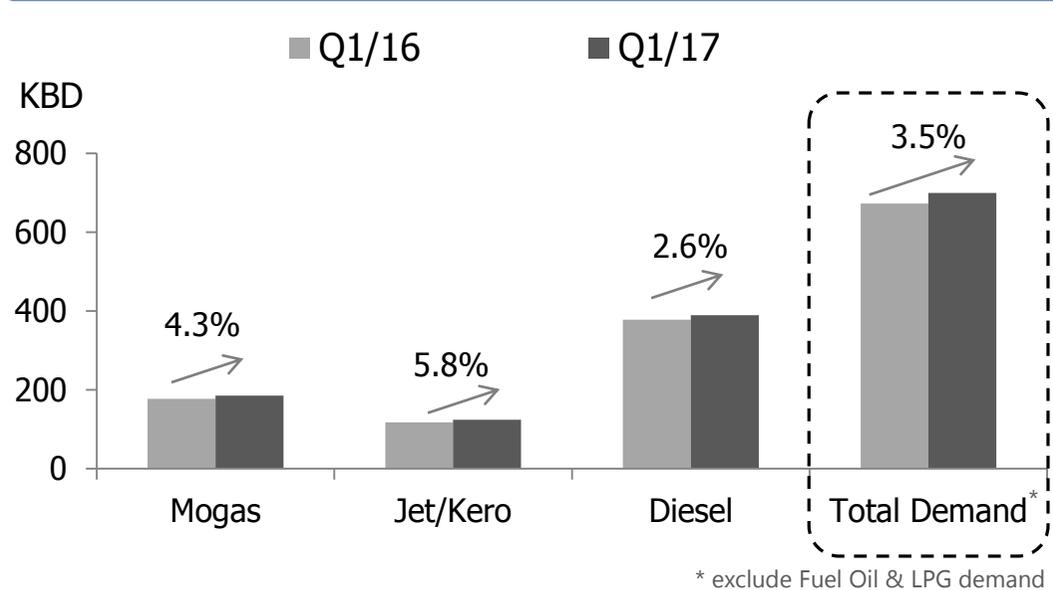


# Refinery: Recorded High Quarterly Utilization Rate

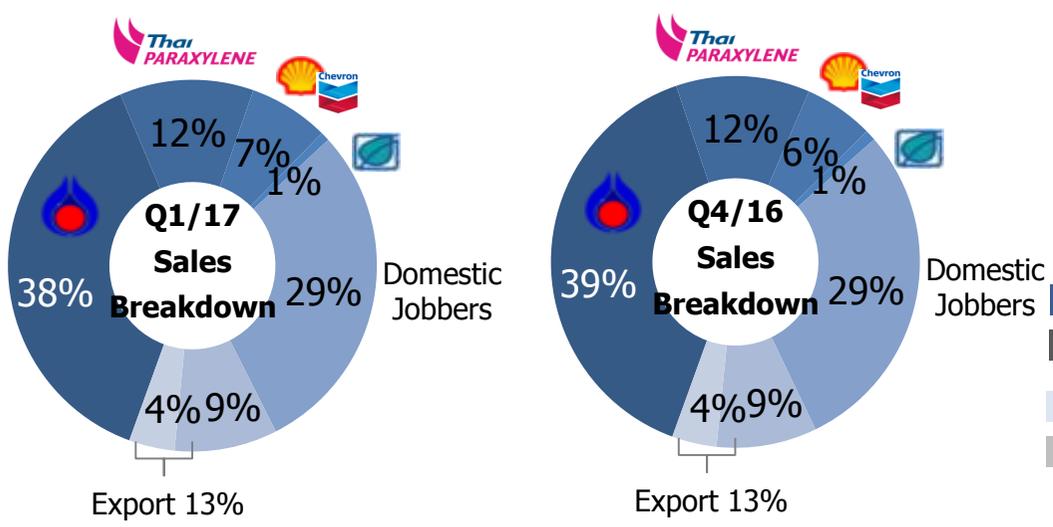
## TOP/ Domestic Refinery Utilization Rate



## Domestic Oil Demand

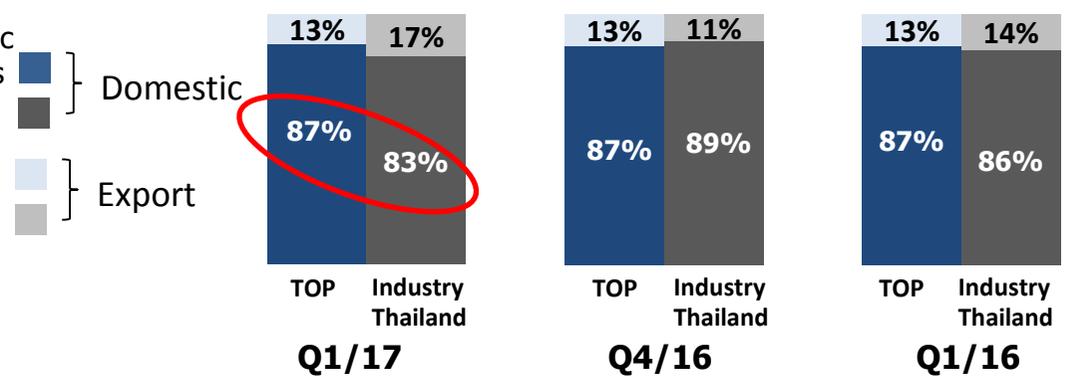


## Sales breakdown by customers



## TOP's Domestic Sale vs Industry\*\*

Export	Q1/17		Q4/16		Q1/16	
	TOP	Ind.	TOP	Ind.	TOP	Ind.
CLMV	8%	3%	8%	6%	10%	4%
Others	5%	14%	5%	5%	3%	10%



\*\* Source: Department of Energy Business, Ministry of Energy



# Q1/17: Stronger Mkt GRM supported by Lower Crude Premium

## Dubai Crude Price & Key Petroleum Product Spreads

\$/bbl	2016				2017		2016 FY16
	Q1	Q2	Q3	Q4	Q1	Q2TD*	
DUBAI (DB)	30.4	43.2	43.2	48.3	↑ 53.1	51.4	41.3
ULG95 - DB	18.8	14.4	11.6	14.6	↔ 14.8	14.8	14.9
JET - DB	11.7	11.1	11.1	12.3	↓ 11.3	11.0	11.6
GO - DB	9.6	10.5	11.0	12.0	↓ 11.8	11.9	10.8
HSFO - DB	(5.2)	(8.7)	(4.3)	(1.7)	↓ (3.1)	(2.8)	(5.0)

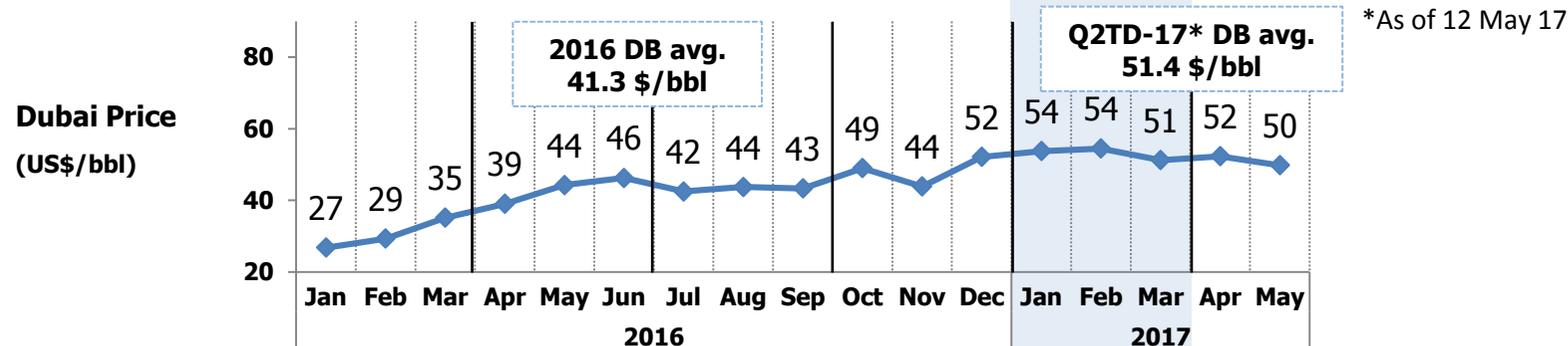
## Refinery Utilization

Q1/17	Q4/16	Q1/16
111%	110%	107%

## % MB Intake/OSP\*

42%/1.6	42%/2.2	51%/3.3

\*Murban OSP over Dubai (\$/bbl)



## Q1/17 Market GRM

- + **Strong Gasoline spreads** due to tight supplies in Asia & Middle East while demand still be good
- + **Lower crude premium** from abundant light crude supply help support margins

## Gross Refinery Margins - GRM

\$/bbl	2016				2017	2016 FY16
	Q1	Q2	Q3	Q4	Q1	
Market GRM	6.1	4.4	4.3	6.0	6.5	5.2
Stock G/(L)	(1.0)	4.2	(0.6)	3.5	(0.2)	1.6
Accounting GRM	5.1	8.6	3.7	9.5	6.3	6.8

## Q1/17 Performance

- + **Profitability Improvement** from Hydrocarbon management & Transcendence\*\*

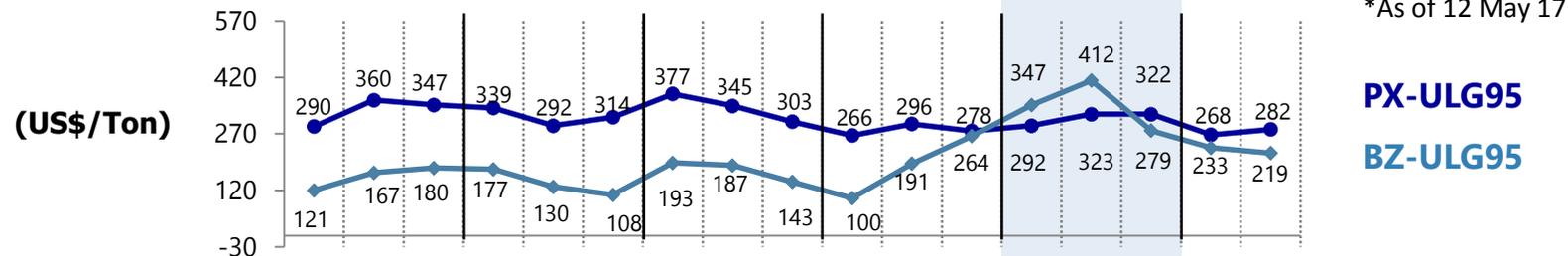
\*\* Target of HMR & Transcendence at 0.7 \$/bbl



# Q1/17: Robust Contribution supported by High BZ Spread

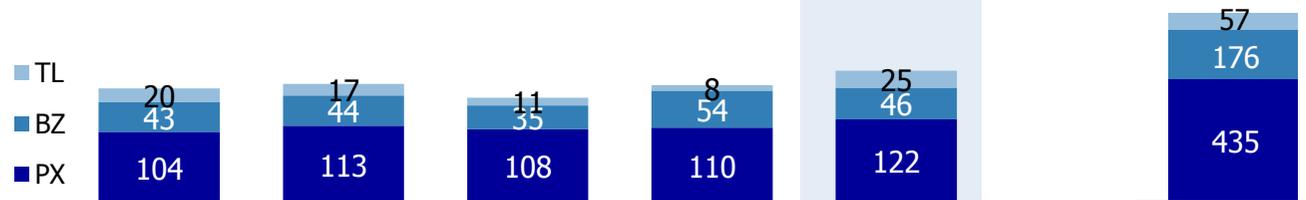
## Aromatics Spreads and Margins

	2016				2017		2016
	Q1	Q2	Q3	Q4	Q1	Q2TD*	FY16
\$/ton							
PX**-ULG95	332	315	341	280	↑ 312	257	317
BZ**-ULG95	156	138	174	185	↑ 346	212	163



## Aromatic's Sales (excluding byproduct) & Product-To-Feed Margin (P2F)

(Unit : KTon)



	2016				2017
	Q1	Q2	Q3	Q4	Q1
Aromatic P2F -\$/ton	98	99	109	95	126
Aromatic P2F -\$/bbl	12.8	13.0	14.3	12.4	16.4
GIM contribution***	1.4	1.7	1.9	1.6	2.1

2016
FY16
100
13.1
1.7

## Aromatics Production

Q1/17	Q4/16	Q1/16
90%	82%	80%

## Q1/17 Market

- + **Stronger downstream demand** i.e. Polyester, Styrene monomer
- + **Stronger BZ Margins** driven by tight supply from unplanned shutdown in U.S.
- + **Delayed additional supply from India** support aromatic spread
- + **Higher LAB price** driven by feedstock cost especially BZ while LAB demand rose in late Q1/17

## Q1/17 Performance

- + **Higher Aromatic run & Improved sales volume** following strong demand

\*\* PX price = CFP Taiwan, BZ price = FOB Korea

\*\*\* including LAB contribution since 25 Feb 2016

Remark: TOL -ULG95 , Q4/16 = 103 \$/ton, 2016 = 115 \$/ton, Q1/17 = 119 \$/ton

# Q1/17: Improved Contribution supported by Rising Lube base & Bitumen spread



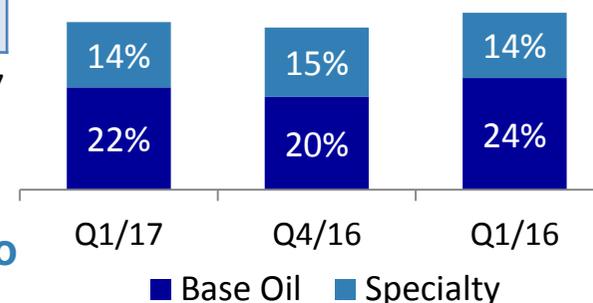
## Base Oil & Bitumen Spreads & Margins

	2016				2017		2016
\$/ton	Q1	Q2	Q3	Q4	Q1	Q2TD*	FY16
500SN-HSFO	427	409	443	367	↑ 451	550	412
BITUMEN-HSFO	(7)	(48)	(61)	(80)	↑ (13)	(40)	(49)

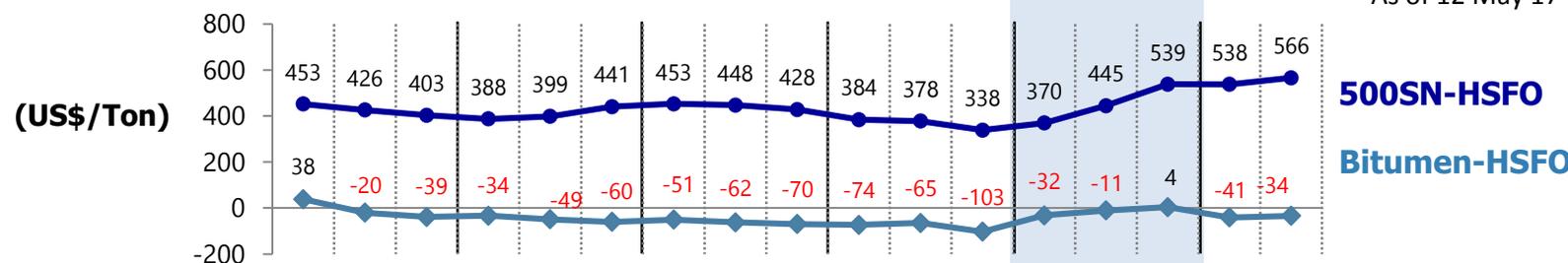
## Base oil Production

Q1/17	Q4/16	Q1/16
88%	88%	88%

## % Base Oil & Specialty Sales Volume



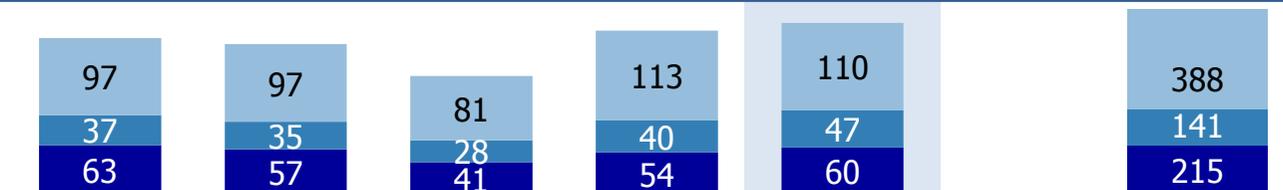
\*As of 12 May 17



## TLB's Sales (excluding byproduct) & Product-To-Feed Margin (P2F)

(Unit : KTon)

Bitumen  
Specialty  
Base Oil



	2016				2017
	Q1	Q2	Q3	Q4	Q1
P2F -\$/ton	126	121	106	77	116
P2F -\$/bbl	19.2	18.4	16.1	11.7	17.6
GIM contribution	0.9	0.9	0.6	0.5	0.9

2016
FY16
107
16.2
0.7

## Q1/17 Market

- + **Tight supplies from planned /unplanned shutdown in Asia** drove stronger base oil & bitumen spread
- + **Rising Chinese demand and more buying** ahead peak refineries maintenance in Q2

## Q1/17 Performance

- + **Higher base oil sales volume as strong demand in the region and lower operating cost** led to better performance

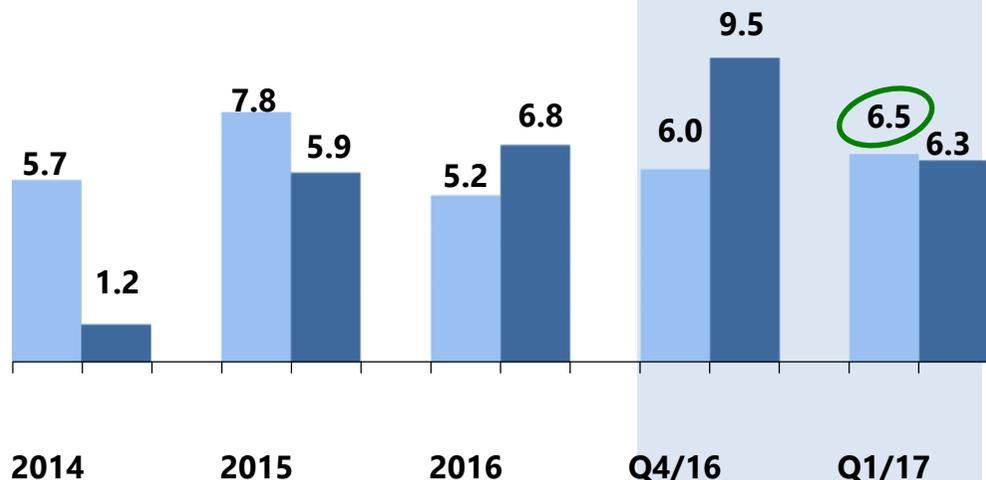


# Integrated Margin & Competitive Cash Cost

## Gross Refining Margin

(Unit: US\$/bbl)

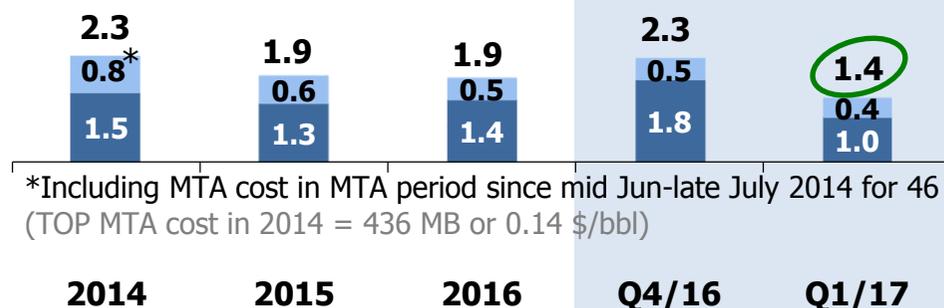
Market GRM Accounting GRM (Market GRM + Stock G/L)



## Refinery's Cash Cost

(Unit: US\$/bbl)

Operating Cost (excl. one-time non-operating item) Interest Expense (net)

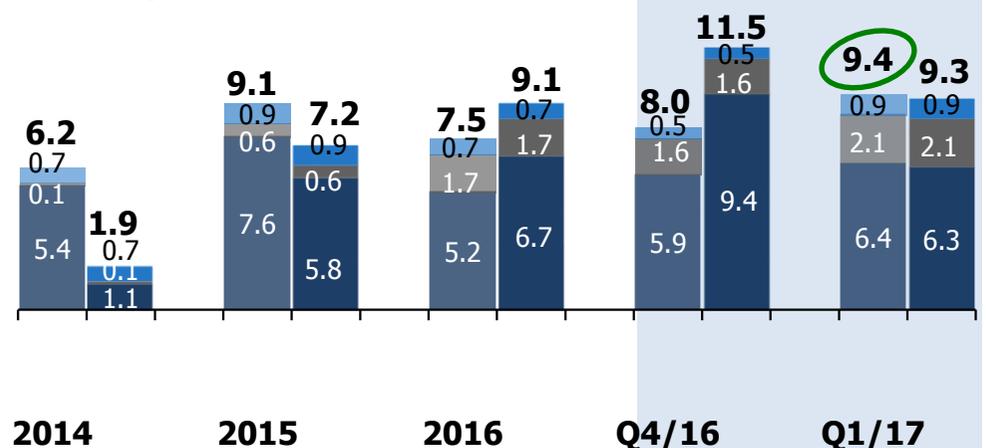


\*Including MTA cost in MTA period since mid Jun-late July 2014 for 46 days (TOP MTA cost in 2014 = 436 MB or 0.14 \$/bbl)

## Gross Integrated Margin

(Unit: US\$/bbl)

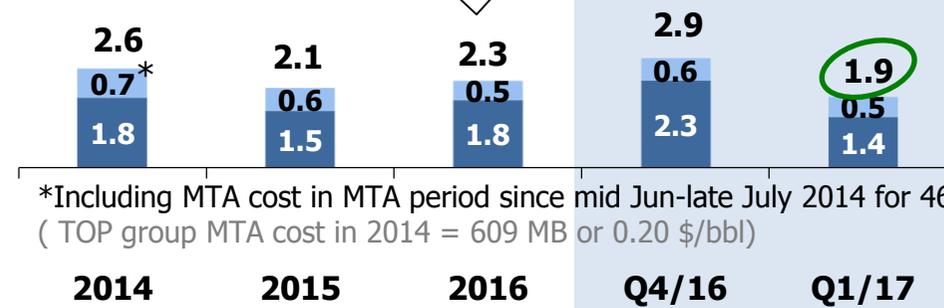
Market GIM Accounting GIM (Market GIM + Stock G/L)  
Refinery Aromatics+LAB Lube Base



## Group's Cash Cost

(Unit: US\$/bbl)

Operating Cost (excl. one-time non-operating item) Interest Expense (net)



Higher group cash cost in 2016 mainly from MTA cost in TLB ~198 MB or ~ 0.1 \$/bbl

\*Including MTA cost in MTA period since mid Jun-late July 2014 for 46 days (TOP group MTA cost in 2014 = 609 MB or 0.20 \$/bbl)



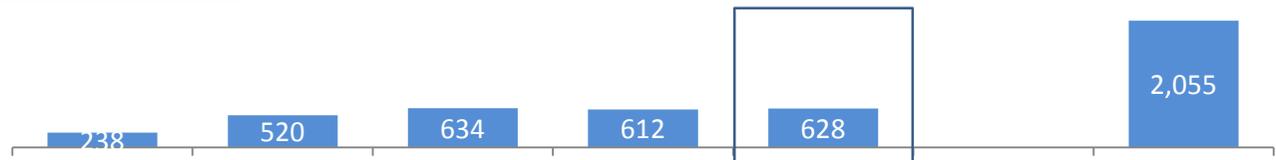
# Q1/17 Power Sector Performance...Growing Contribution to the Group

## Power Business Sector

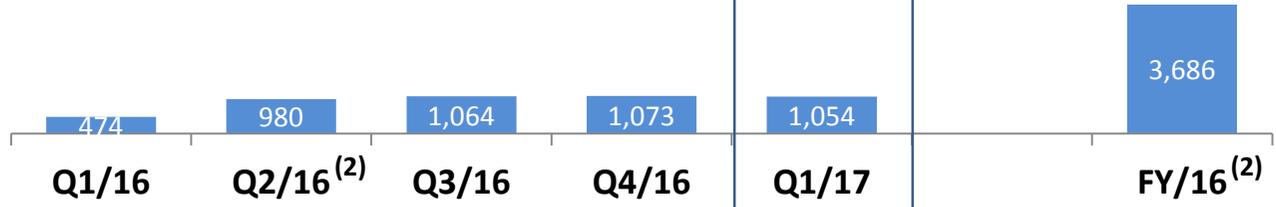


### Power & Steam Sales

**Electricity<sup>(1)</sup>**  
(GWh)



**Steam<sup>(1)</sup>**  
(kton)



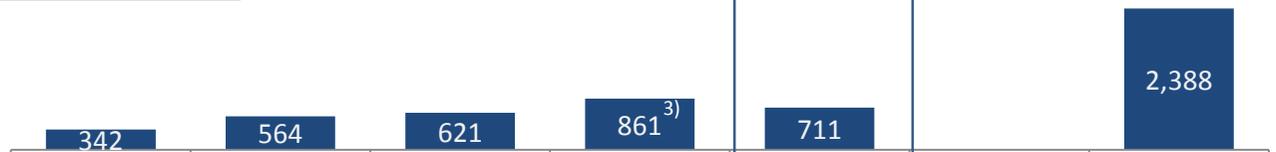
\*\*\*TOP shareholding 24.29% (8.91% via TOP and 20.79% via TP)  
GPSC is an associate company of TOP. Equity method is applied to recognize share of profit. (EBITDA calculation excludes profit sharing from GPSC)

■ Equity income from GPSC  
■ SPP (TP+TOP SPP)

<sup>(1)</sup> 100% of TP and TOP SPP  
<sup>(2)</sup> TOP SPP COD 1<sup>st</sup> block in Apr 16 and 2<sup>nd</sup> block in Jun 16

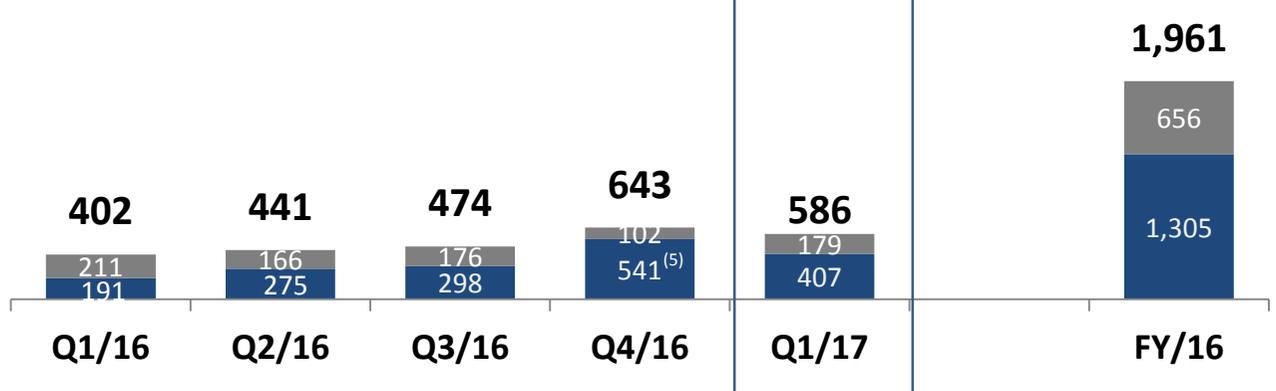
### EBITDA & Net Profit

**EBITDA<sup>(3)</sup>**  
(THB million)



<sup>(3)</sup> consolidated EBITDA of TP and TOP SPP

**Net Profit<sup>(4)</sup>**  
(THB million)



<sup>(4)</sup> Net profit of 74% TP + 100 % TOP SPP + 24.29% profit sharing from GPSC

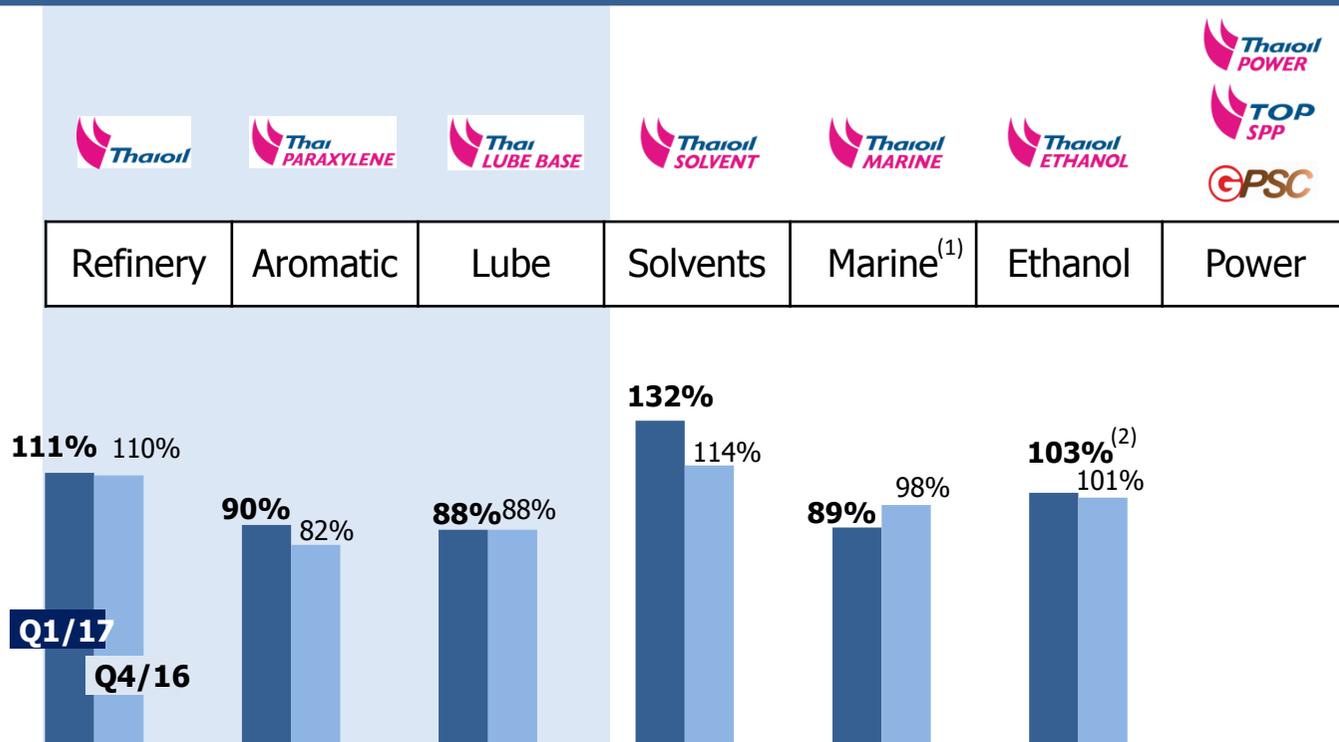
### Performance Highlight

- +Higher electricity dispatch as TP returned from maintenance
- +TOP SPP Net profit contribution of 321 MB
- +Higher Contribution from GPSC

<sup>(5)</sup> In Q4/16, TOP SPP had a significant increase in sales revenue from retrospective adjustment of electricity and steam sales volume, resulting in higher EBITDA and net profit

# Q1/17: Performance Breakdown by Business Unit

## Utilization/Production (%) & Net Profit (million THB)



## Key Points

- **Refinery:** better contribution driven by high u-rate and strong GRM
- **Aromatic/LAB:** higher contribution from higher U-rate and improved product spreads
- **Lube:** higher contribution supported by better product spread and strong demand in the region
- **Power:** improved TP net profit as return from maintenance and healthy contribution from TOP SPP & GPSC
- **Solvents:** improved net profit from higher run rate & better sales volume and gross margin
- **Marine:** higher contribution from joint venture
- **Ethanol:** better performance supported by higher ethanol selling price while lower feedstock cost and one-time gain on sales of MCE investment ~ 39 MB

	Refinery	Aromatic	Lube	Solvents	Marine <sup>(1)</sup>	Ethanol	Power	Consol	StkG/(L)& Reversal of NRV/(NRV)	Consol Excl Stock G/(L) & Reversal of NRV/(NRV)
Q1/16	2,788	881 <sup>(3)</sup>	502	27	48	24	402 <sup>(4)</sup>	4,726	(311)	5,037
Q4/16	4,275	566 <sup>(3)</sup>	136	107	(4)	54	643 <sup>(4)</sup>	5,802	3,753	2,050
Q1/17	4,492	1,213 <sup>(3)</sup>	489	148	1	120	586 <sup>(4)</sup>	7,075	(249)	7,324

(1) U-rate of 5 Oil & Chemical Tankers (total capacity: 52,350 DWT)

(2) U-rate of TET includes MCE 1-month U-rate at 124%, SAPTHIP 102% and UBE 100%

(3) Includes 75% of LAB net profit Q1/16 = (12) MB, Q4/16 = (90) MB, Q1/17 = 118 MB

(4) Apply on an equity accounted basis in the consolidated financial statement. (GPSC has been held by TOP 8.9% and TP 20.8%, TP has been held by TOP 74% & TOP SPP has been held by TOP 100%)

# Q1/17 TOP Group Consolidated P&L



(million THB)	Q1/17	Q4/16	QoQ+ / (-)	Q1/16	YoY+ / (-)	
Sales Revenue	87,596	77,104	10,492 <sup>A</sup>	56,790	30,806	<b>A Higher overall product price and sale volume due to strong demand</b>
Hedging Gain / (Loss)	(86)	(330)	244 <sup>B</sup>	27	(113)	<b>B Mainly from loss in inventory hedge in Q4/16</b>
<b>EBITDA</b>	<b>9,548</b>	<b>10,085</b>	<b>(537) <sup>C</sup></b>	<b>6,653</b>	<b>2,895</b>	<b>C Mainly from huge stock gain in Q4/16</b>
EBITDA excl. Stk G/(L) & Reversal of NRV/(NRV)	9,798	6,332	3,466 <sup>D</sup>	6,964	2,833	<b>D Mainly from stronger Mkt GIM 9.4 \$/bbl compared to 8.0 \$/bbl &amp; lower operating cost</b>
Financial Charges	(846)	(911)	65	(805)	(41)	
FX G/(L) & CCS	1,323	(870)	2,193 <sup>E</sup>	687	636	
(Tax Expense)/reversal of income tax	(1,461)	(794)	(667) <sup>F</sup>	(363)	(1,098)	
<b>Net Profit / (Loss)</b>	<b>7,075</b>	<b>5,802</b>	<b>1,273</b>	<b>4,726</b>	<b>2,349</b>	<b>E Unrealized gain on USD debt from THB appreciated in Q1/17 compared to Q4/16 and realized gain on AP/AR</b>
EPS (THB/Share)	3.47	2.84	0.62	2.32	1.15	
Stock G/(L)&Reversal of NRV/(NRV)	(249)	3,753	(4,002)	(311)	61	
<b>Net Profit/ (Loss) excl. Stk G/(L) and Reversal of NRV/(NRV)</b>	<b>7,324</b>	<b>2,050</b>	<b>5,274</b>	<b>5,037</b>	<b>2,287</b>	<b>F Mainly from fully used of BOI privilege for tax exemption on environment projects in Q1/17</b>
THB/US\$ - average	35.28	35.57	(0.29)	35.81	(0.53)	
THB/US\$ - ending	34.61	36.00	(1.39)	35.41	(0.80)	
Effective Tax Rate (%) *	17%	12%	5%	7%	10%	



# Q1/17 TOP Group Consolidated Cash Flow

(Unit: Million THB)

Operating Cash Flow		
	Q1/17	Q1/16
<b>Operating Cash Flow</b>	<b>10,089</b>	<b>9,763</b>
Net income & non-cash adj.	10,047	6,378
Change in working capital	42	3,385

(Unit: Million THB)

Investments		
	Q1/17	Q1/16
<b>Investments</b>	<b>(2,891)</b>	<b>(18,725)</b>
ST investments	244	(16,293)
Private fund	(2,011)	-
CAPEX (PP&E) & other	(1,124) <sup>1)</sup>	(2,432)

1) TOP 609MB, SAPTHIP 43MB

Free Cash Flow		
	Q1/17	Q1/16
<b>Free Cash Flow</b>	<b>7,199</b>	<b>8,962</b>

Financing		
	Q1/17	Q1/16
<b>Financing</b>	<b>(6,396)</b>	<b>(12)</b>
Loans proceeding	415 <sup>2)</sup>	1,653
Loans repayment	(5,259) <sup>3)</sup>	(164)
Interest	(1,551)	(1,501)

2) SAPT 358MB, LABIX 50MB  
 3) TOP 4,932MB, LABIX 248MB, TM 54MB, SAPT 25MB

	Beginning	Change	Effect of FCD	Ending
<b>cash</b>	<b>31,121</b>	<b>802</b> ↑	<b>(612)</b>	<b>31,311</b>
<b>S/T investment</b>	<b>29,654</b>	<b>(495)<sup>4)</sup></b> ↓		<b>29,159</b>
	<b>60,775</b>			<b>60,471<sup>5)</sup></b>

4) non-cash transaction :  
 Other payable-Proceed of purchase securities 233MB and  
 Accrued interest in investment 18MB

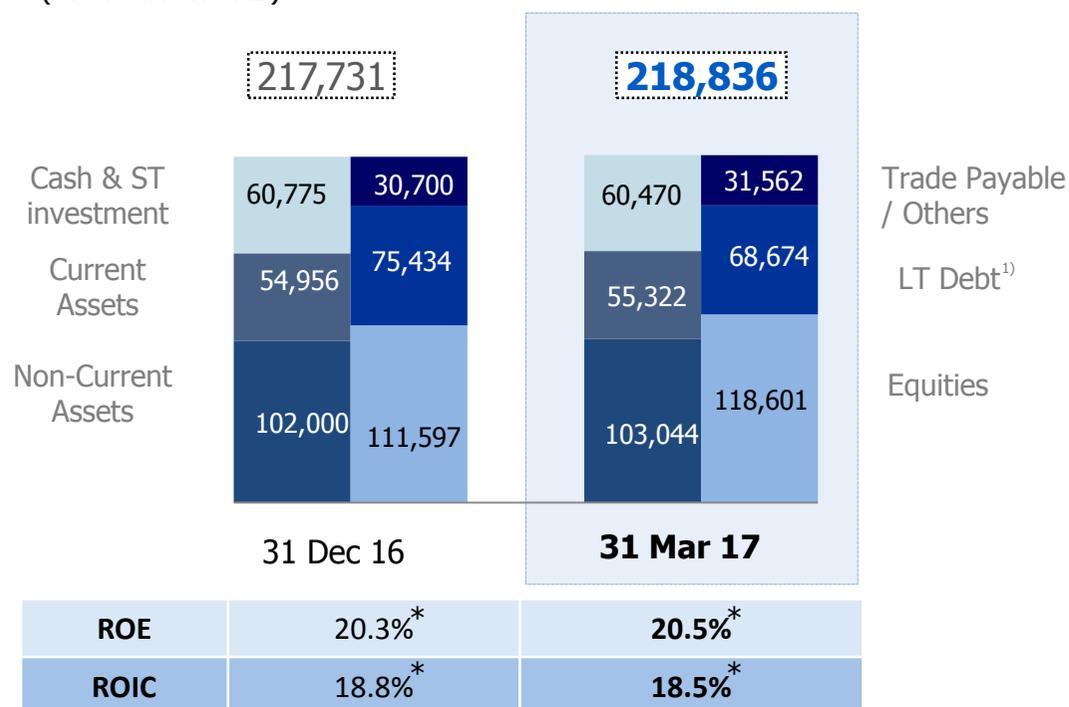
5) FCD = 17,177MB (501MUSD)



# Q1/17 TOP Group Strong Financial Position & Financial Ratios

## Statements of Financial Position

(Unit: million THB)

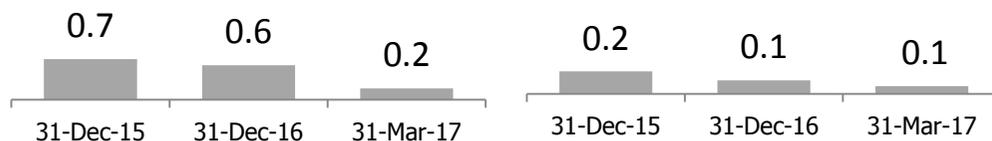


1) Including current portion of Long-Term Debt

## Financial Ratios

**Net Debt / adj. EBITDA\*\***

**Net Debt / Equity**



\* Based on actual performance in the past 12 months

\*\* Annualized EBITDA (excl stock gain/loss & Reversal of NRV/(NRV))

## Consolidated Long-Term Debt as at 31 Mar 17<sup>1)</sup>

**Total Long-Term Debt**

68,674 million THB  
**(US\$ 1,984 million equivalence)**

**Net Debt**

9,457 million THB  
**(US\$ 273 million equivalence)**

As at 31 Mar 17 (34.61 THB/US\$)

	Value (Million)	Portion
US\$ Bond & US\$ Loan	USD 1,106	56%
THB Bond	THB 23,500	34%
THB Loan	THB 6,902	10%

Interest Rate	Portion
Float	11%
Fixed	89%
<b>TOP avg.debt life</b>	<b>11.64 Yrs</b>

Cost of Debt	
TOP Group (Net***)	3.48%
TOP Group (Gross)	4.63%

\*\*\*Calculated by interest expense net off interest income as per FS as at 31 Mar 17



Moody's Investors Service

**Baa1**  
Stable Outlook



**BBB**  
Stable Outlook



**AA- (tha)**  
Stable Outlook

## 2H-17 & 2017 MARKET OUTLOOK

- *Crude Oil*
- *Petroleum Products*
- *Aromatics*
- *Base Oil & Bitumen*
- *Linear Alkyl Benzene (LAB)*



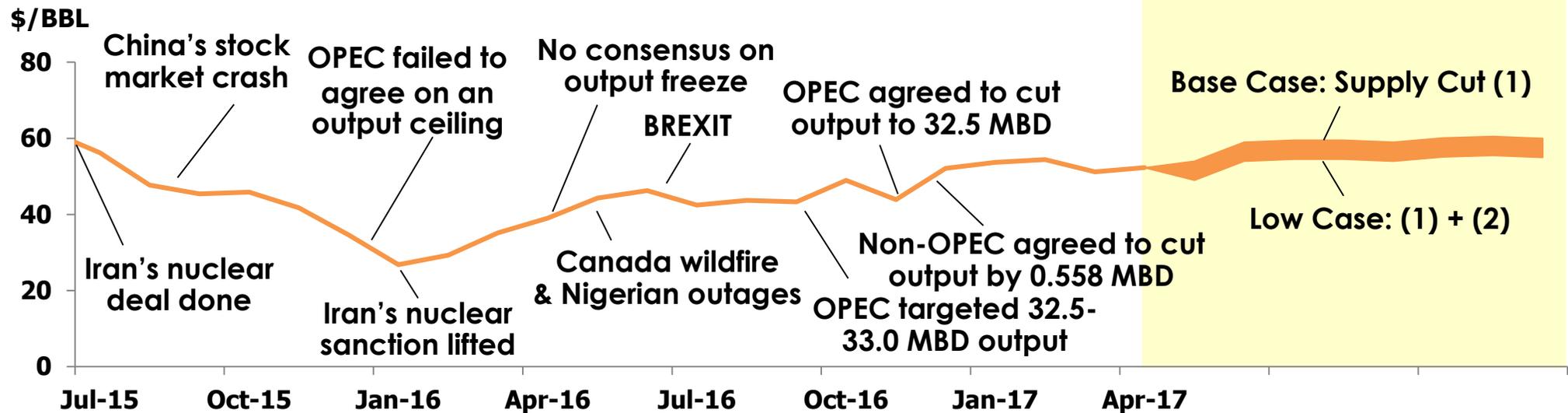


# CRUDE OIL



# Higher Crude Oil Price from Healthy Demand and Supply Cut Deal Extensions

## Dubai Price Movement



\*Q2TD'17 (as of 12 May): \$ 51.4/BBL

## Key Highlights in 2H-17

1

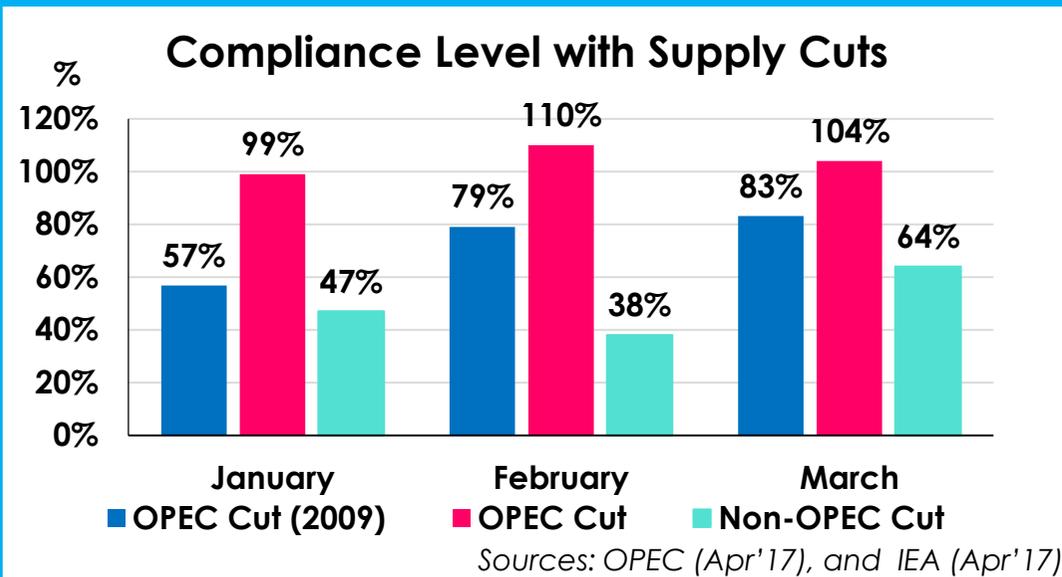
Expectation of Supply Cut Deal Extension by 6-9 Months

2

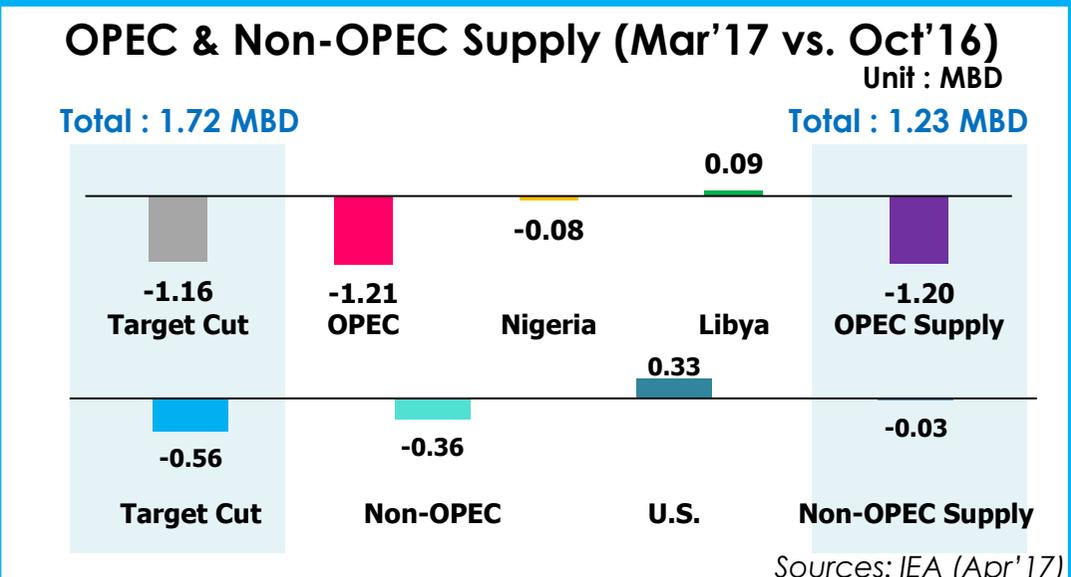
Potential Uptick in Oil Supplies from U.S, Libya and Nigeria

# 1 Expectation of Supply Cut Deal Extension by 6-9 Months

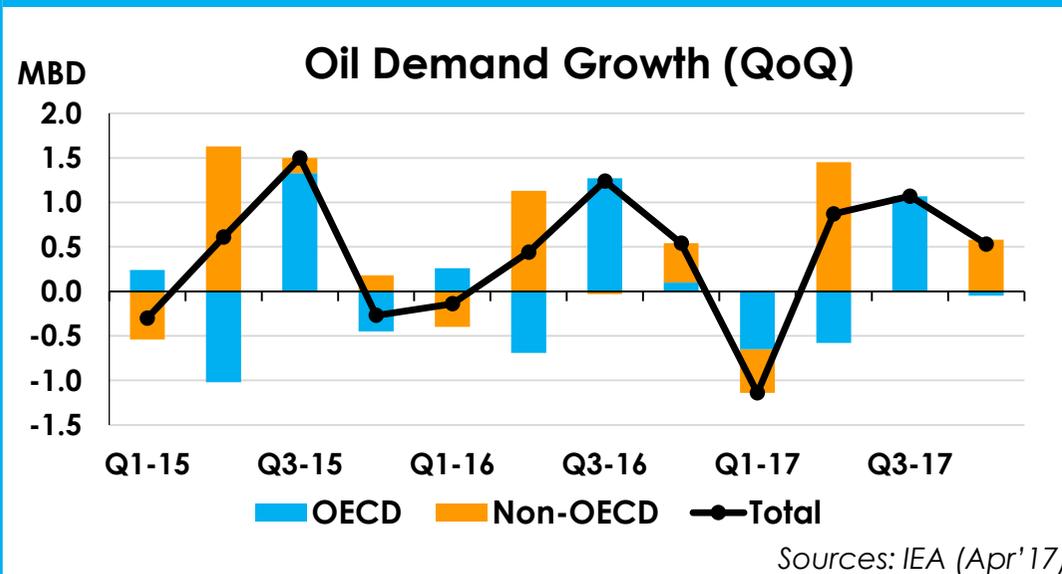
## A High Compliance from OPEC Producers



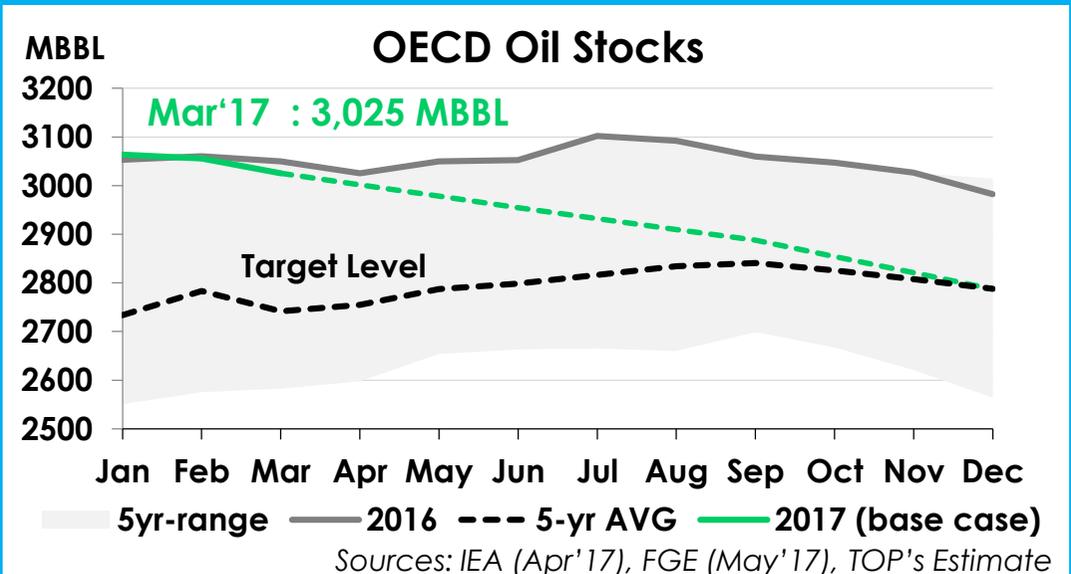
## B Supply Cuts are Partly Offset



## C Declining Oil Consumption in Q1-17

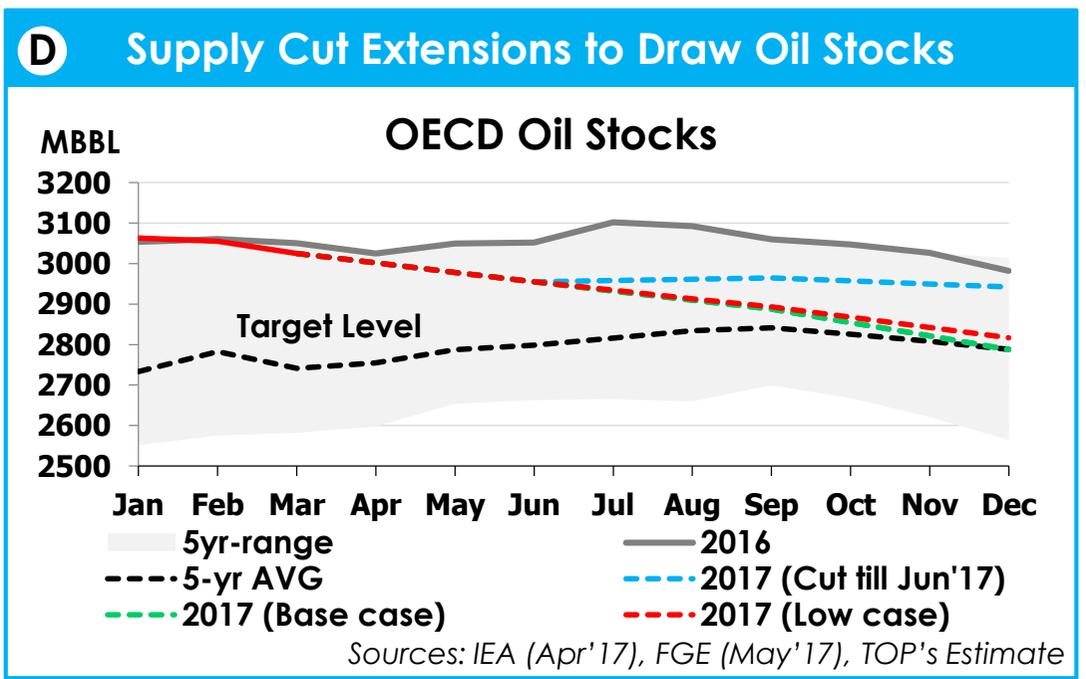
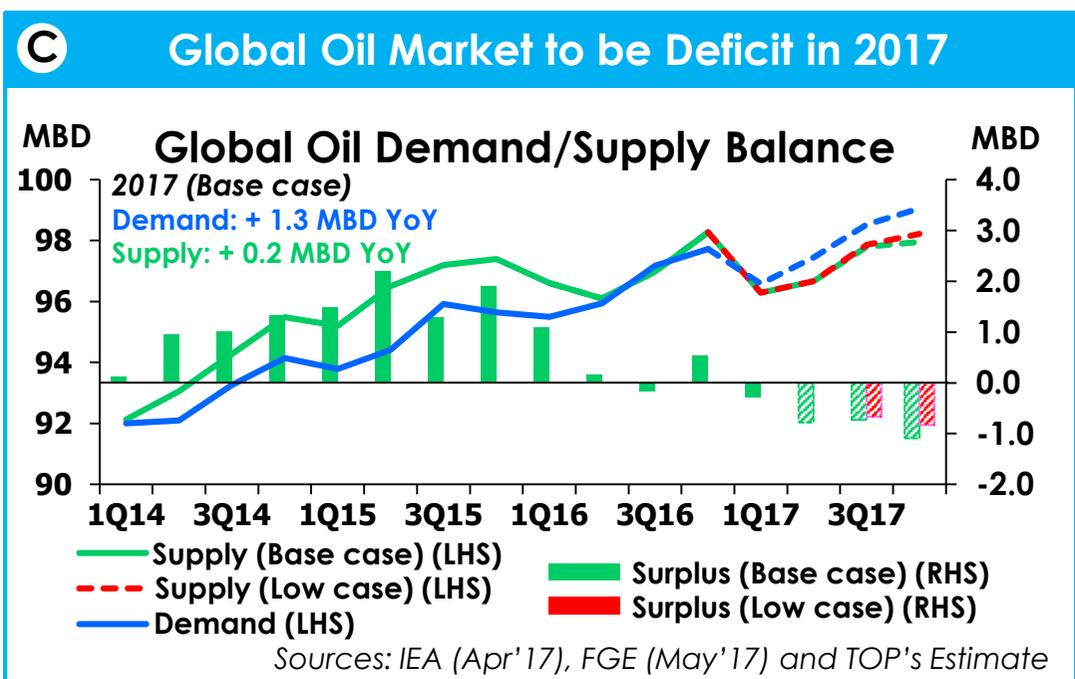
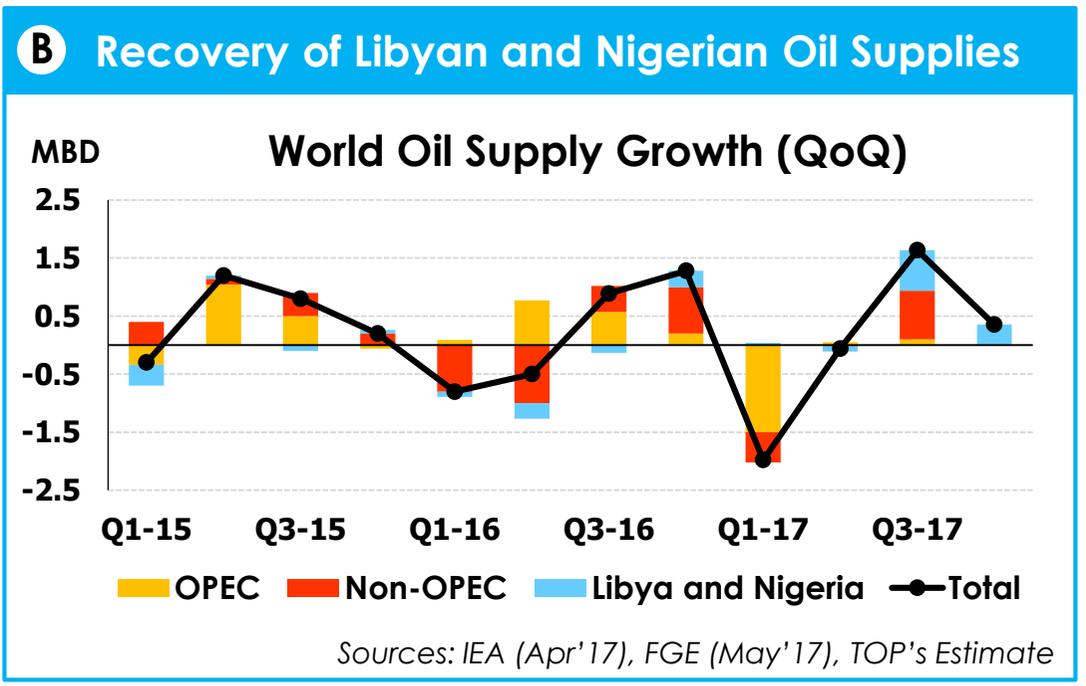
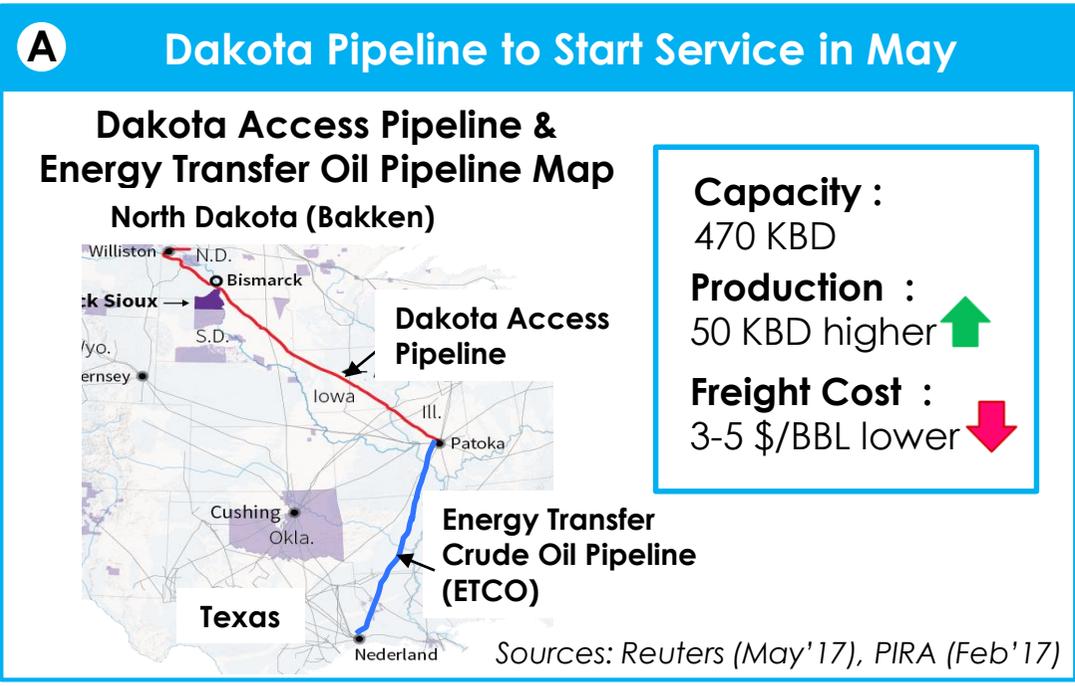


## D Still-High OECD Oil Inventories





# 2 Potential Uptick in Oil Supplies from U.S, Libya and Nigeria

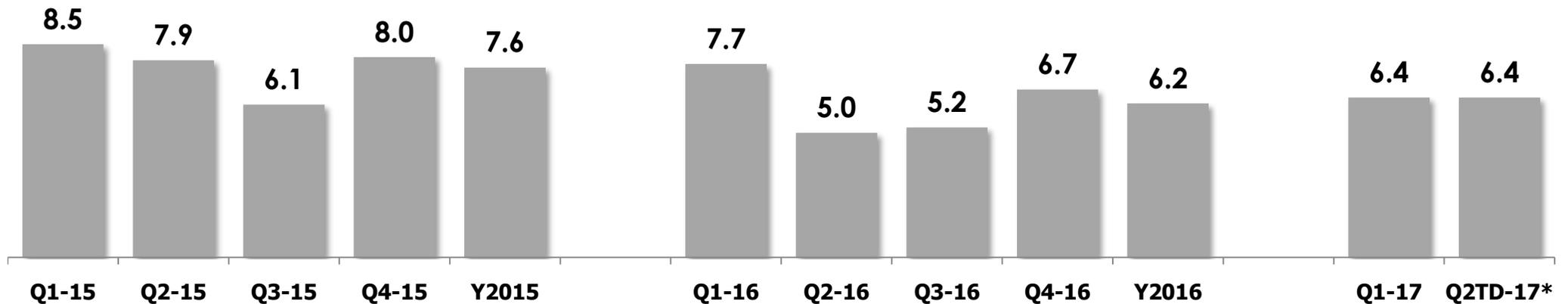




# PETROLEUM PRODUCTS



### Singapore Cracking GRM (\$/BBL)



(\$/BBL)	Q1-16	Q2-16	Q3-16	Q4-16	2016	Q1-17	Q2TD-17*
ULG95-DB	18.8	14.4	11.6	14.6	14.9	14.8	14.8
JET-DB	11.7	11.1	11.1	12.3	11.6	11.3	11.0
GO-DB	9.6	10.5	11.0	12.0	10.8	11.8	11.9
HSFO-DB	(5.2)	(8.7)	(4.3)	(1.7)	(5.0)	(3.1)	(2.8)

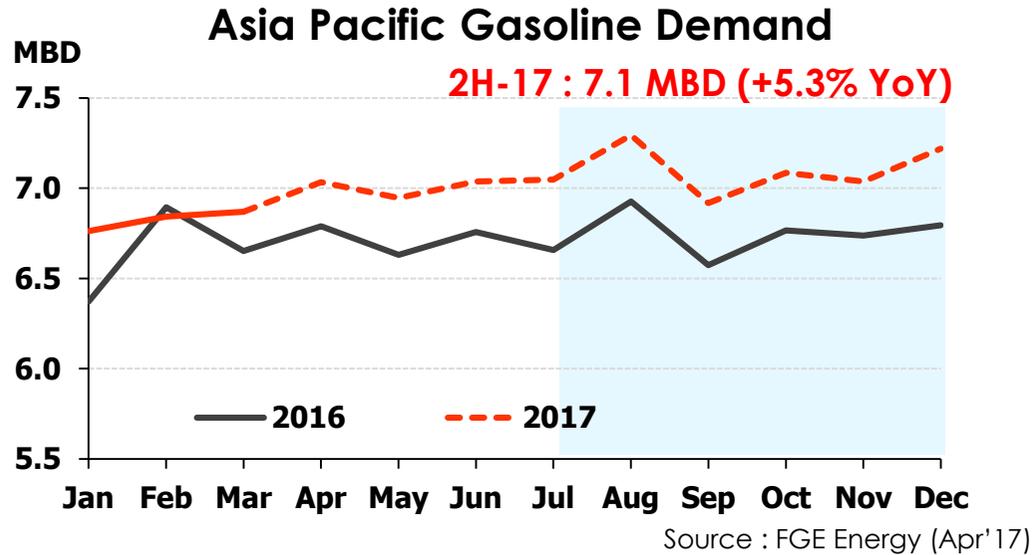
Remarks: \*Q2TD-17 as of 12 May 17

### Key Highlights in 2H-17

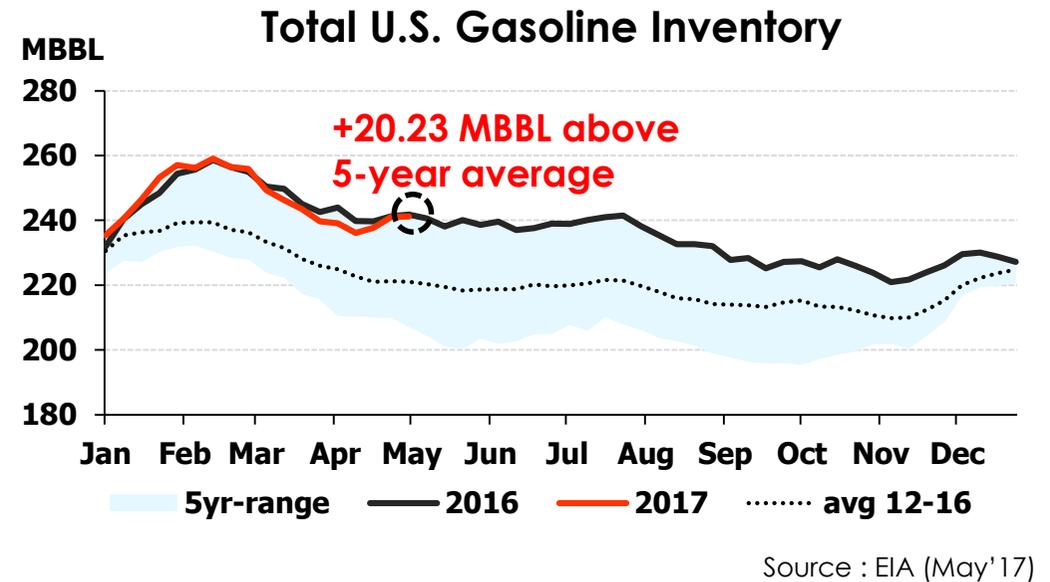
- 1 Steady Gasoline Cracks from Tight Market in Asia and the ME**
- 2 Stable Middle Distillate Cracks from High Demand and Tight Supply**

# Steady Gasoline Cracks from Tight Market in Asia and the ME

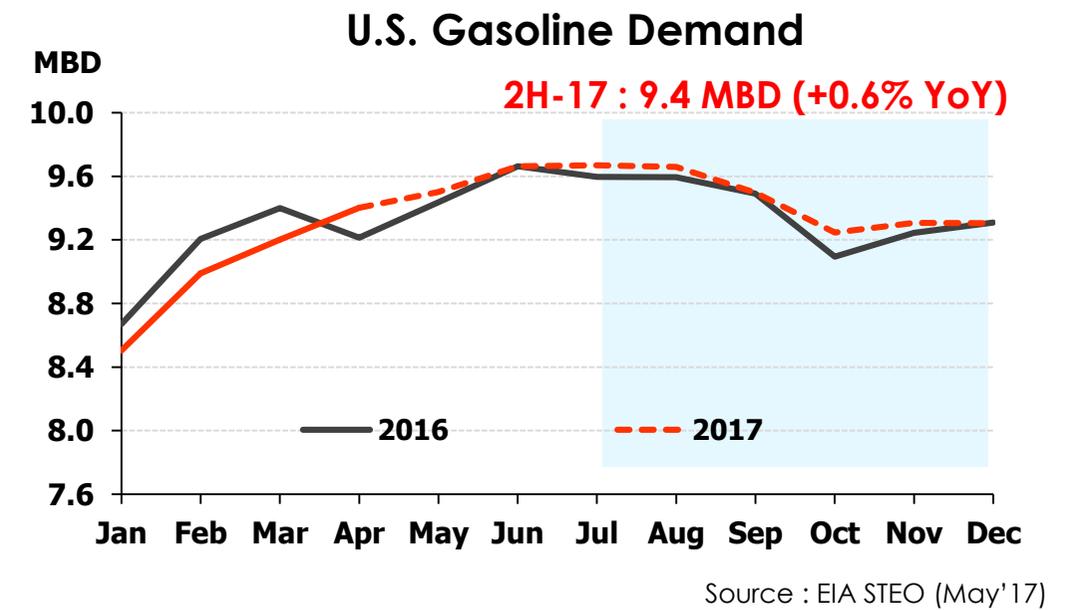
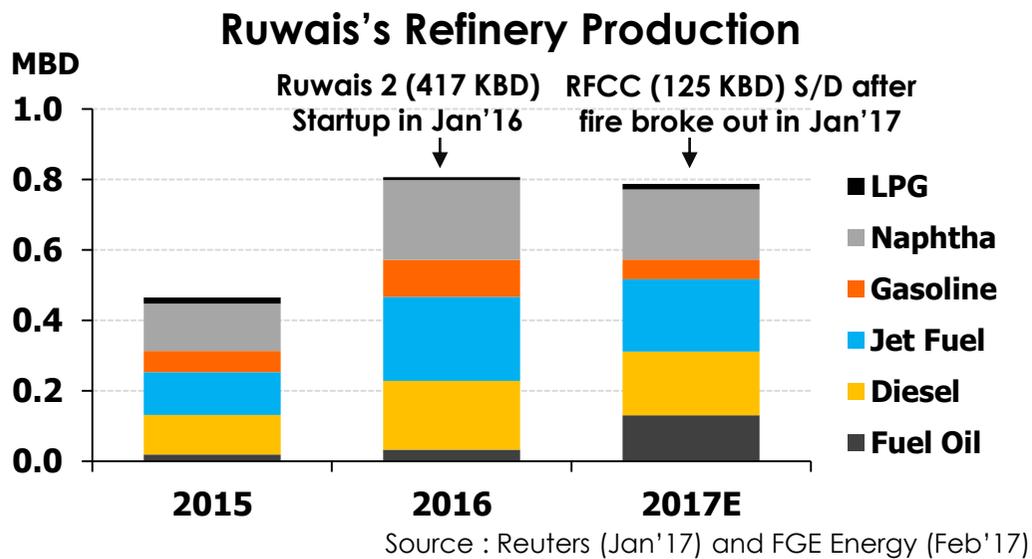
## A Tight Market on Strong Demand Growth



## C High U.S. Stocks from High Runs & Weak Demand



## B Prolonged Shutdown of Ruwais's RFCC until 2018

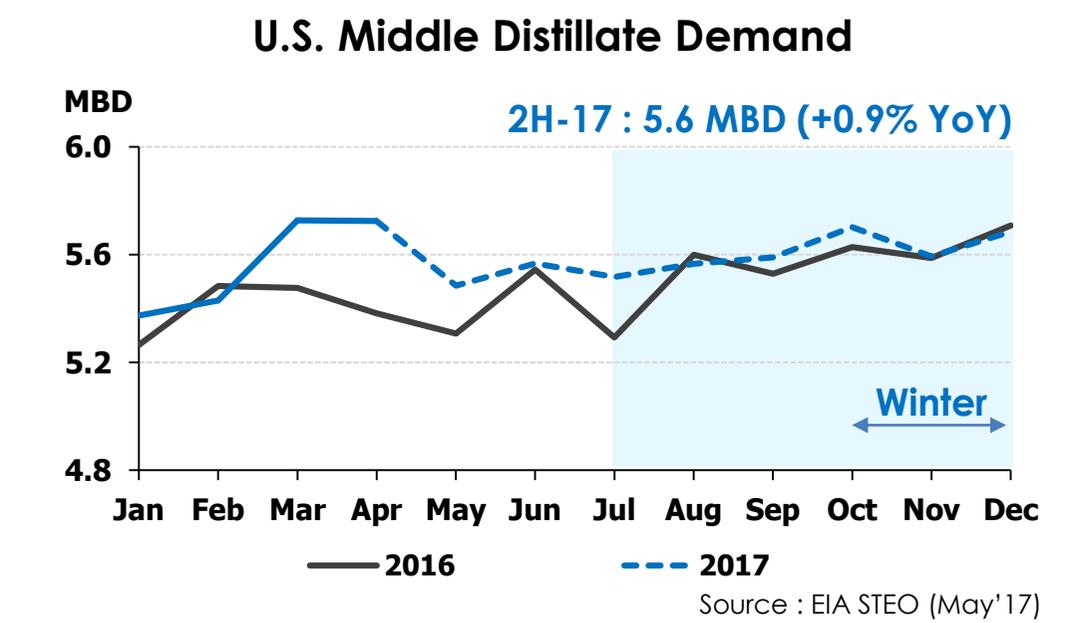
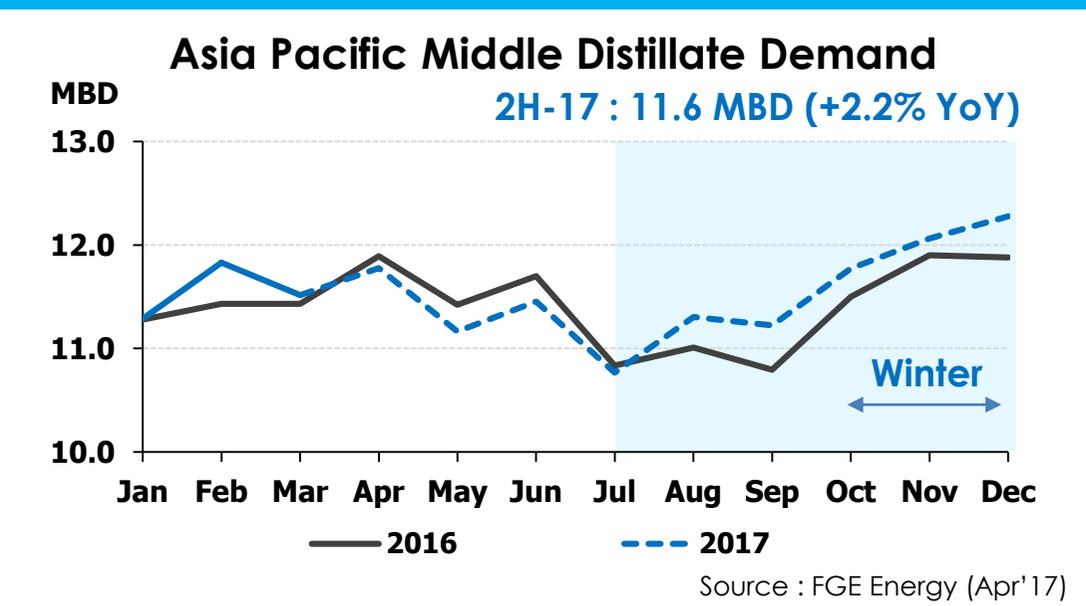




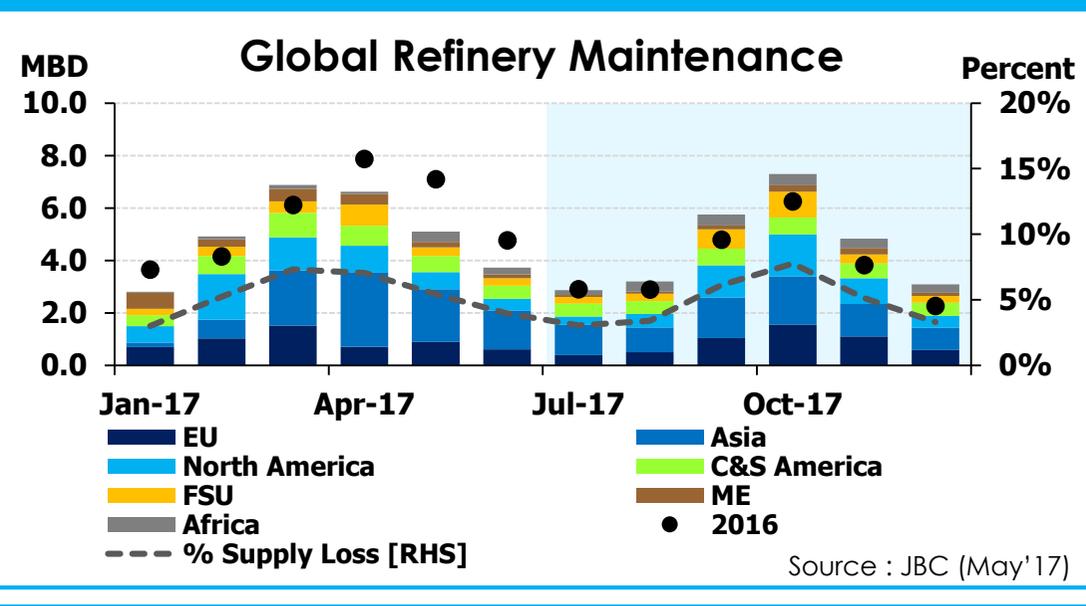
2

# Stable Middle Distillate Cracks from High Demand and Tight Supply

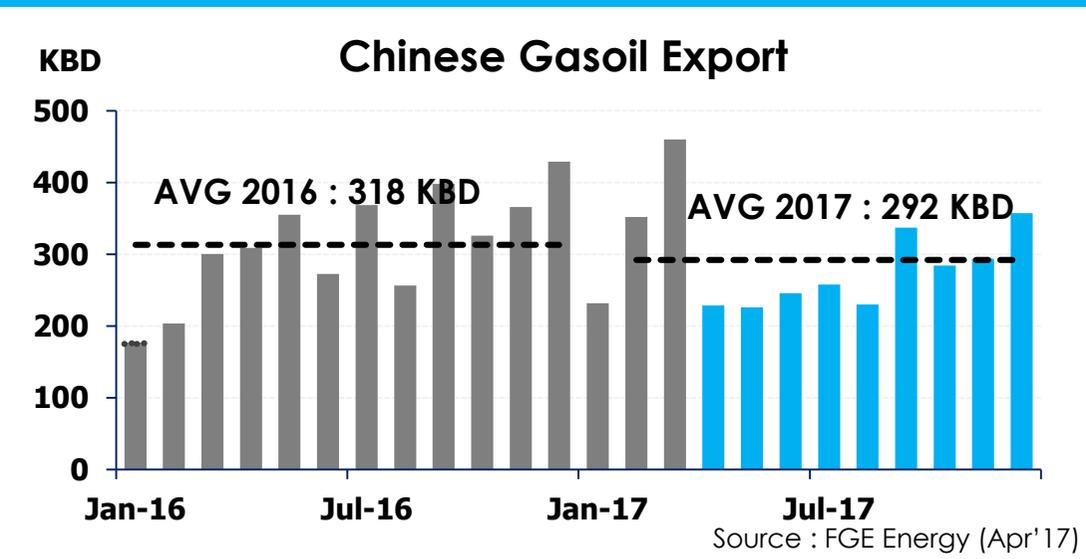
## A Greater Demand from Improved Economy



## B Tight Supply from Heavier Maintenance



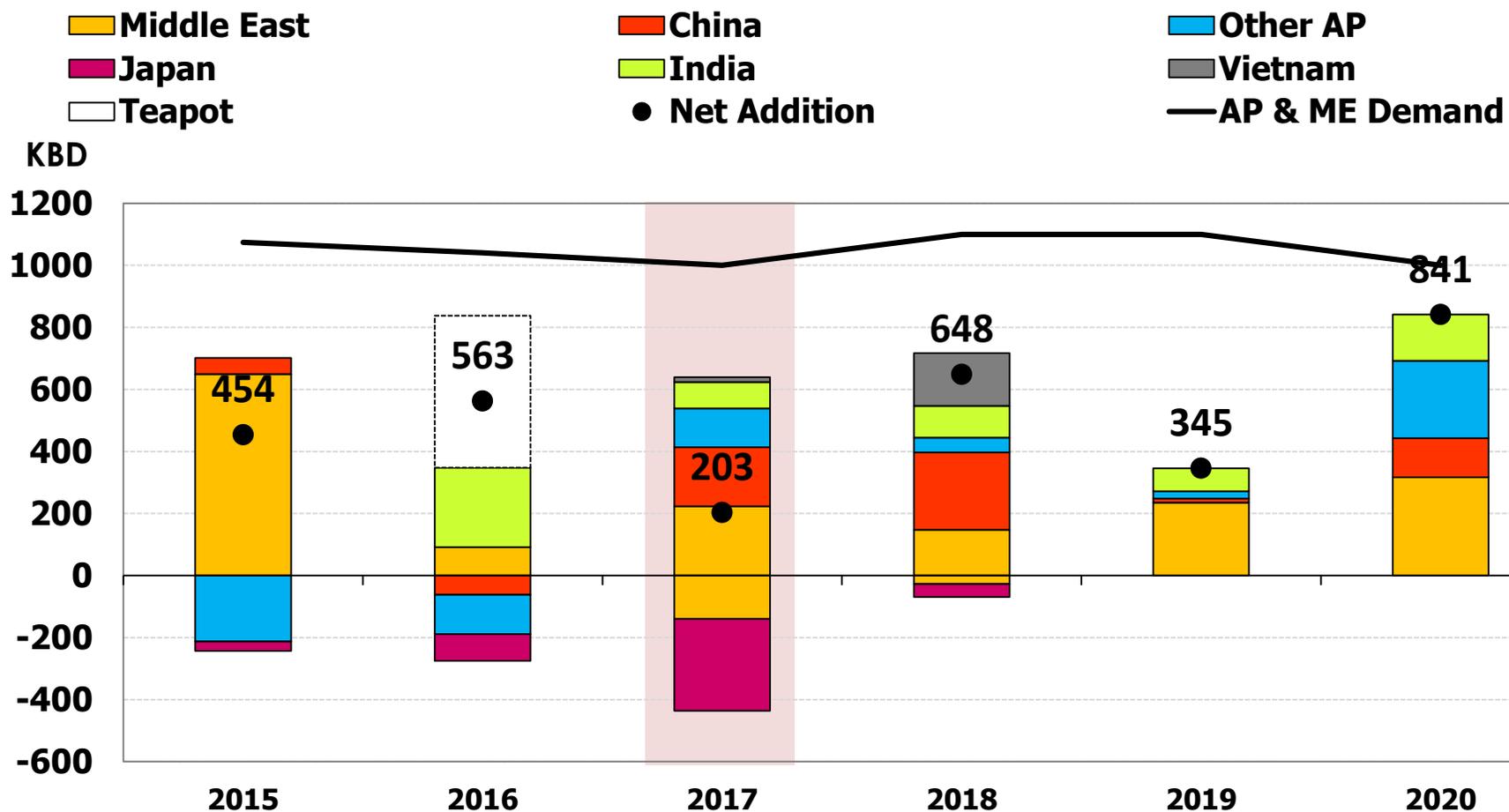
## C Limited Exports from MTA and Higher Demand



# Still-High Refinery Margins in 2017 as Demand Outpaces Refinery Addition

- Lower refinery addition in 2017 due to regulatory restrictions in Japan and delayed startup of refineries in China and Vietnam

## CDU Addition VS Additional Demand – AP & ME



Note: Adjusted capacity based on start-up period (effective additional capacity)

# Thailand Oil Demand Growth

## Thailand Oil Demand Growth



Year on Year	Average 2011-2015 <sup>(B)</sup>	Y 2016 <sup>(B)</sup>	YTD 3M/2017 <sup>(B)</sup> (vs 3M/2016)	Y2017F <sup>(C)</sup>
Mogas <sup>(A)</sup>	+7.1%	+9.8%	+4.3%	+3.1%
Jet/Kero	+4.4%	+6.8%	+5.8%	+4.4%
Diesel <sup>(A)</sup>	+3.4%	+3.1%	+2.6%	+2.3%
<b>Total</b>	<b>+4.4%</b>	<b>+5.4%</b>	<b>+3.5%</b>	<b>+2.8%</b>
GDP	+3.4%	+3.2%	+3.3%	+3.4% <sup>(D)</sup>

**Thailand oil demand growth at 2.8% YoY in 2017**

- Remarks:**
- (A) Mogas and Diesel includes Ethanol and Biodiesel, respectively
  - (B) DOEB Statistics
  - (C) PTT's Estimation (May-17)
  - (D) BOT's Estimate (BOT Monetary Report as of Mar-17)



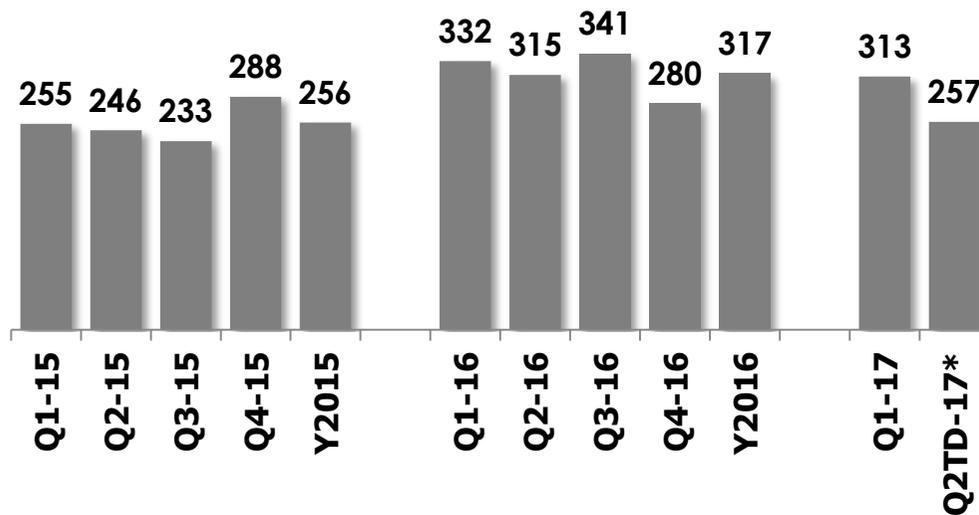
# AROMATICS



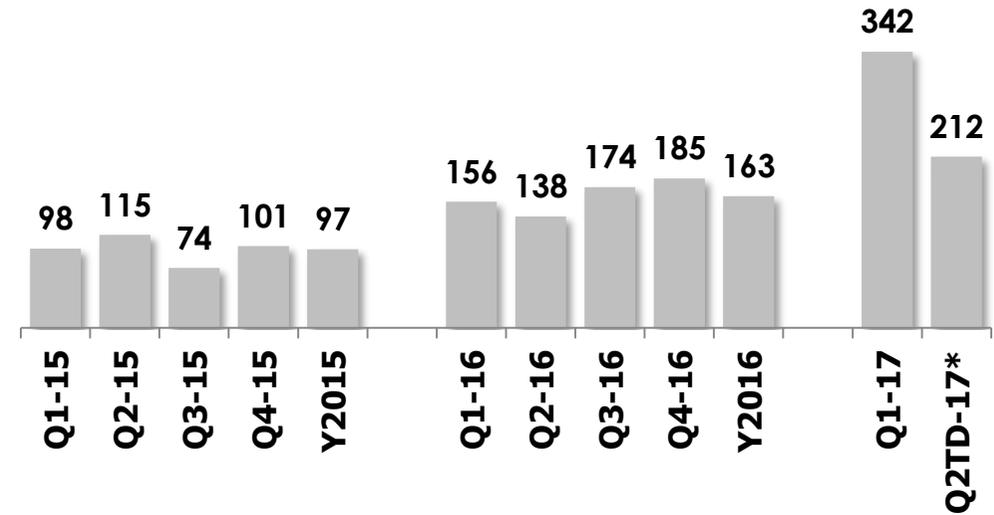
# Soft Aromatics Market due to New Supply Pressure

## Aromatics Market

### PX CFR Taiwan-ULG95 (\$/TON)



### BZ FOB Korea-ULG95 (\$/TON)



(\$/TON)	Q1-16	Q2-16	Q3-16	Q4-16	2016	Q1-17	Q2TD-17*
PX-ULG95	332	315	341	280	317	312	257
BZ-ULG95	156	138	174	185	163	346	212

Remarks: \*Q2TD-17 as of 12 May 17

### Key Highlights in 2H-17

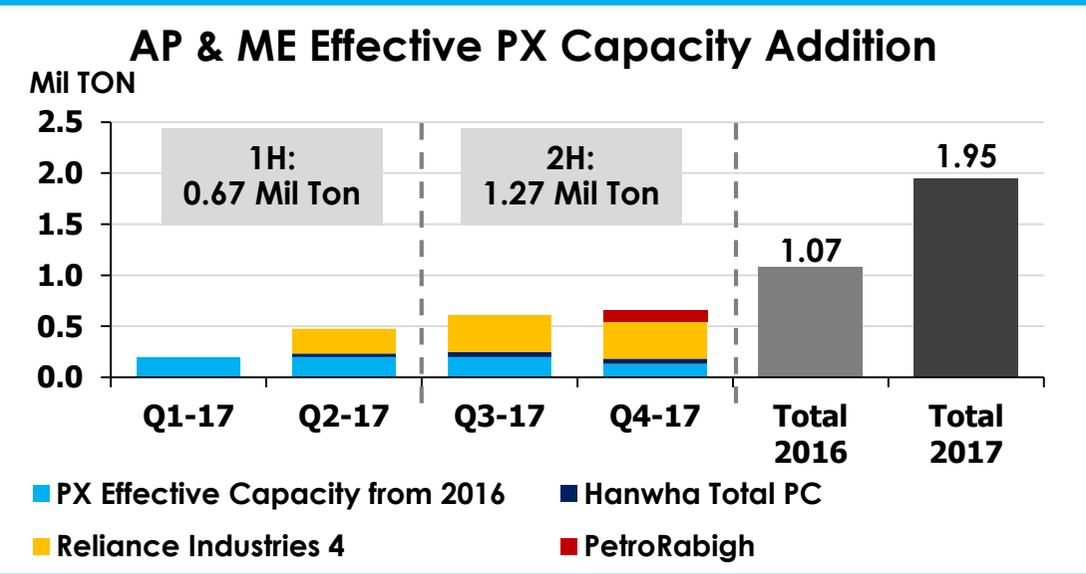
- 1 Softer PX Market on High Capacity Addition amid Lower Supply
- 2 Pressured BZ Market on Higher Supply amid Lower Maintenance



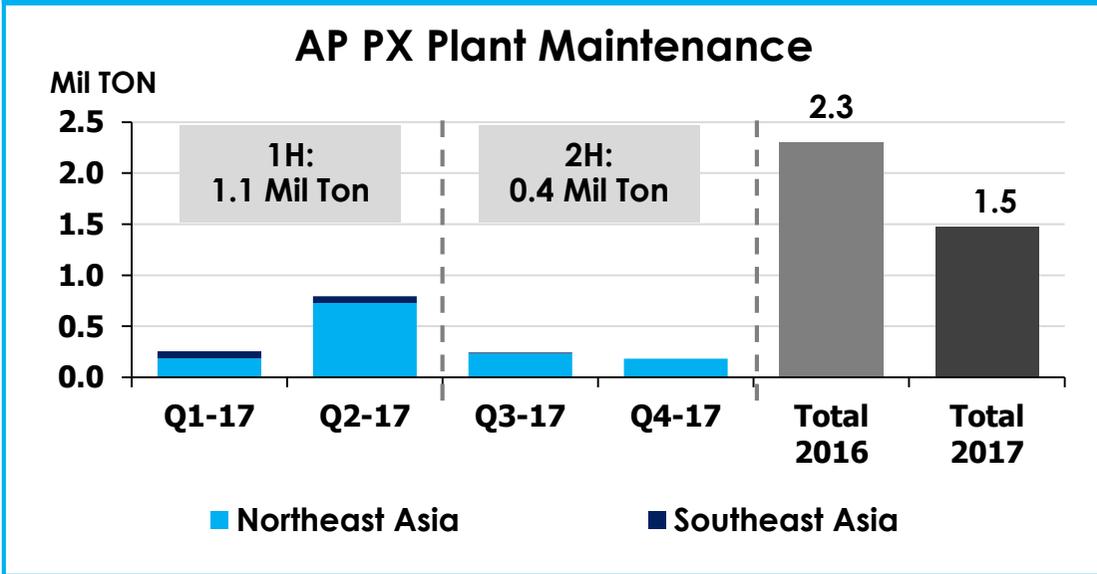
1

# Softer PX Market on High Capacity Addition amid Lower Supply

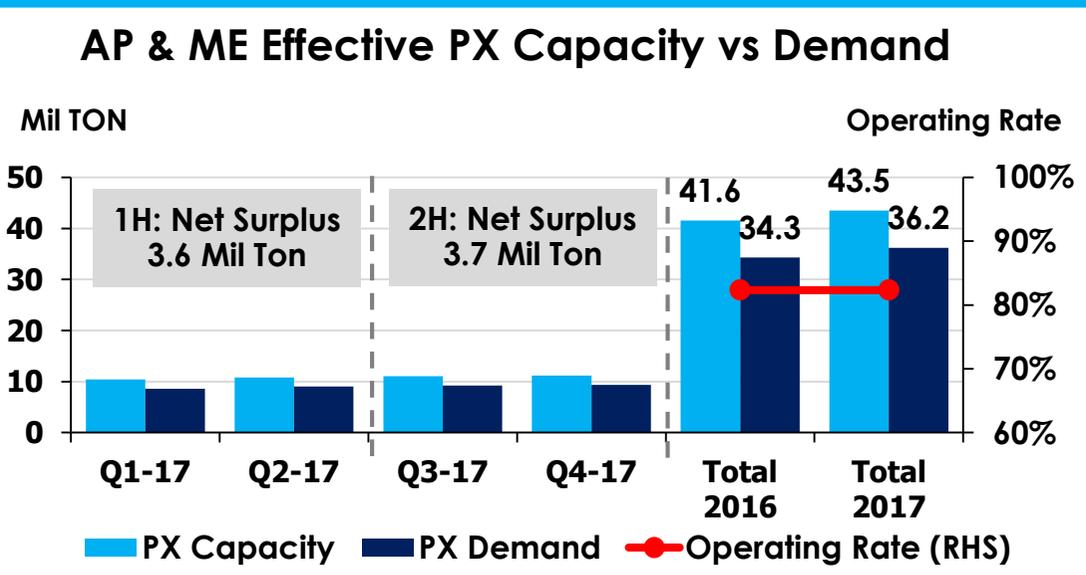
## A Softer Sentiment in 2H-17 due to Capacity Addition



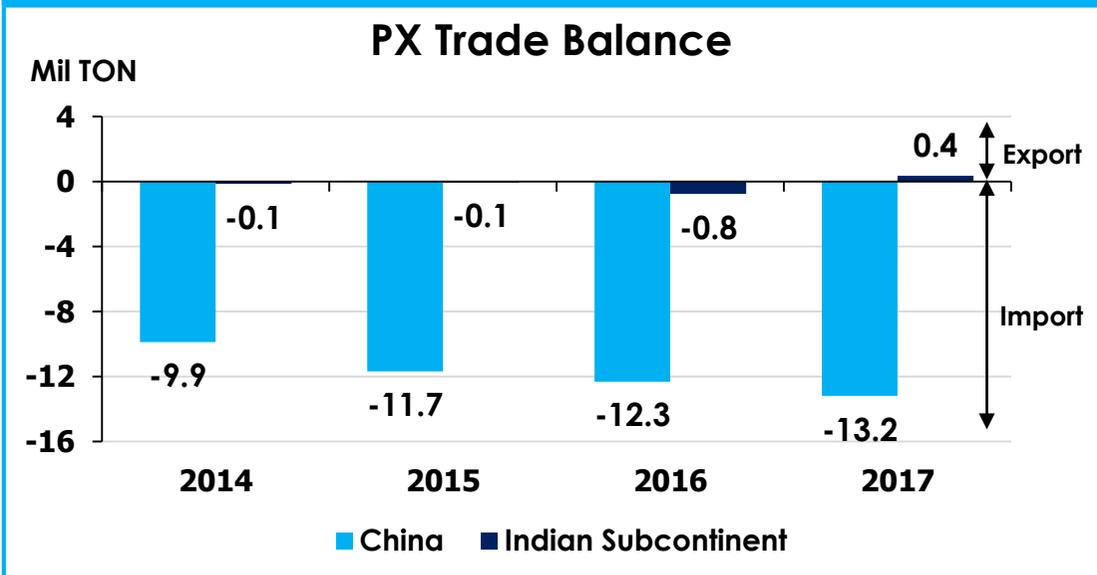
## B Supply Pressure in 2H-17 on Lower Maintenance



## C Softer Market on Higher Surplus in 2H-17



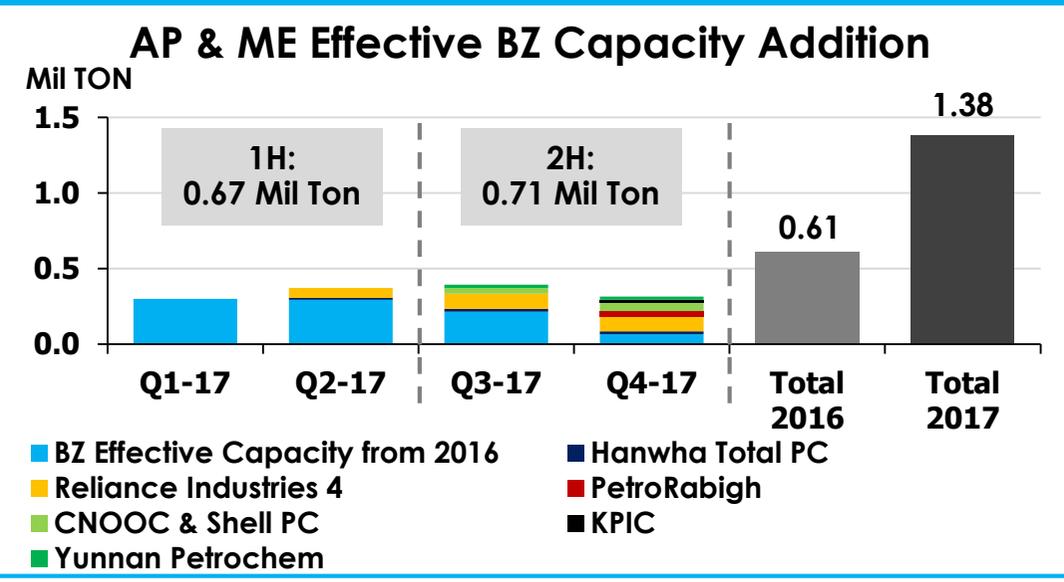
## D China Remains Major Importer, India to be Exporter



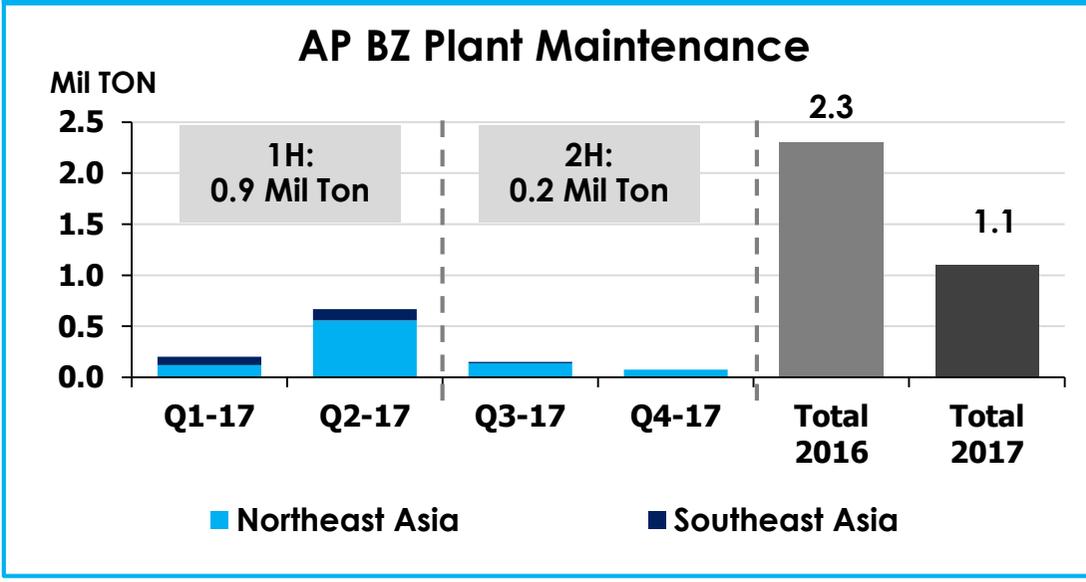
Source: PCI WoodMac (Feb'17), IHS (Mar 17), TOP's Estimate

# Pressured BZ Market on Higher Supply amid Lower Maintenance

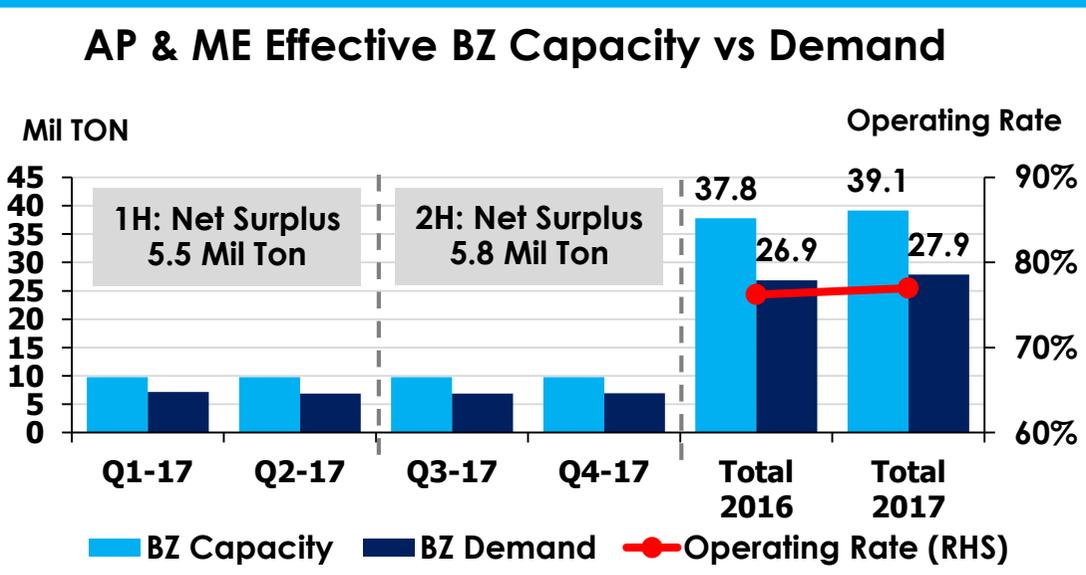
**A** Softer Sentiment in 2H-17 due to Capacity Addition



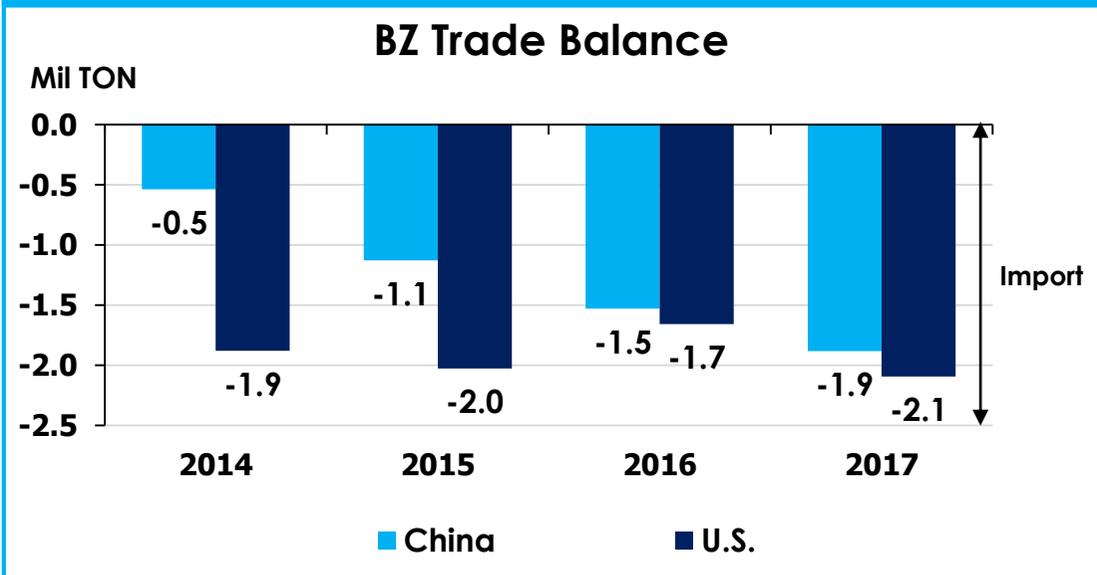
**B** Supply Pressure in 2H-17 on Lower Maintenance



**C** Softer Market on Higher Surplus in 2H-17



**D** Rising Chinese and U.S. BZ Imports in 2017



Source: IHS (Mar'17), TOP's Estimate



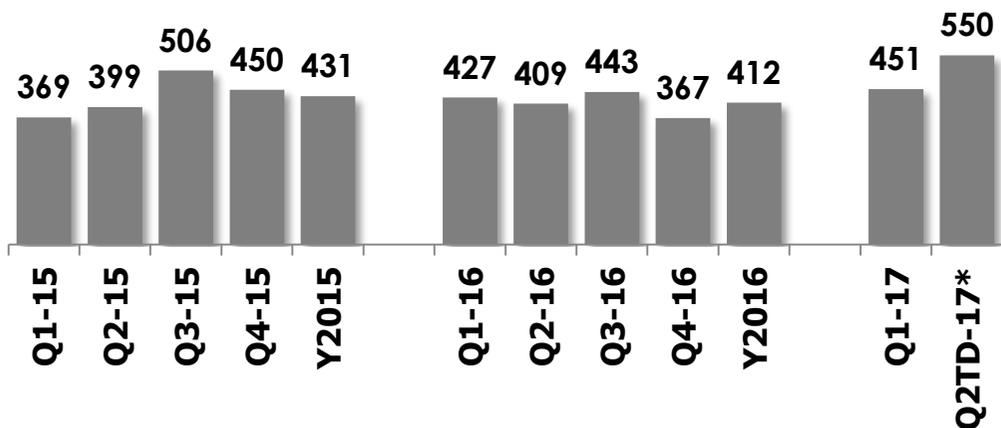
# **BASE OIL & BITUMEN**





# Softer Base Oil Market due to Lower Plant Maintenance

## 500SN – HSFO (\$/TON)



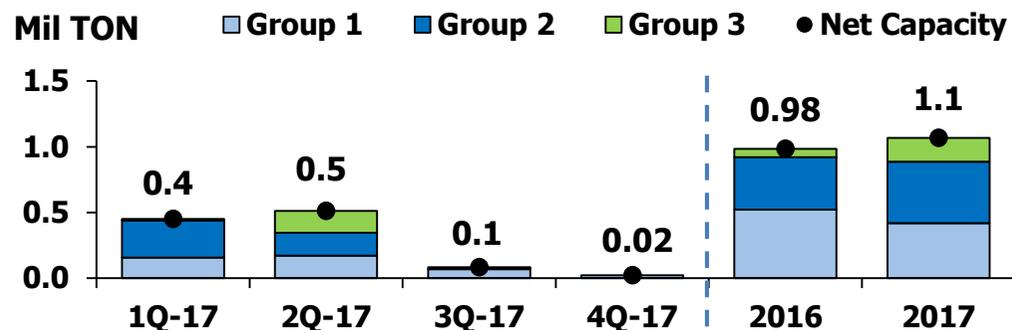
(\$/TON)	Q1-16	Q2-16	Q3-16	Q4-16	2016	Q1-17	Q2TD-17*
500SN -HSFO	427	409	443	367	412	451	550

Remarks: \*Q2TD-17 as of 12 May 17

## Key Highlights in 2H-17

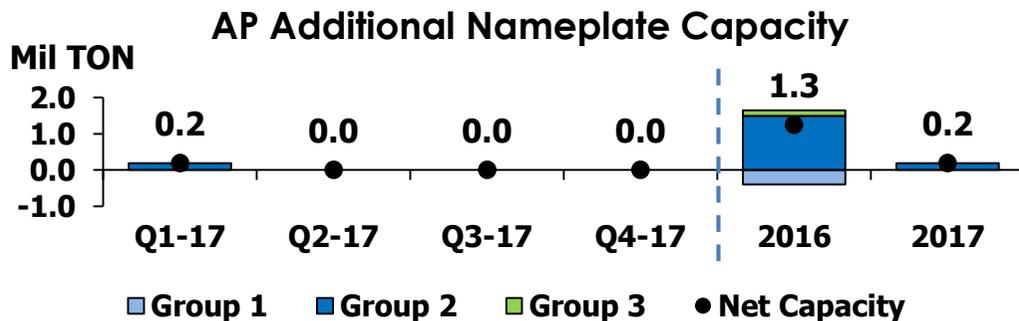
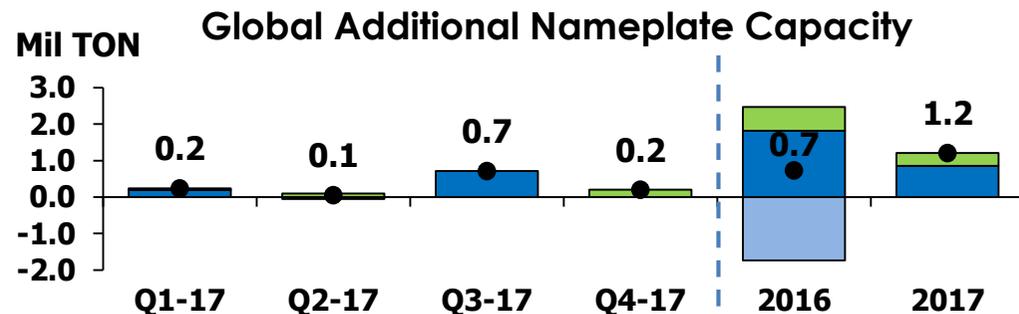
- 1 Higher Supply due to Lower Plant Maintenance
- 2 No New Base Oil Additional Capacity in Asia Pacific

## A AP Plant Maintenance (Effective Capacity)



Sources: Argus Apr'17 and TOP's Estimate

## B New Gr.2 and Gr.3 Expansion in 2017

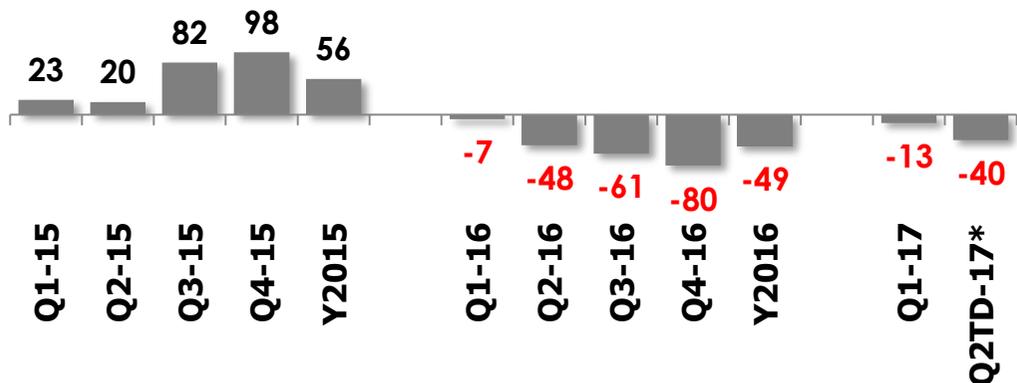


Sources: Argus Apr'17 and TOP's Estimate



# Softer Bitumen Market on Weaker Demand

## Bitumen-HSFO (\$/TON)



(\$/TON)	Q1-16	Q2-16	Q3-16	Q4-16	2016	Q1-17	Q2TD-17*
Bitumen-HSFO	(7)	(48)	(61)	(80)	(49)	(13)	(40)

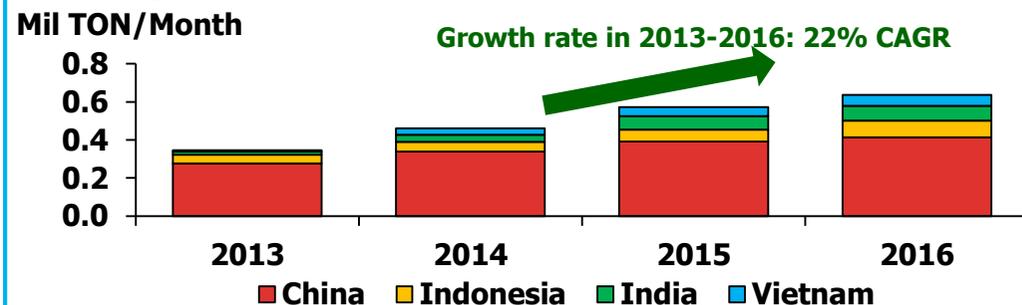
Remarks: \*Q1TD-17 as of 12 May 17

## Key Highlights in 2H-17

- 1 Softer Regional and Thai Demand during Rainy Season
- 2 Maintaining Import from Major Asian Players for Road Construction Projects

## A Rising Bitumen Demand of Major Asian Players

### Average Import Bitumen Volume of Major Asian Players



### 2017

China: 2<sup>nd</sup> year of China's 13<sup>th</sup> Five-Year Plan

India: Easing up Indian economy after Banknote demonetization

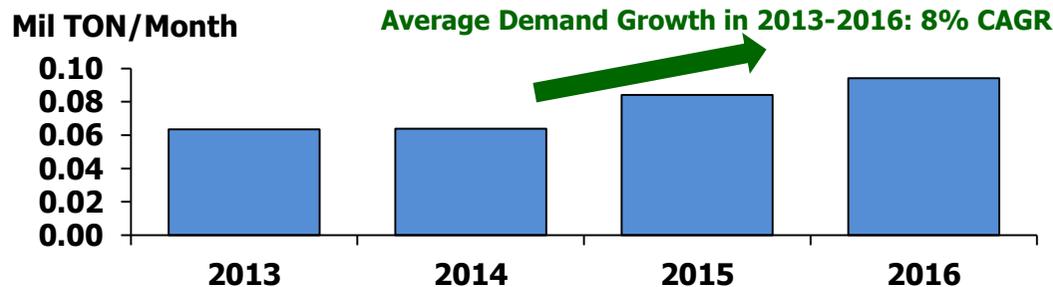
Indonesia: Indonesian budget reimbursement

Vietnam: 2<sup>nd</sup> year of Vietnam's Socio-Economic Development Plan

Source: Bitumart (Apr'17) and Argus (Apr'17)

## B Expected Firmer Thai Demand in 2017

### Thai Domestic Bitumen Demand



### 2017

Thai infrastructure budget growth 12%YOY to 139 Bil Baht  
Rising Thai Asphalt road distance project by 2.9%YOY to 43,182 Km.

Source: DOEB (Mar'17), Department of Highways and Maintenance Bureau



# Linear Alkyl Benzene (LAB)

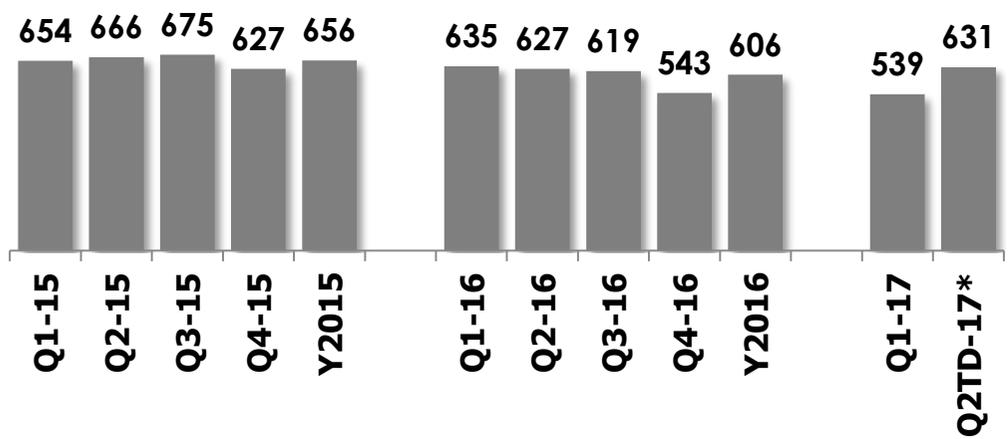


# Stable LAB Market on Slightly Higher Maintenance despite Lower Demand

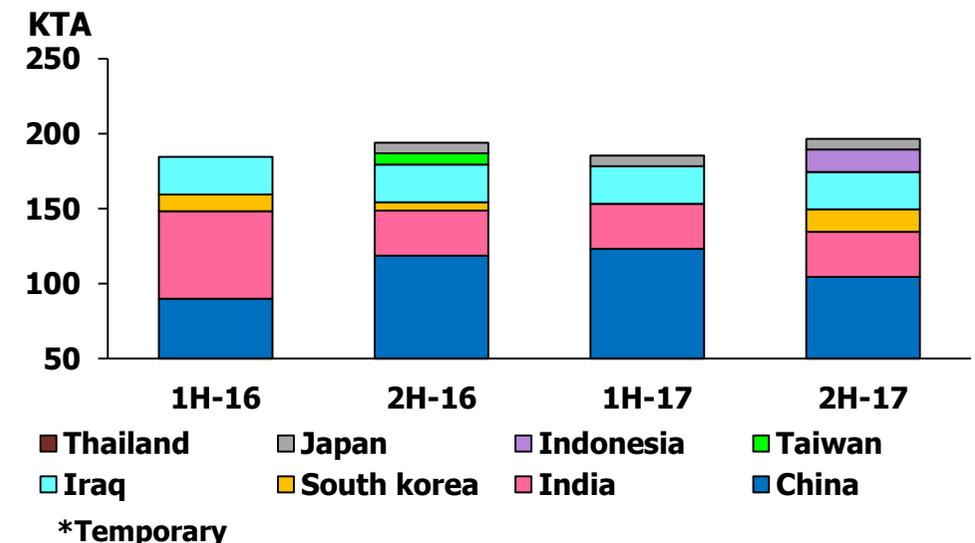


## LAB Market

LAB Spread\*\* (\$/TON)



AP/ME Effective Maintenance/Closure\*



(\$/TON)	Q1-16	Q2-16	Q3-16	Q4-16	2016	Q1-17	Q2TD-17*
LAB Spread	635	627	619	543	606	539	631

Remarks: \*Q2TD-17 as of 12 May 17  
 \*\*Estimated indicator

### Key Highlights in 2H-17

- 1 Slightly Higher Maintenance in AP/ME
- 2 Lower Demand during Rainy Season in Q3



# CONCLUSION



# 2H-17 Market Outlook Conclusion

(vs. 1H-17)



## Crude Oil

**Stronger Crude Oil Price from Healthy Demand and Supply Cut Deal Extensions**



## Refinery

**Still-High Margins from Stronger Demand Growth and Lower Refinery Addition**



## Aromatics

**Softer PX and BZ Market due to New Capacity Addition and Less Maintenance**



## Lube Base

**Softer Base Oil Market due to Lower Plant Maintenance  
Softer Bitumen Market on Weaker Demand**



## LAB

**Stable LAB Market on Slightly Higher Maintenance despite Lower Demand**

# Thank You

Any queries, please contact:



at email: [ir@thaioilgroup.com](mailto:ir@thaioilgroup.com)

Tel: 662-797-2999 / 662-797-2961

Fax: 662-797-2976

## APPENDIX

- Strategic Investment Plan
- Optimized & Flexible Operations...Superior Performance
- CDU Addition VS Additional Demand – AP & ME
- World GRM / Inventories
- Thailand petroleum demand by products



# Strategic Investment Plan Approved by Board of Directors



## CAPEX Plan (Unit US\$ million)

### Projects

	Remaining capital investment		
	2016	2017	2018
Reliability, Efficiency and Flexibility Improvement	32	45	25
Benzene Derivatives – LAB	41	11	13
Power – 2 SPPs	43		
Infrastructure Improvement			
- Lorry Expansion	26	22	
- Jetty 7&8 / Improvement		54	72
- Office Relocation & New Crude Tank		57	56
Other Investments	12	5	
<b>Total</b>	<b>154</b>	<b>194</b>	<b>166</b>

Notes: Excluding approximately 40 M\$/year for annual maintenance

\$360m

# Optimized & Flexible Operations...Superior Performance



Crude Assays based on TOP configuration\*



Sources of Crude

Product output

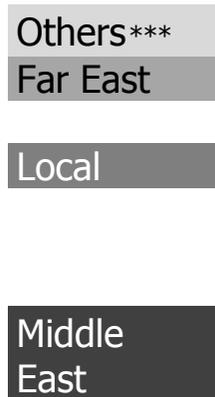
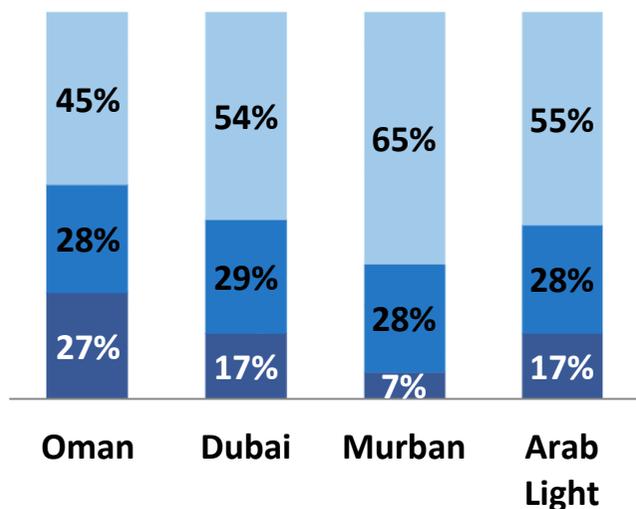
Reference Price



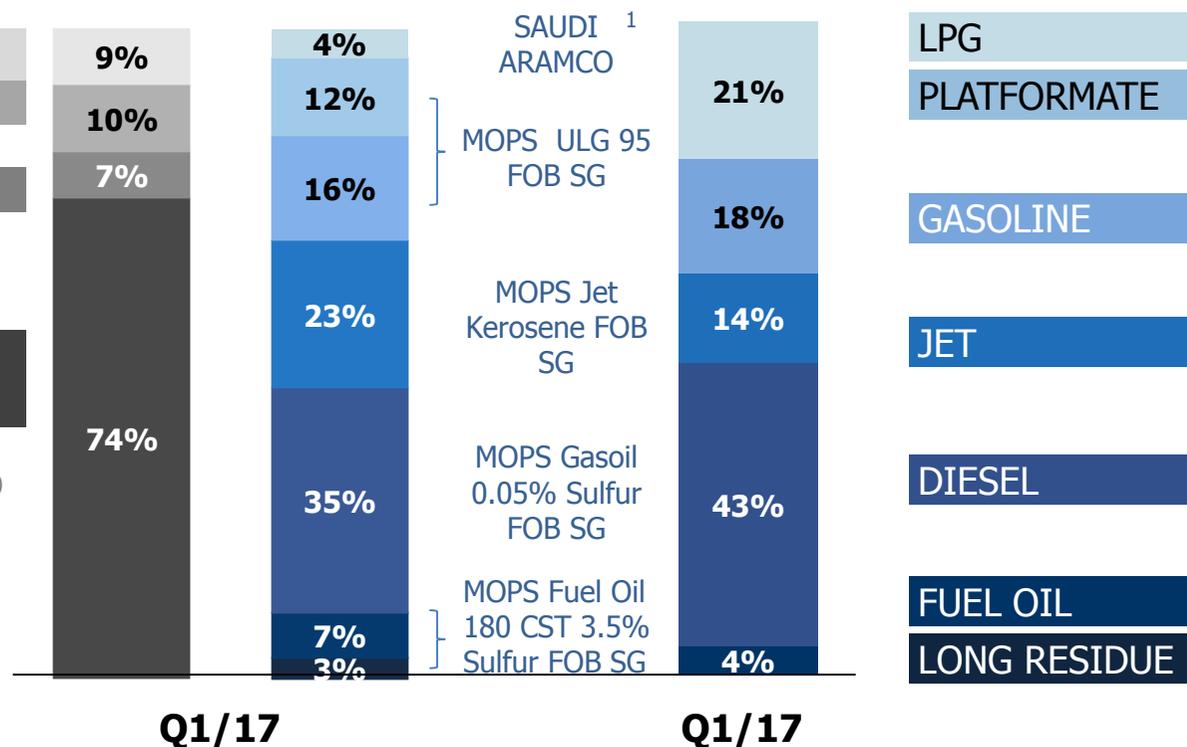
Domestic demand for petroleum products\*\*

% S = 1.43 API = 32.0	% S = 2.52 API = 31.2	% S = 0.78 API = 39.4	% S = 1.97 API = 32.8
--------------------------	--------------------------	--------------------------	--------------------------

■ Short Residue ■ Waxy ■ Gas/Distillates



1. LPG price = LPG CP - 20\$/ton) since 2 Feb 15 onwards.



Thai Oil is able to diversify its type of crude intake and product outputs to maximize demand and margin

- Flexibility in crude intake allows diversification of crude types to source cheaper crude
- Flexibility in product outputs by maximizing middle distillates (jet and diesel) by adjusting production mode to capture domestic demand and price premium
- Maximize Platformate production to capture higher margin on aromatics
- Minimize fuel oil output to avoid lower margin products

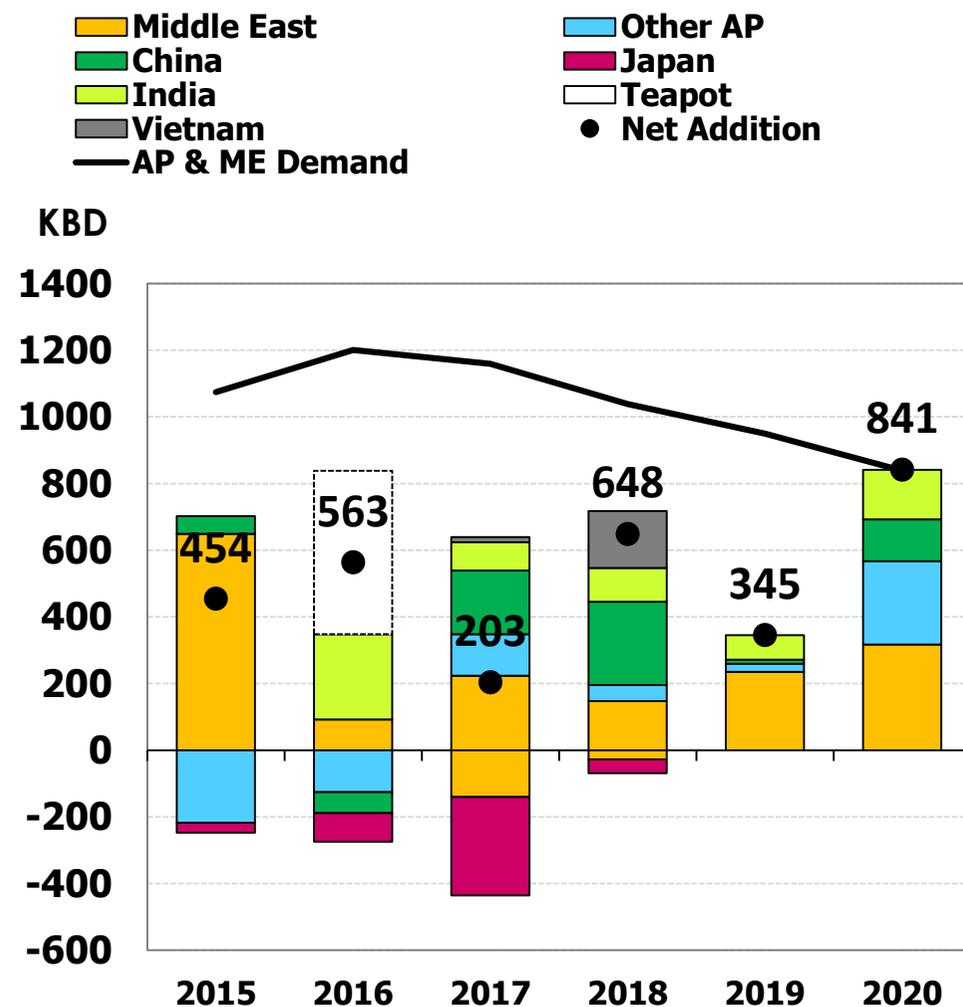
\*Crude yield as per assay in Spiral as of Feb 2016

\*\*Source: Energy Policy and Planning Office, Ministry of Energy Thailand

\*\*\* Including Nigeria, Russia and others

# Asia Pacific and Middle East Refinery Addition

## CDU Addition VS Additional Demand – AP & ME

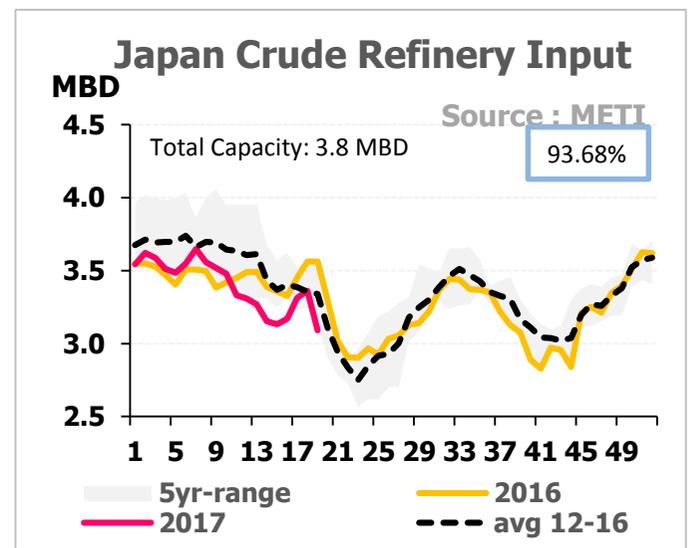
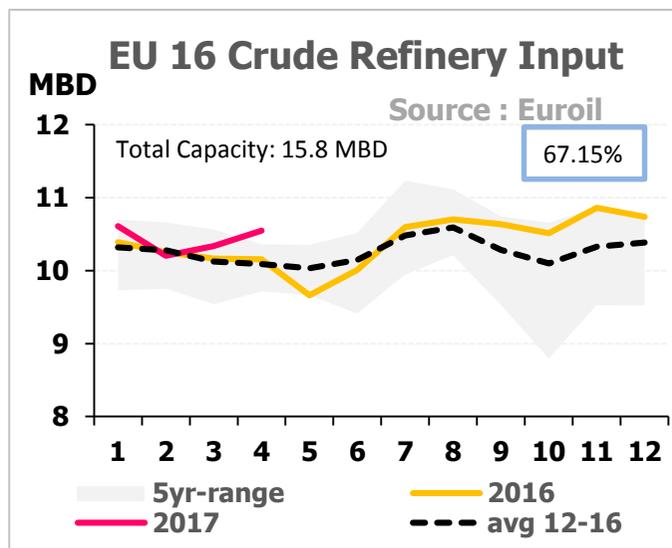
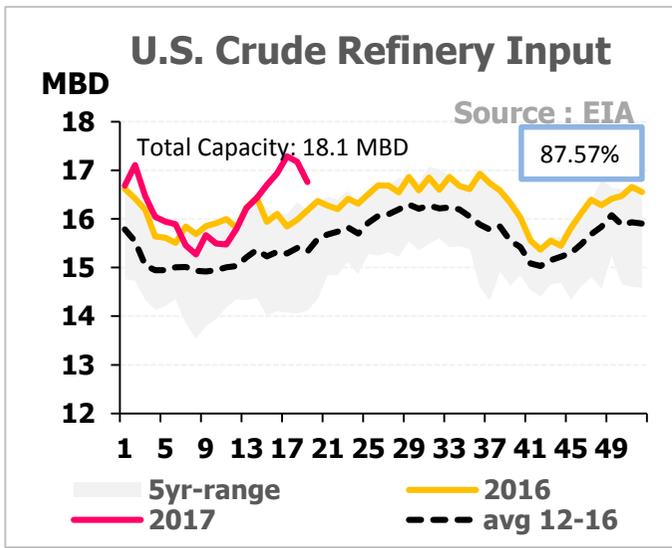
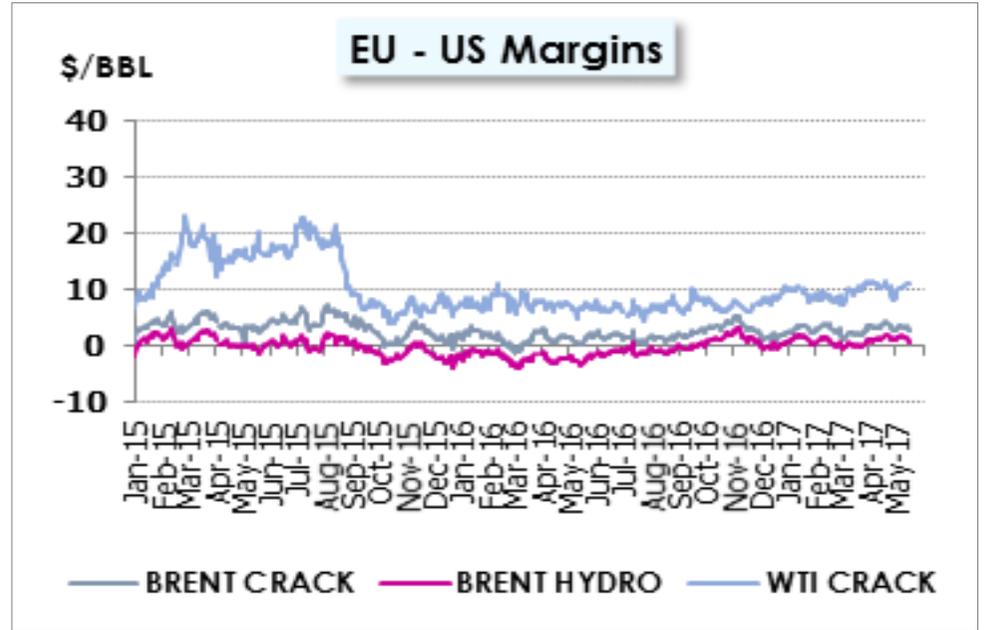


Note: Adjusted capacity based on start-up period (effective additional capacity)

Start-up period)	Country	Nameplate (KBD)	Company
Q1-17	Iran	120	Bandar Abbas - PGSOC/1
Q2-17	Taiwan	47	CPC Dalin
	Oman	109	Sohar Bitumen/Orpic
	India	42	HPCL Bhatinda
	China (Feb'17 > Jun'17)	200	CNOOC Huizhou
	China (Oct'16 > Jun'17)	260	CNPC/SA Anning
Q3-17	China	100	Petrochina Huabei
	India (May'16 > Sep'17)	120	BPCL - Kochi
Q4-17	Vietnam (Jun'18 > Dec'17)	200	Nghi Son
	China	100	Local Zhuhai Huafeng
Q1-18	Iran	120	Bandar Abbas - PGSOC/1
Q3-18	Kuwait	171	KPC - Mina Abdullah
	India	36.1	Bharat - Bina
<b>Closures</b>			
Q1-17	Japan	-252	Cosmo Oil/ JX Nippon / Tonen General/ Taiyo Oil Shaowa Shell
	Kuwait (Mar'18 > Apr'17)	-186	KPC - Shuaiba
Q4-17	China	-100	Local refineries
Q3-18	Kuwait	-112	KPC - Mina Al-Ahmadi

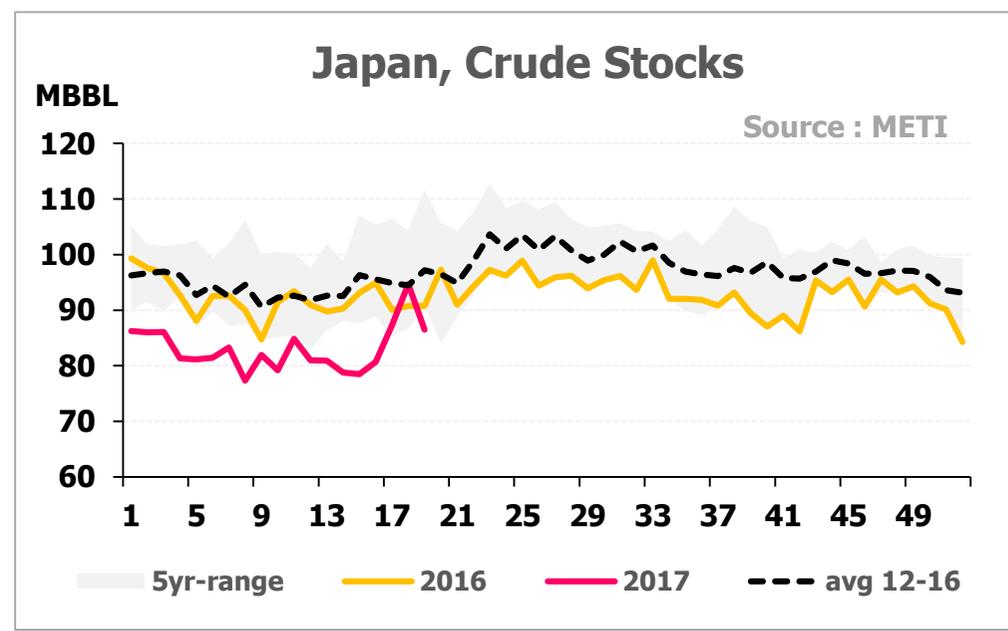
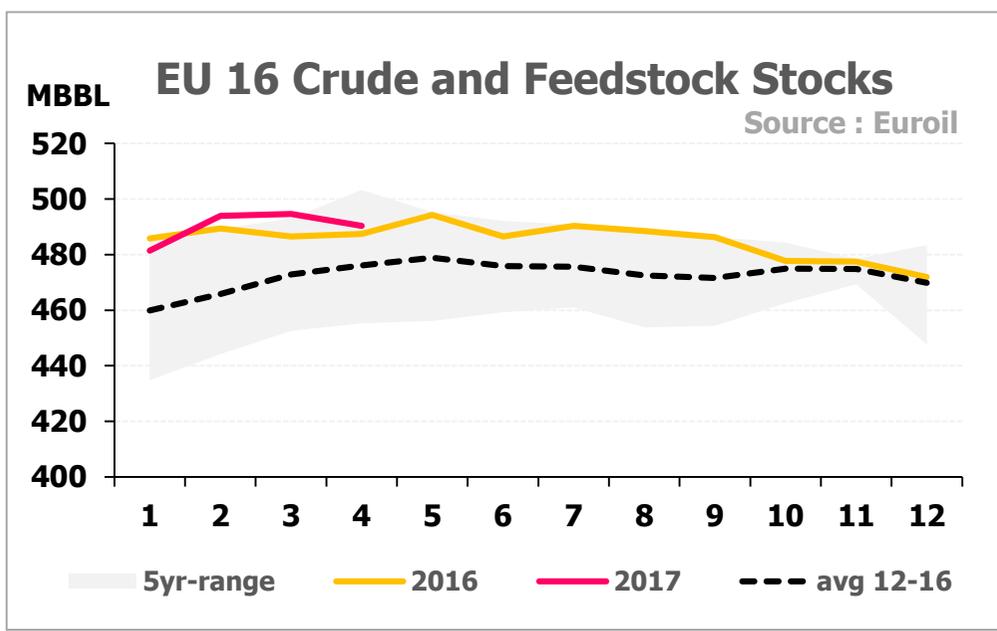
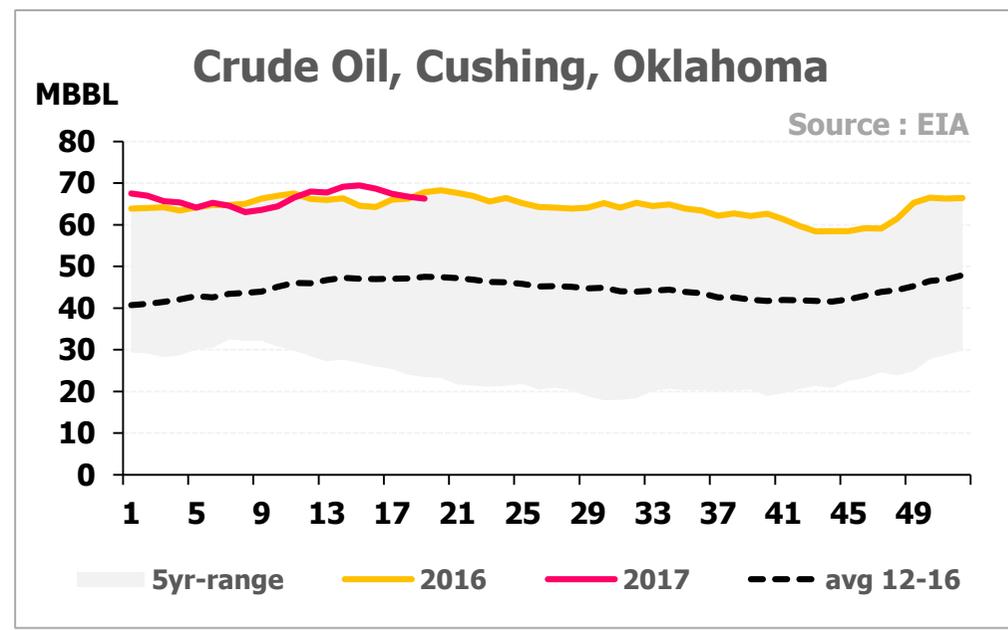
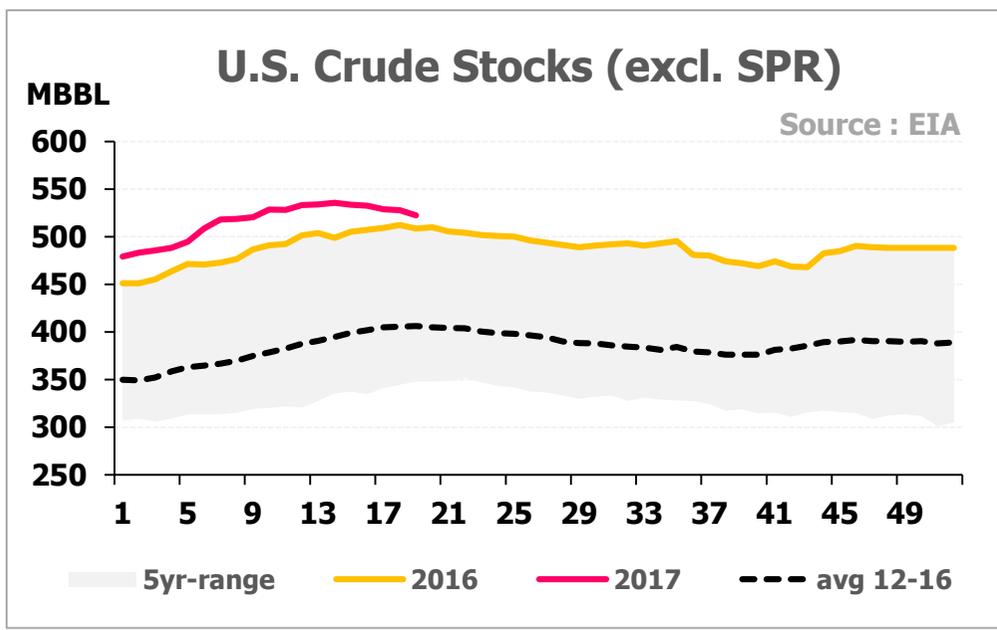


# Asian Margin Vs. US-EU margin



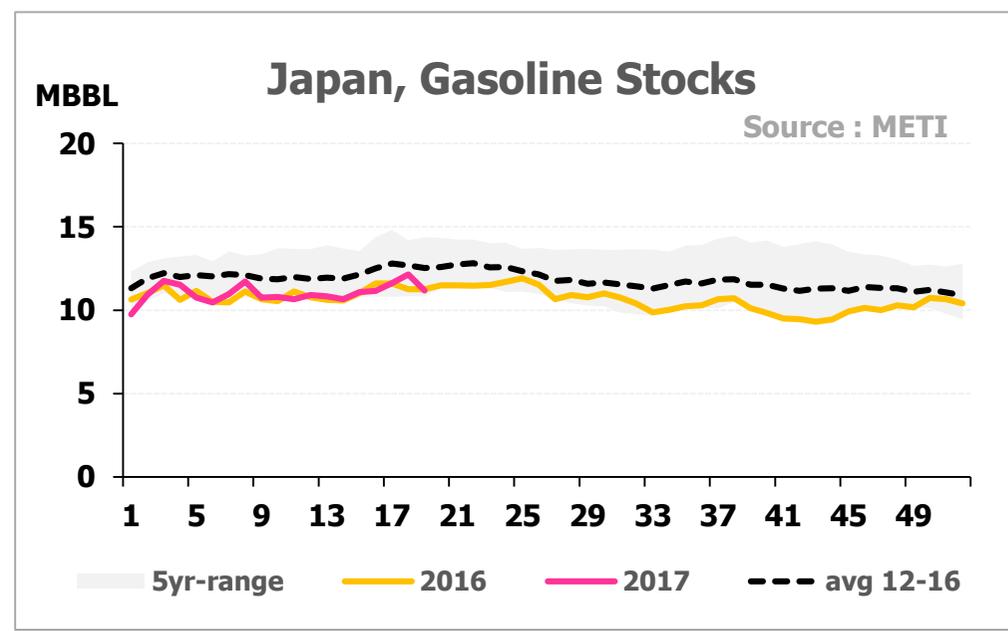
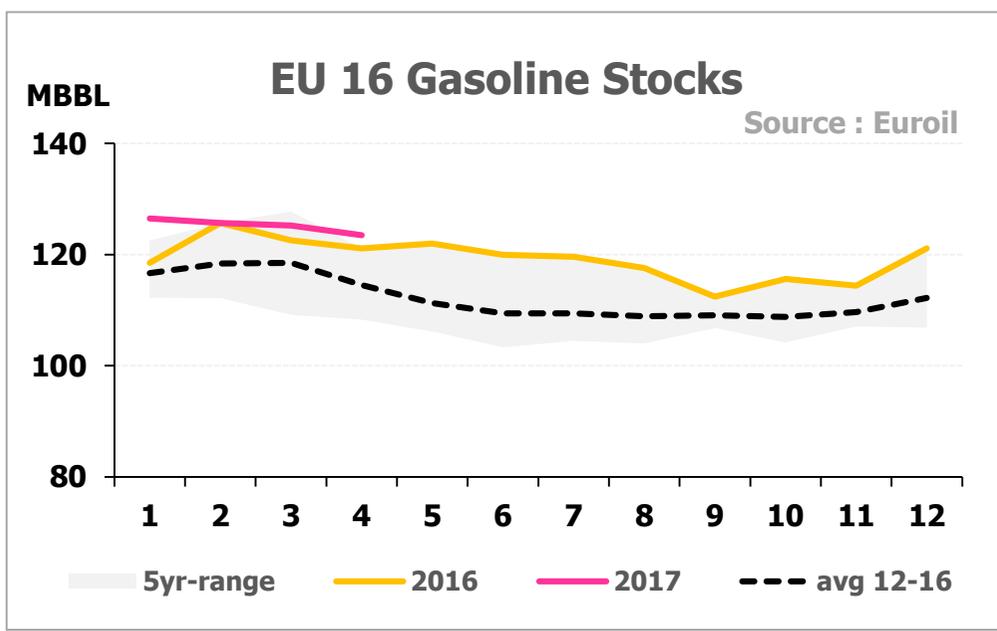
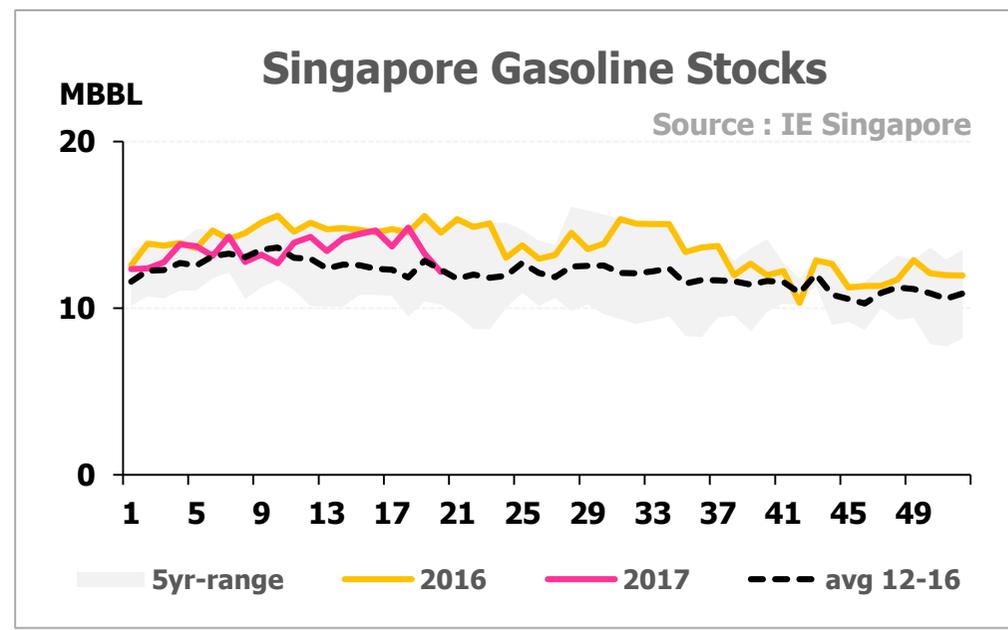
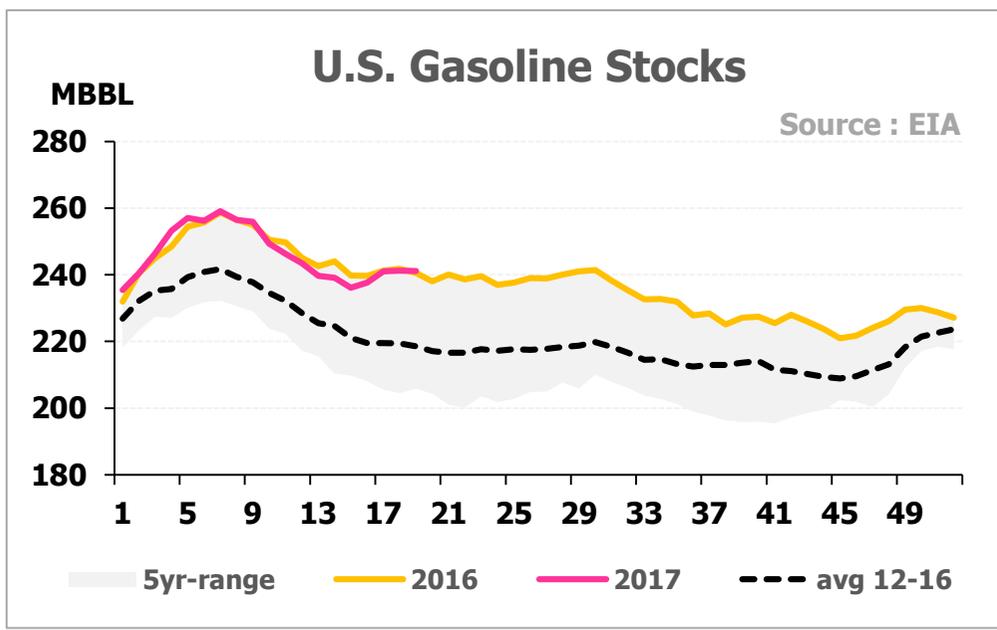


# Global Crude Oil Inventories



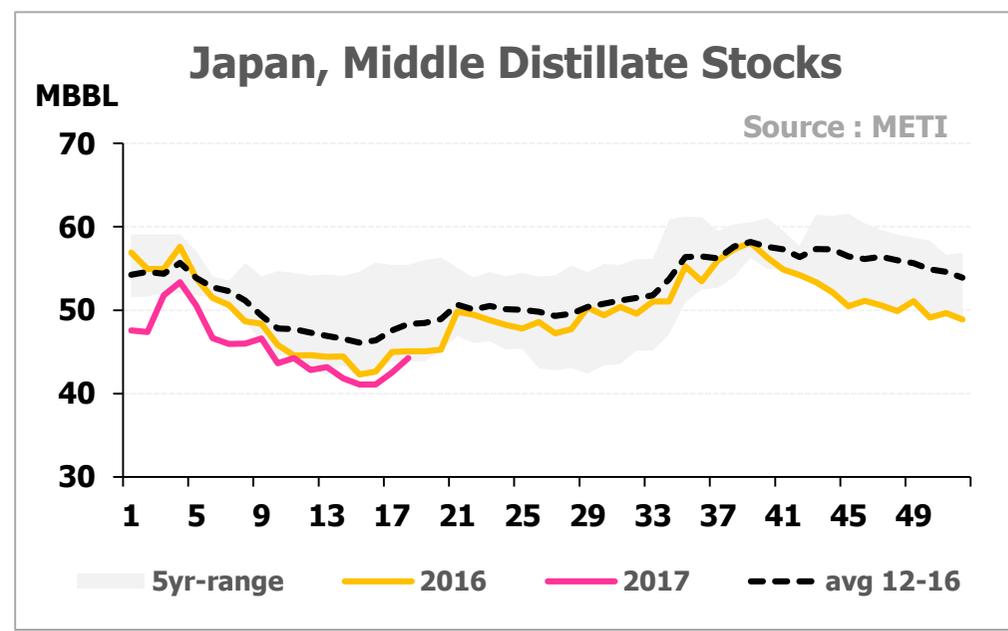
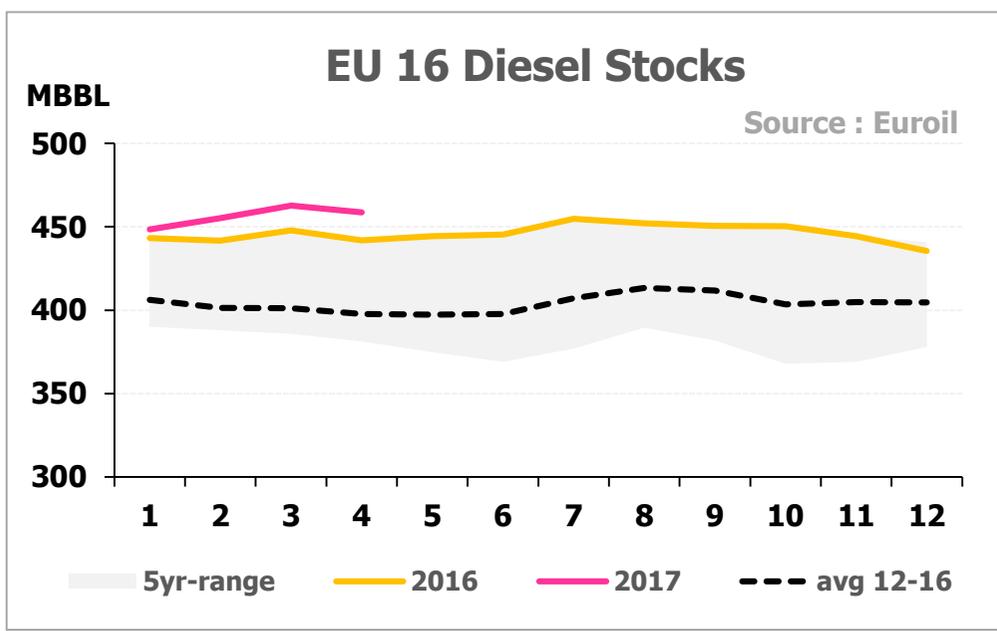
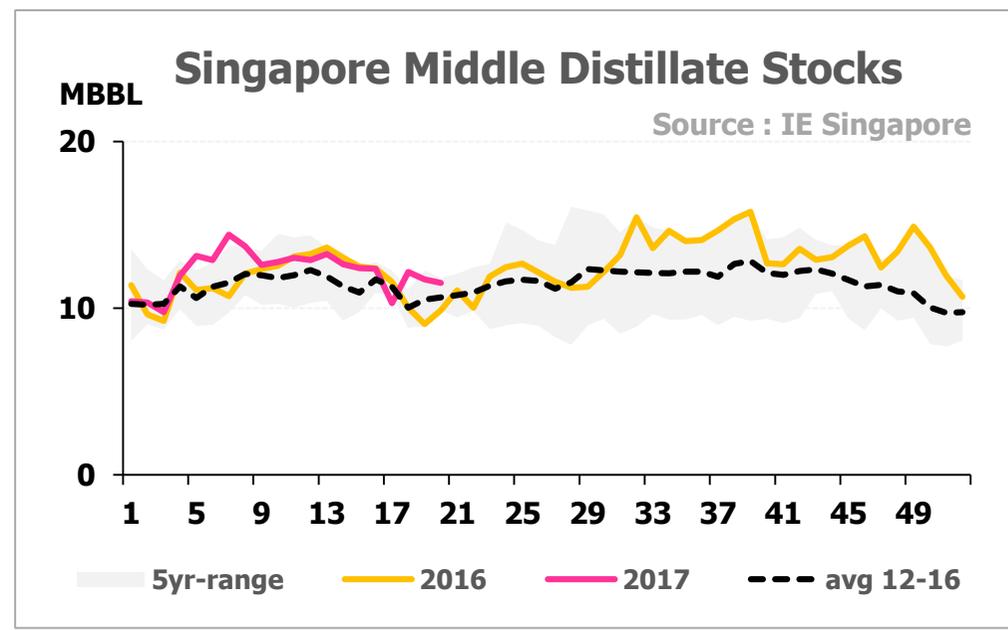
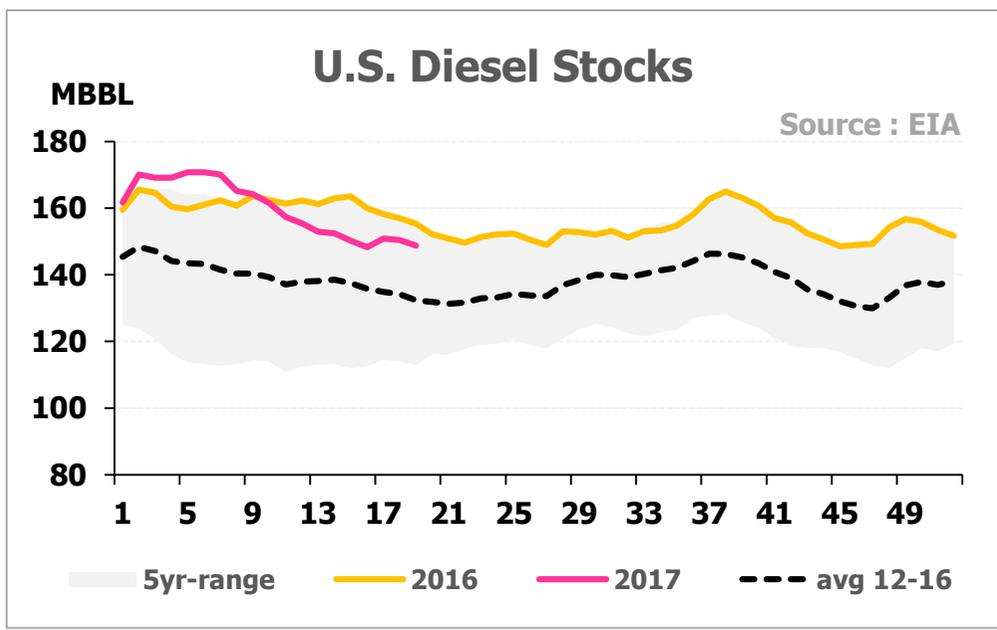


# Global Gasoline Inventories



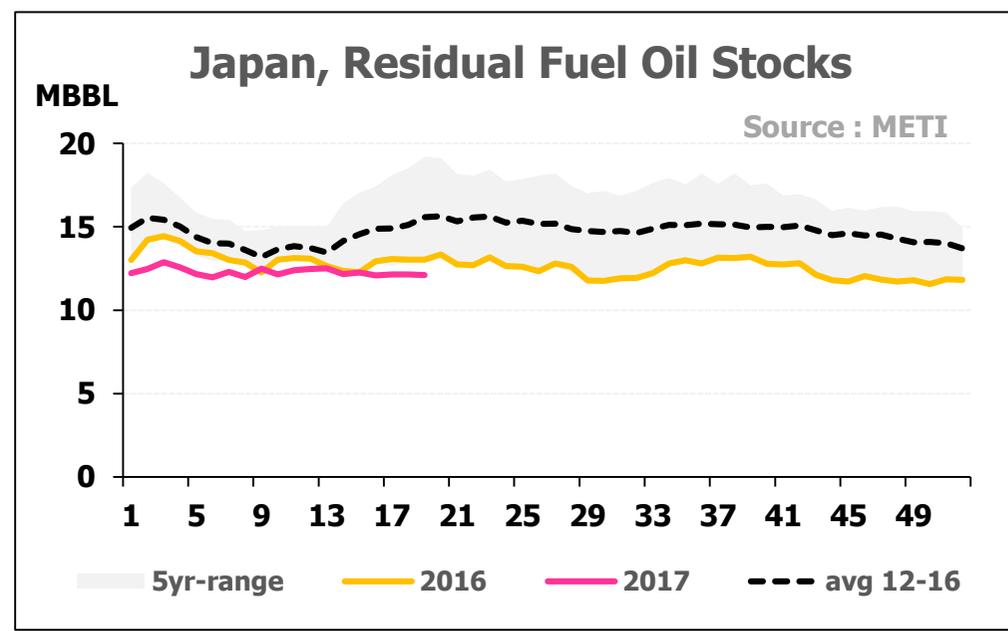
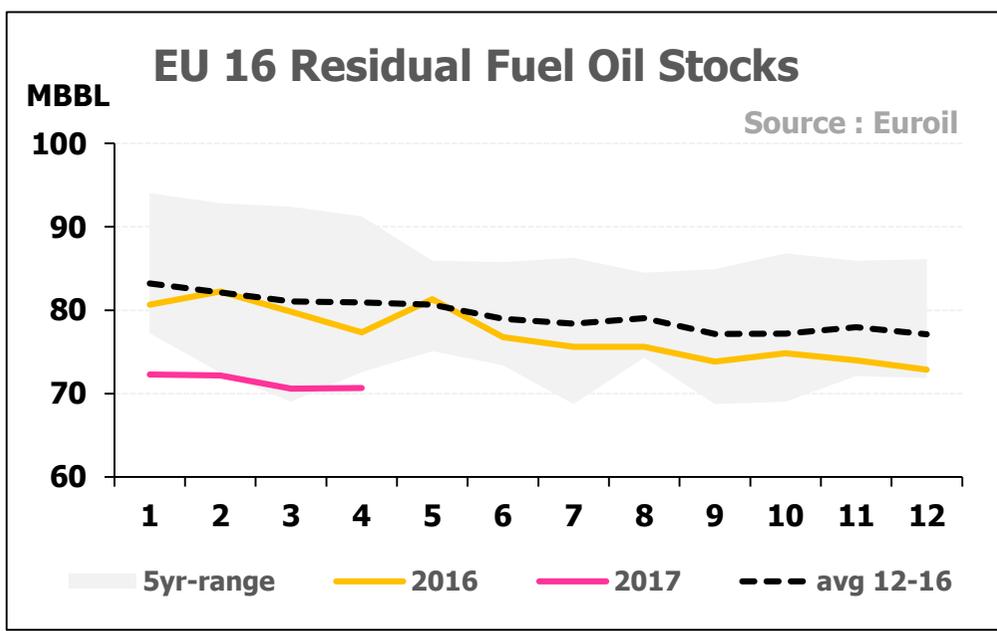
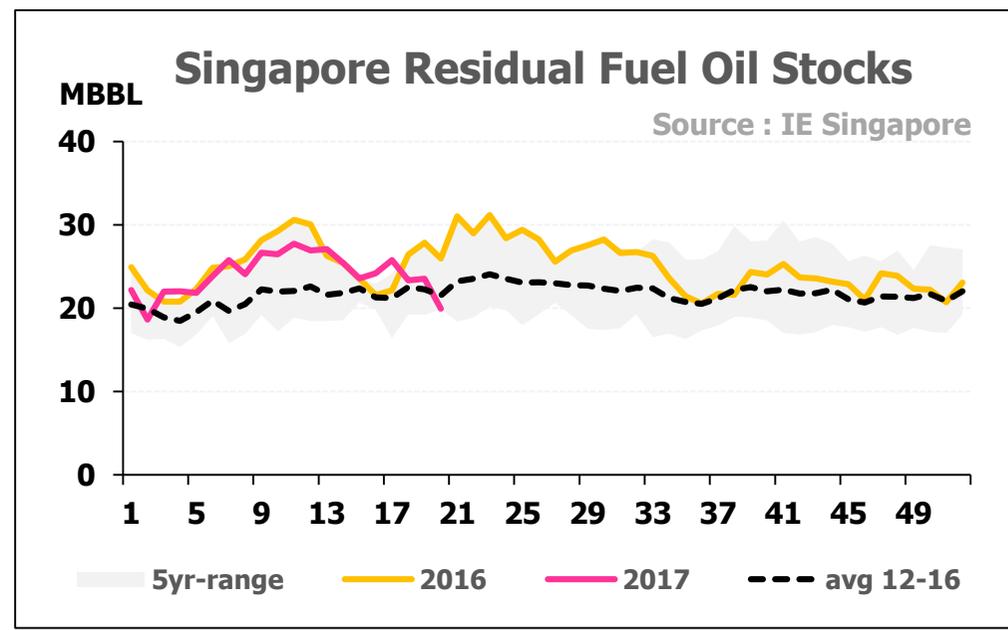
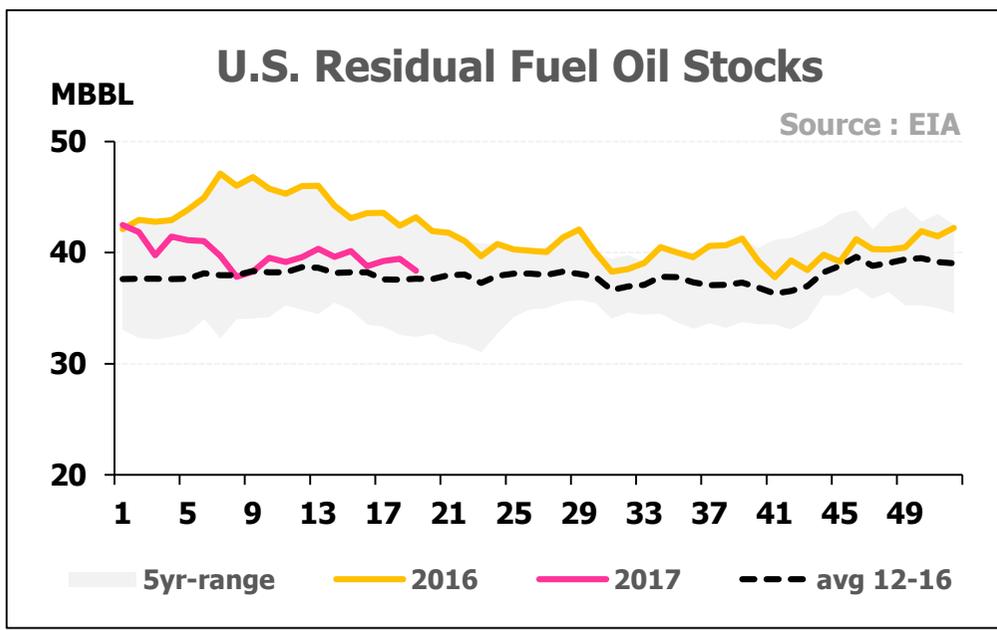


# Global Middle Distillate Inventories





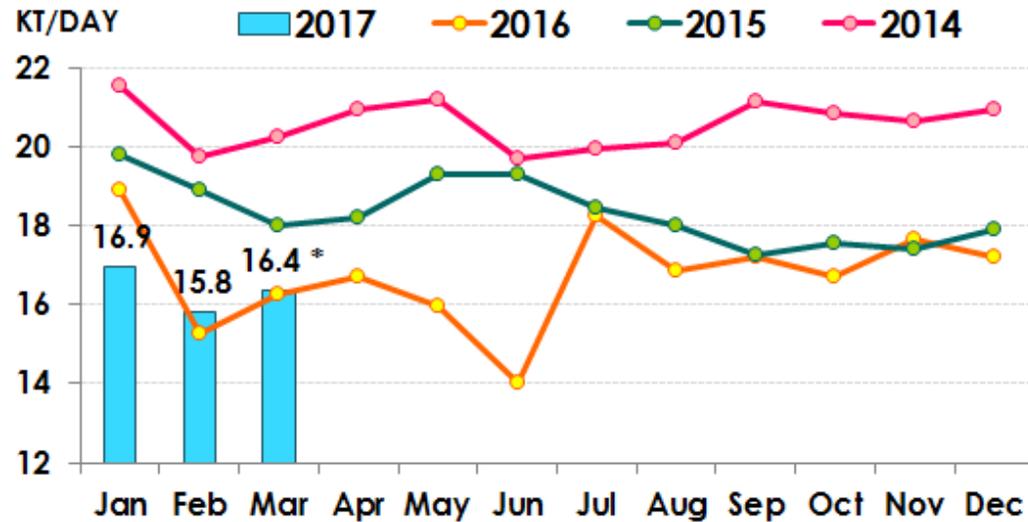
# Global Fuel Oil Inventories





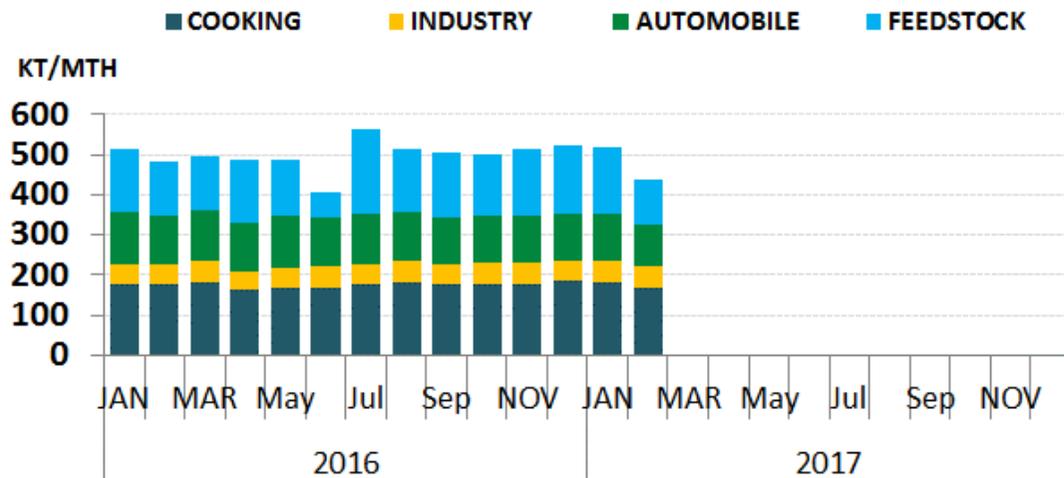
# Domestic LPG Demand

## Thailand LPG Demand



Remark : LPG demand includes Petrochemical and own used consumption  
\* Mar-17 data estimated from DOEB data

## LPG Demand by Sector



## LPG Demand Highlight

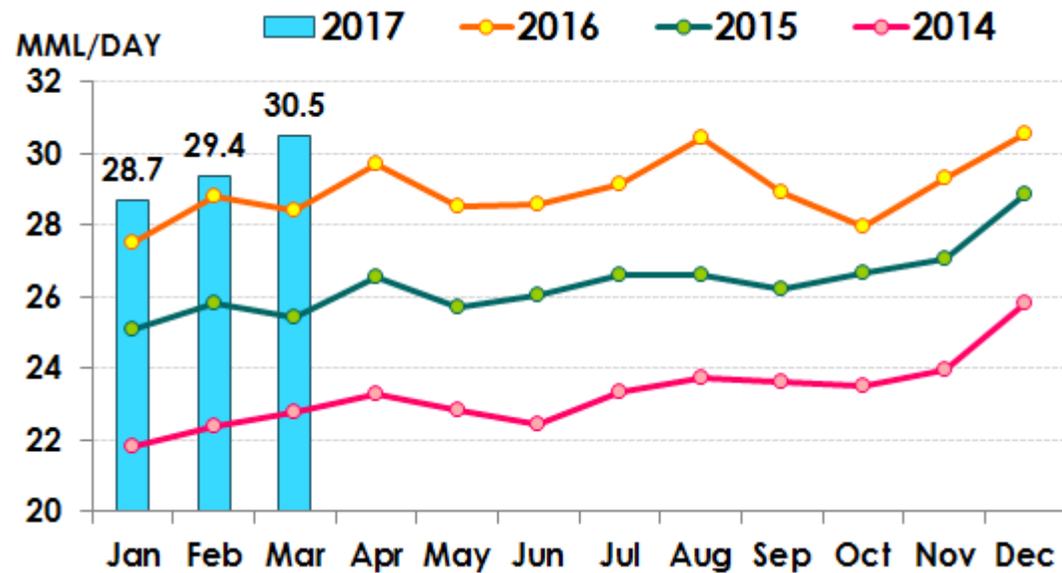
- In Q1/17, LPG demand fell significantly by 2.6%YoY on account of 8.6%YoY lower usages in automobile sector, as a result of fuel switching from LPG to Mogas. Moreover, LPG demand in petrochemical was lower by 3.6%YoY, according to IRPC plant shutdown in Feb-17. However, LPG demand was still supported by 1.4%YoY, and 3.4%YoY higher demand of cooking sector, and industrial sector, respectively.

## Outlook for 2017

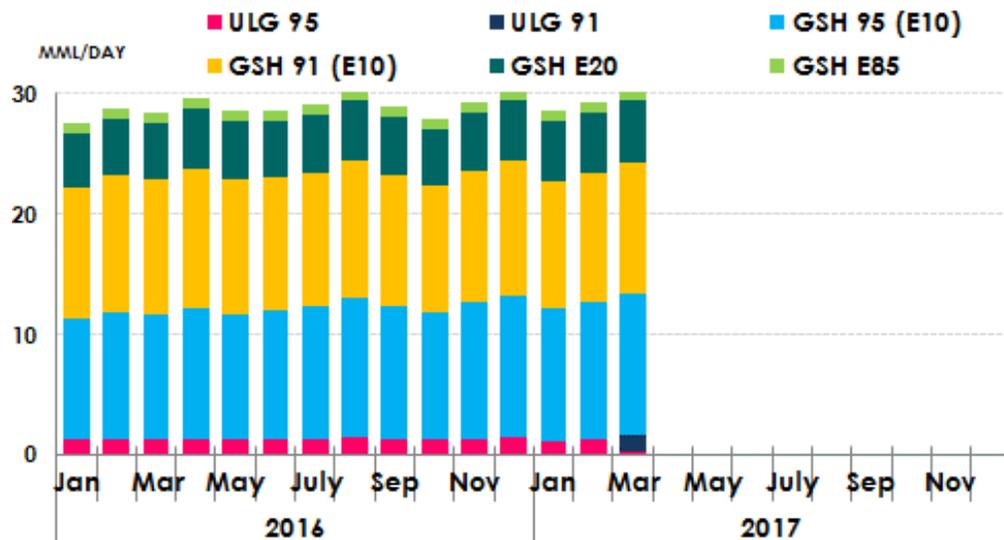
- LPG demand is expected to dropped by 1.5% YoY pressured by the expectation of more fuel switching from LPG to Mogas, due to low oil price.
- Moreover, the demand from household sector is also expected to decrease from changing of customers' behavior.
- However, the slowdown of LPG demand was expected to be limited by higher usage in industry sector as a result of persistent low level of LPG price.

# Domestic Gasoline/Gasohol Demand

## Thailand Gasoline/Gasohol Demand



## Gasoline/Gasohol Demand by Grade



## GASOLINE/Gasohol Demand Highlight

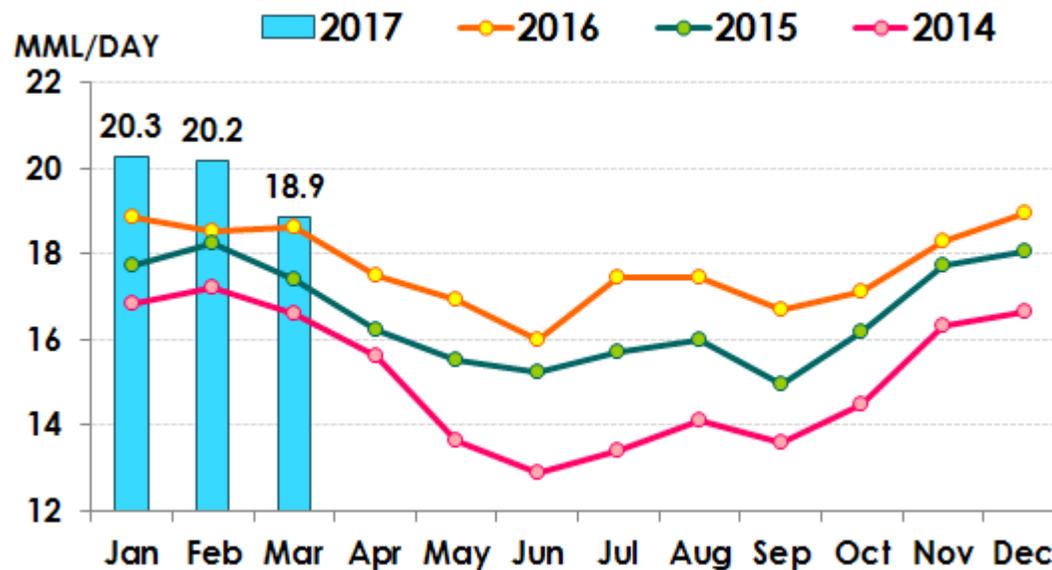
- In Q1/17, Mogas demand rose moderately by 4.3%YoY to an average 29.4 ML/day. Although, the retail price of Mogas is higher, Mogas demand was still supported by consumers' intimation that using their personal cars in their routine. Moreover, Mogas demand is also supported by better Private consumption, according to 38.7%YoY higher passenger car sale in this year.
- The level of domestic ethanol demand, in 2017, rose significantly by 7.8%YoY from 3.53 mml/day to 3.81 mml/day following the rising of Mogas demand. Additionally, this was also because of higher demand in GSH-95, E20, and E85 which increased by 10.5%YoY, 8.2%YoY, and 22.3%YoY, respectively, backed by increasing in the number of new E20 vehicle, E20 gas station, wider GSH95-E20, and E20-E85 price gap.

## Outlook for 2017

- Mogas consumption is predicted to grow by 1.3% YoY supported by expectation of growing of new passengers cars from return of private consumption. However, the demand is limited by high growth level in 2016 and higher oil price.

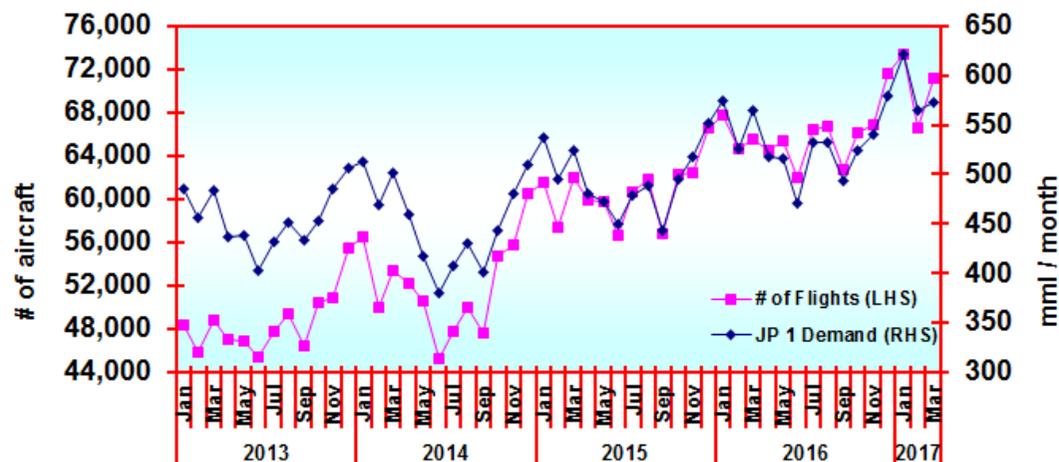
# Domestic Jet Demand

## Thailand JET-A1 Demand



## JET-A1 demand and # of flights

Relationship between aircraft movement and JP-1 demand



## JET Demand Highlight

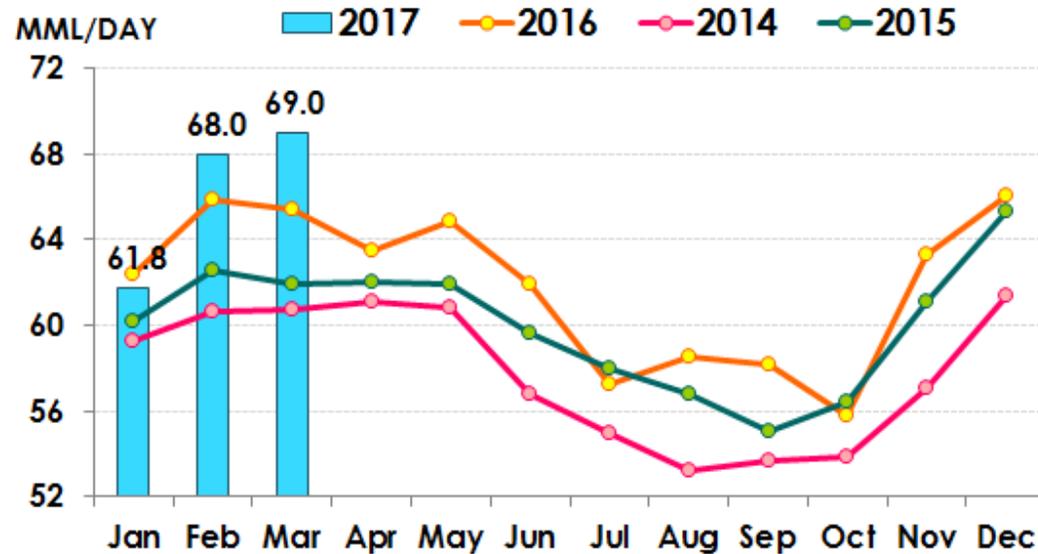
- In Q1/17, Jet consumption increased significantly by 5.8% over the corresponding period last year mainly owing to booming tourism industry, leading to 6.6%YoY higher aircraft movement. The expansion in tourism sector was a result of increasing number of Chinese, Indian and European tourists, pushing the number of flight movements higher both international and domestic aircrafts.

## Outlook for 2017

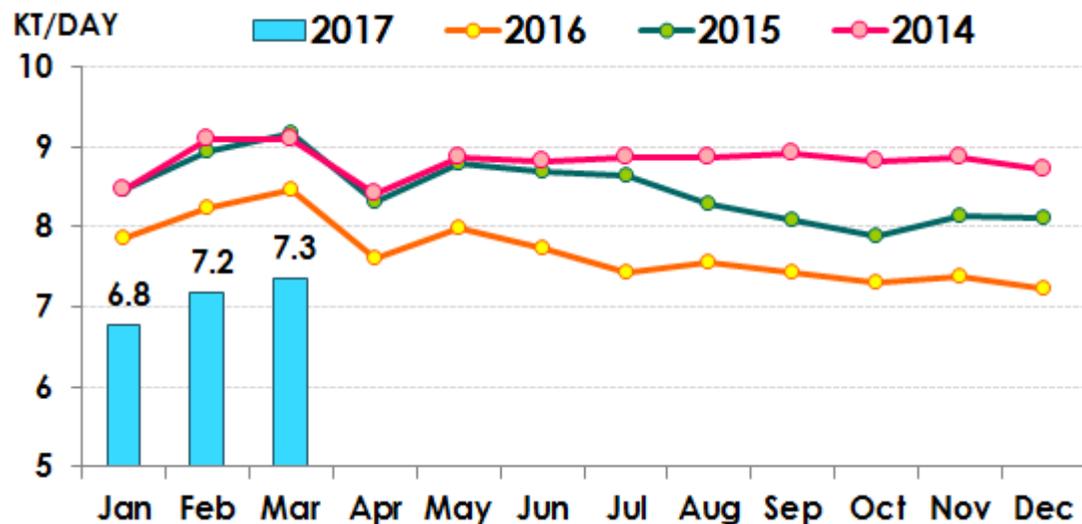
- Jet demand growth is expected to grow by 3.7%YoY as a result of rapid tourist number growth, especially from China and ASEAN, which supported by expansion of Phuket and other international airports. Furthermore, the demand is also supported by the return of European and Russian tourists.

# Domestic Gasoil and NGV Demand

## Thailand Gasoil Demand



## NGV Demand



### Diesel Demand Highlight

- In Q1/17, Diesel demand rose moderately by 2.6% YoY as a result of Thai economic recovery. However, Diesel demand was still pressured by flooding situation in Southern part of Thailand which lower agricultural activity and goods transportation. Meanwhile, in 2016, Diesel demand in Southern part of Thailand took approximately 12.5% of total Diesel demand in Thailand.

### Outlook for 2017

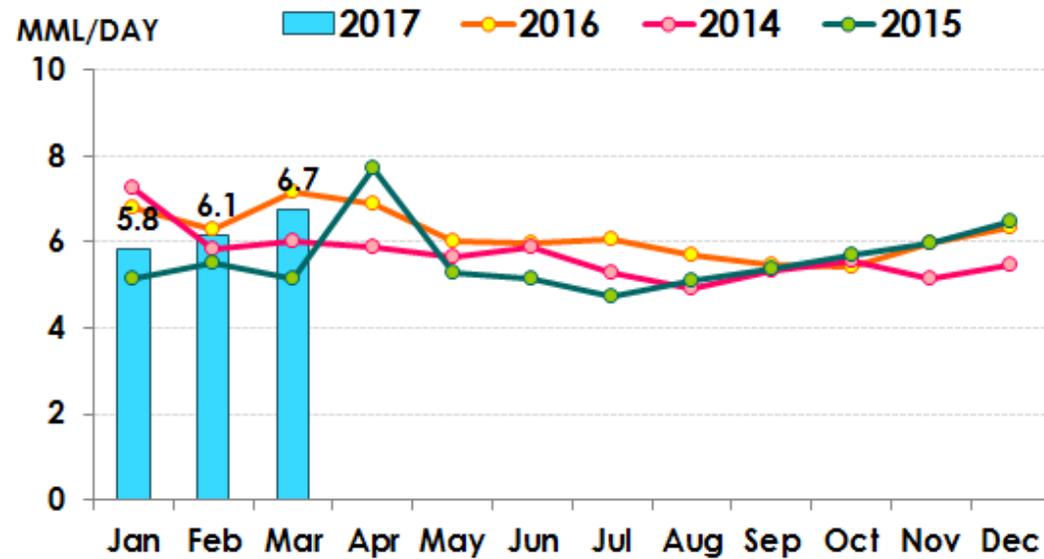
- Diesel demand in 2017 is expected to expand by 1.8% YoY supported by Thailand economic improvement.

### NGV Demand Highlight

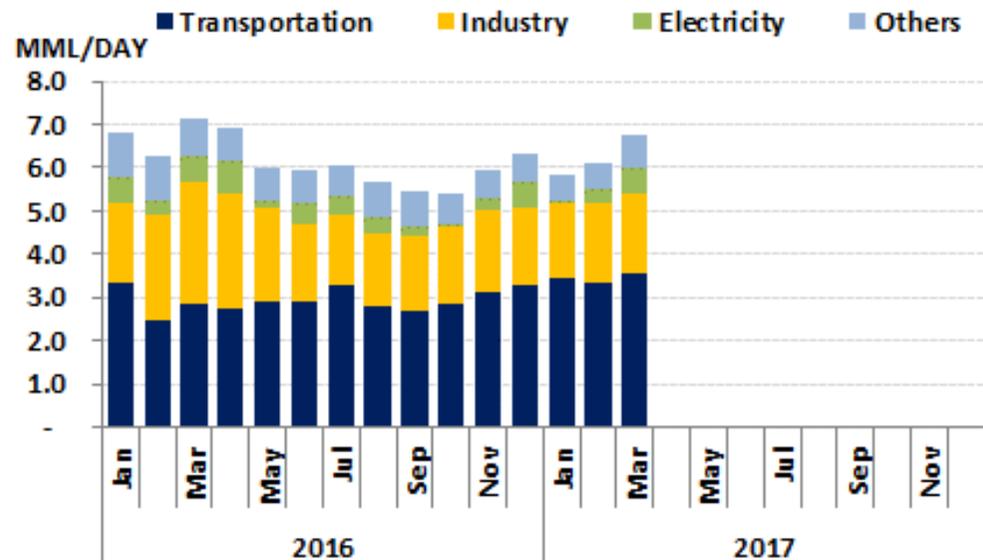
- In Q1/17, NGV demand fell significantly by 13.4%YoY. This was mainly because of consumers' intimation that still prefer to consume oil. Moreover, the low oil price level in 2016 has pressed the fuel switching from old cars, whereas the new cars which is available for NGV was lower recently.

# Domestic Fuel Oil Demand

## Thailand Fuel Oil Demand



## Thailand Fuel Oil Demand by Sector



## Fuel Oil Demand Highlight

- In Q1/17, Fuel Oil consumption fell sharply by 7.7%YoY, as a result of sharply falling by 38.1%YoY of electricity sector demand which pressured by late gas field maintenance (25Mar – 2Apr 2017). Last year, Yadana gas field had maintenance in Feb-16. Furthermore, the demand in industrial sector also decreased by 22.5%YoY, as a result of higher price of fuel oil. However, the demand in transportation sector increased by 18.8%YoY.

## Outlook for 2017

- Fuel oil demand is expected to drop by 3.6%YoY, as a result of switching to alternative fuel in transportation sector due to concerning of regulation about fuel oil usage in near-port area.

# Thank You

Any queries, please contact:



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