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Dow Jones
Sustainability Indices
In Collaboration with RobecoSAM



Thai Oil Public Company Limited

Presentation to Investors

September 2019



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Corporate Vision, Mission and Values

<p>VISION</p>	<p>Empower Human Life through Sustainable Energy and Chemicals</p>
<p>MISSION</p>	<ul style="list-style-type: none"> • To enrich stakeholders' well-being and deliver sustainable returns built upon innovation, technology and resilient portfolio with top class management and accountable corporate governance
<p>VALUES</p>	<p> Professionalism Ownership & Commitment Social Responsibility </p> <p style="text-align: center;">  </p> <p> Integrity Teamwork & Collaboration Excellent Striving Vision Focus Initiative </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

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Email



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CG
Manual

<http://www.thaioilgroup.com>



Our Achievement in Sustainable Development



MEMBER OF

**Dow Jones
Sustainability Indices**

In Collaboration with RobecoSAM 

**7th Consecutive Year as the
Member of DJSI Emerging Markets
and high ranked positions.**



Presentation Agenda

TOP GROUP BUSINESS OVERVIEW

KEY FINANCIAL HIGHLIGHTS

STRATEGIC INVESTMENT PLANS

MARKET OUTLOOK

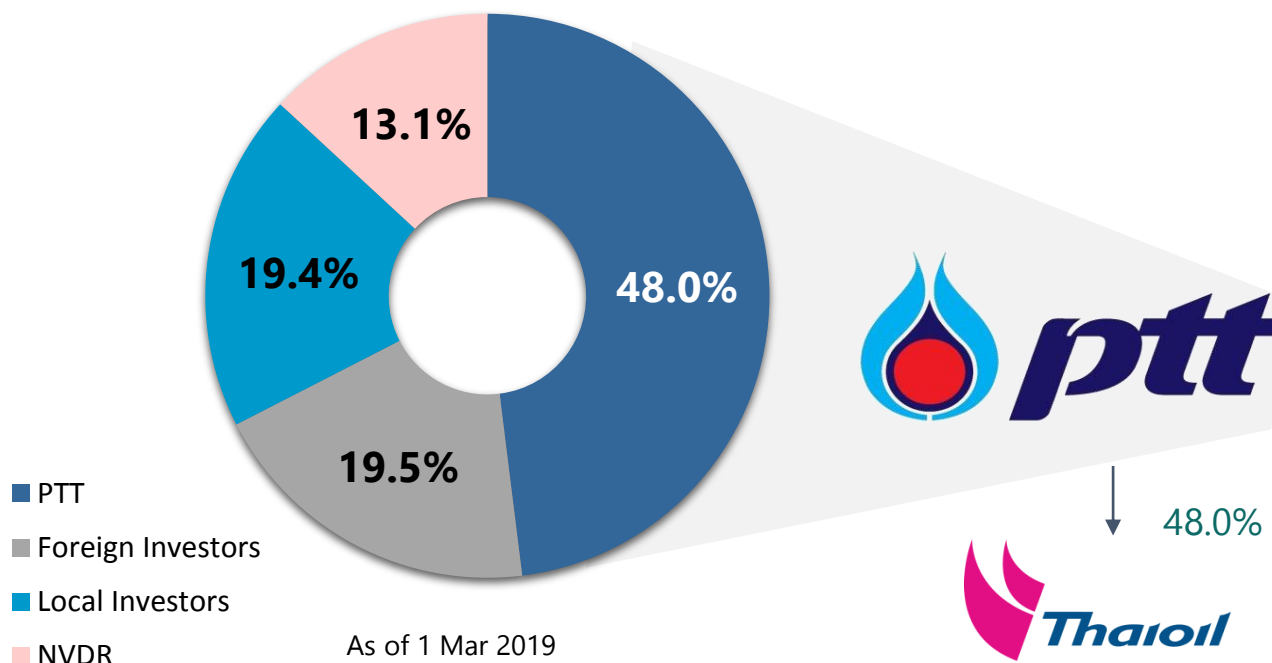
APPENDIX



TOP GROUP BUSINESS OVERVIEW

Strategic Relationship and Operational Integration with PTT

Thai Oil's strong shareholder base



- Benefits from PTT's dual role as our major shareholder and key business partner
- All transactions take place at arm's length and in adherence with strong corporate governance principles

Key strategic benefits for Thai Oil

1. Long-term strategic partnership

- Thai Oil is PTT's principal refiner
- Long-term strategic shareholder and joint investment

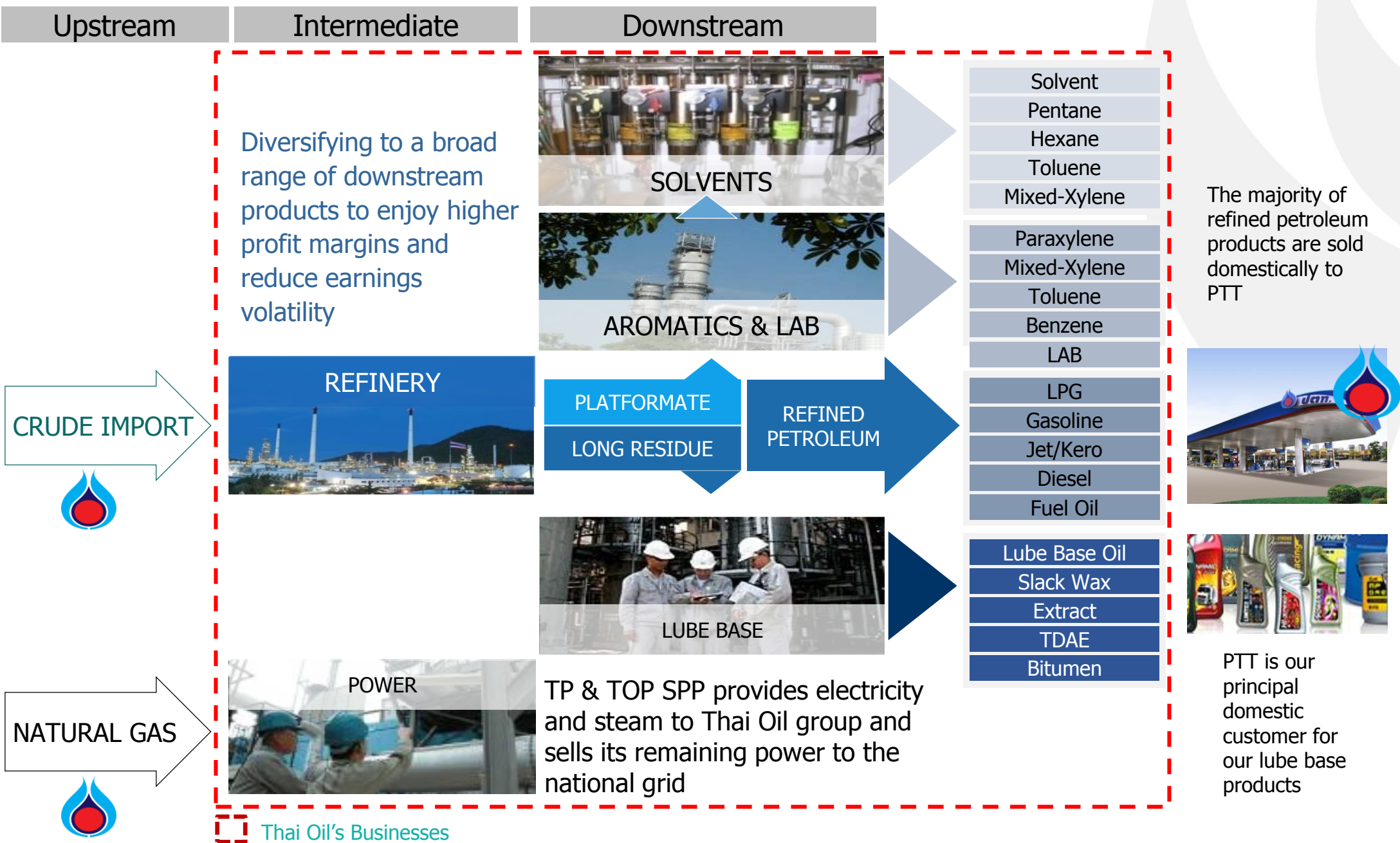
2. Business partnership

- Product offtake
- Crude procurement

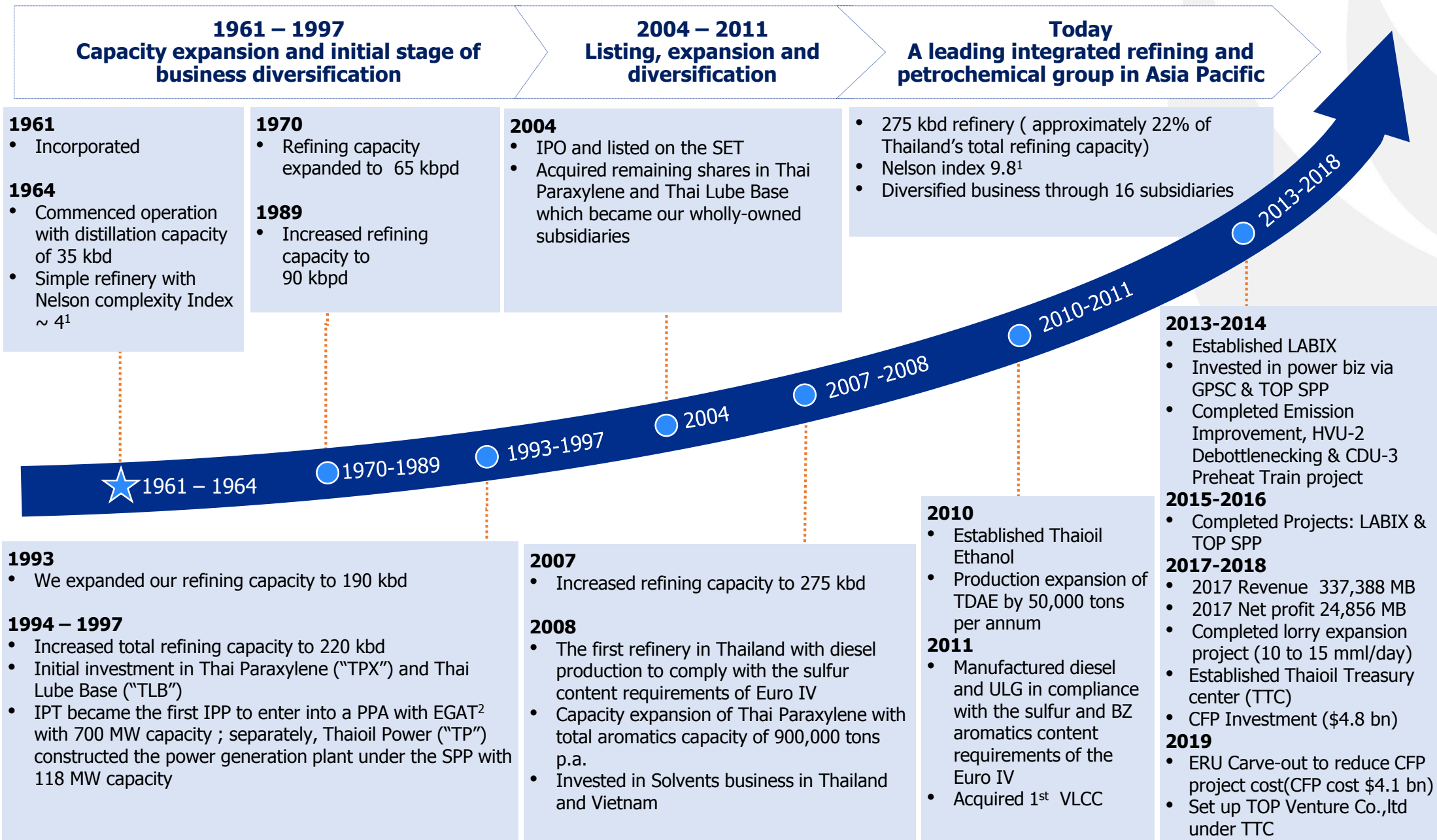
3. Operational synergies

- Freight costs reduction
- Knowledge transfer and shared services
- Close management collaboration and secondment of trained staff

TOP Group Synergy & Strategic Role in PTT Group Value Chain



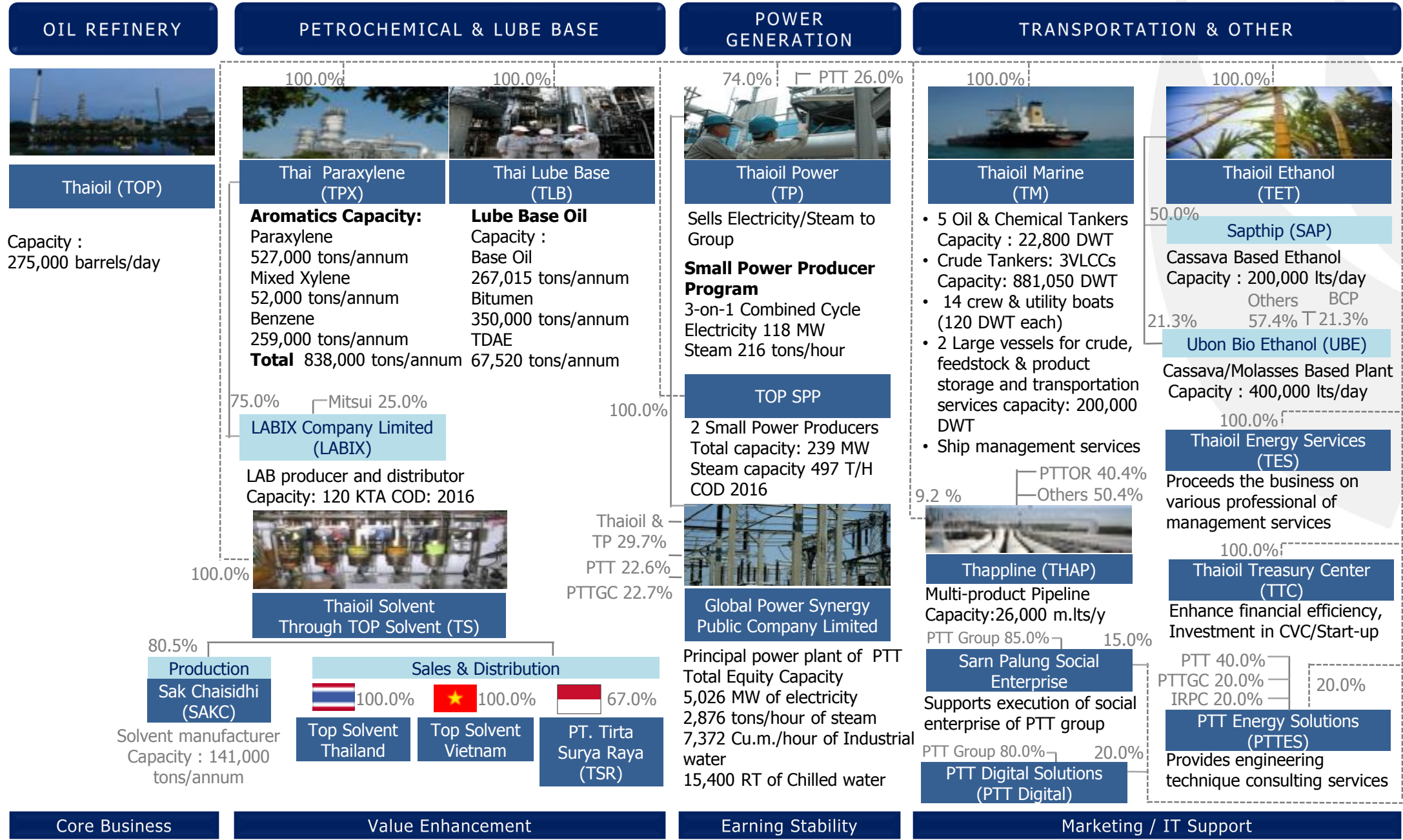
Key Milestones: 58 Years, A Long Track Record of Success



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

Thai Oil Group Business Structure



Net Profit Contribution

51%

24%

13%

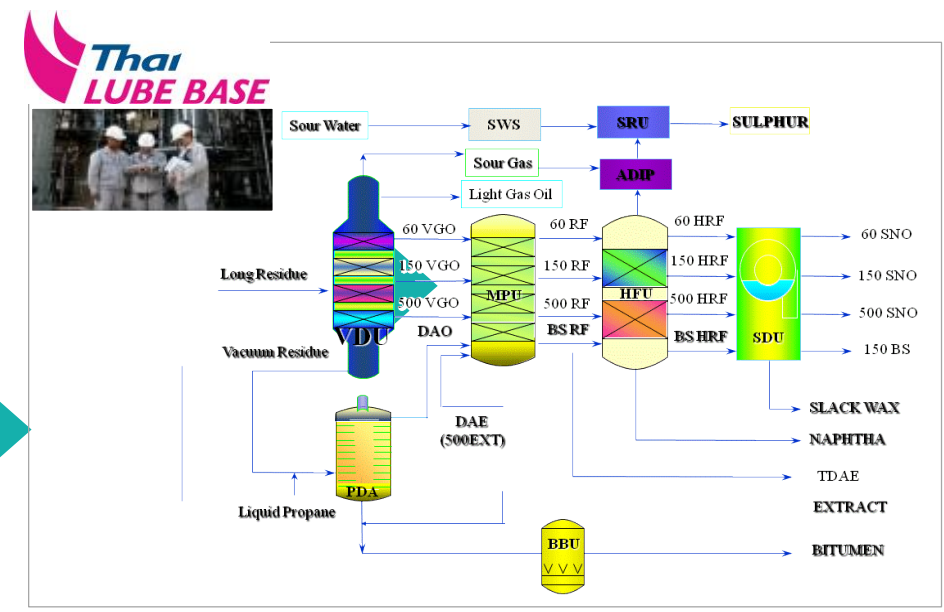
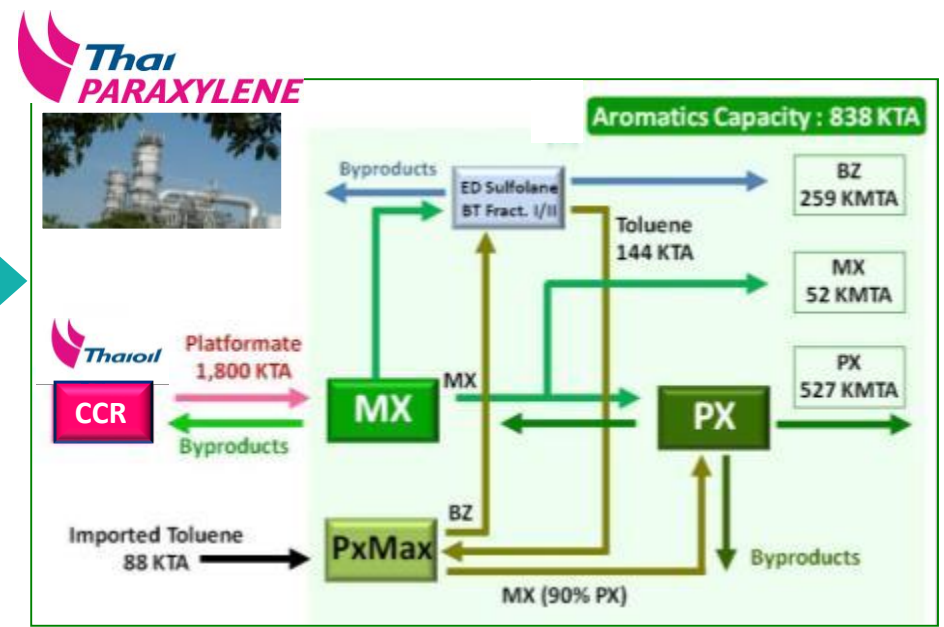
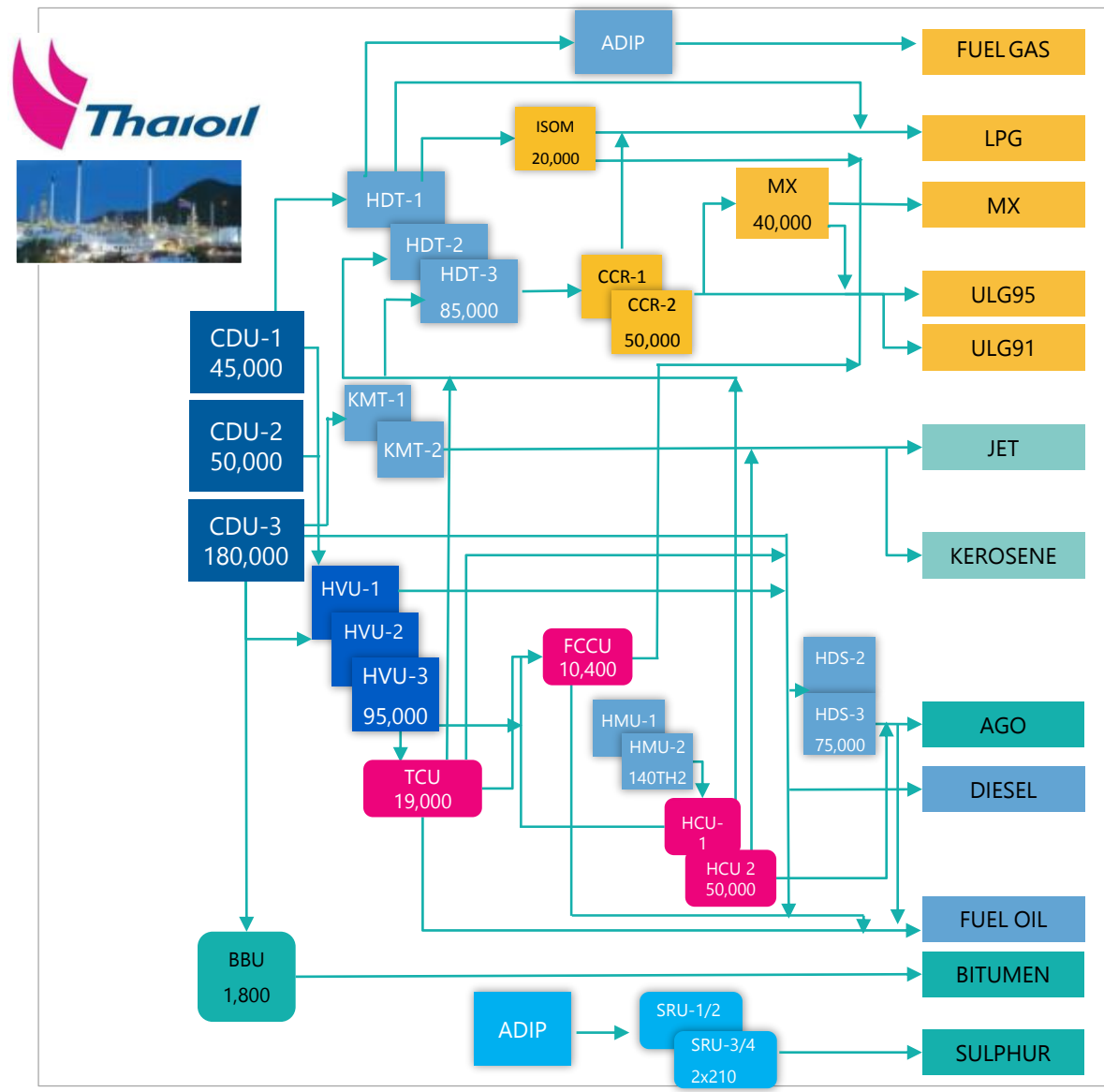
12%

- Refinery
- Aromatics
- Lube Base
- Others

(Avg. from 2006 – Q2/19)

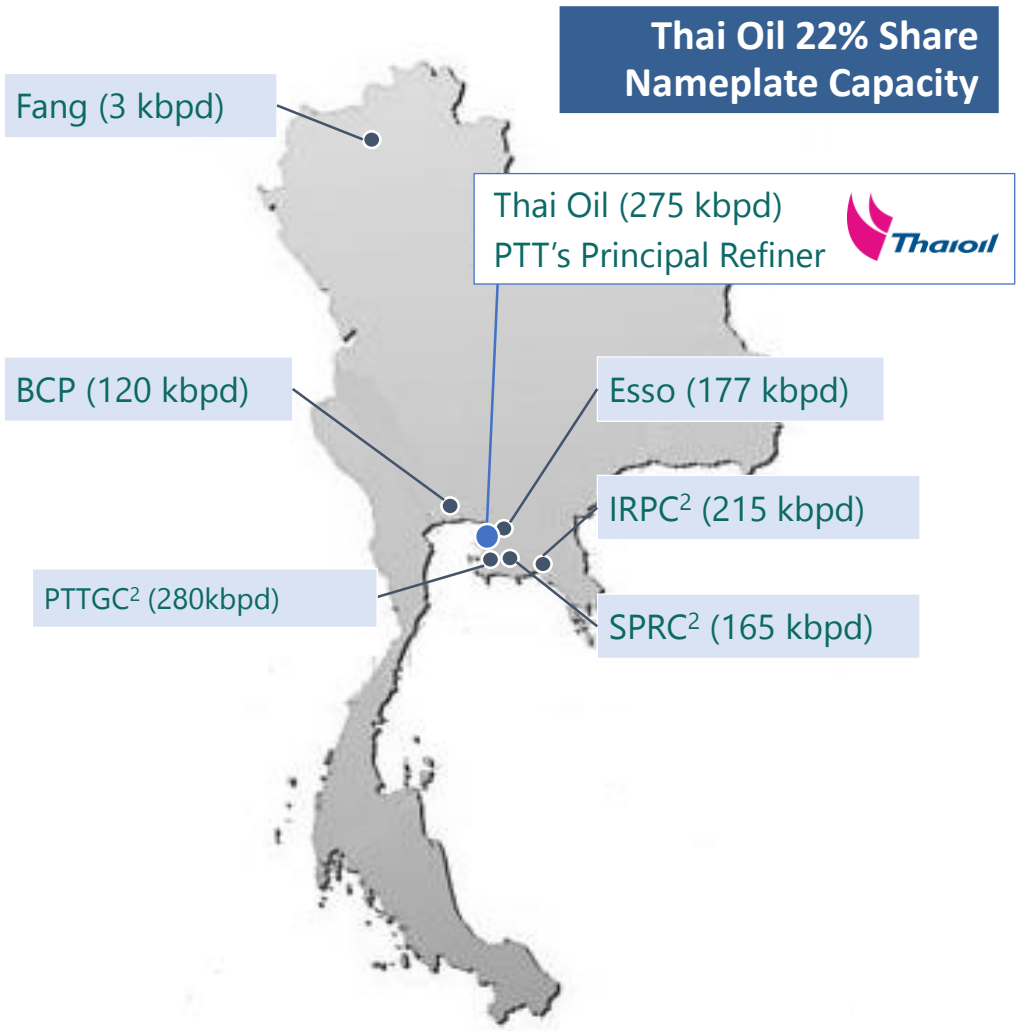
Process Linkage: Beauty of Integration

PROCESS FLOWCHART

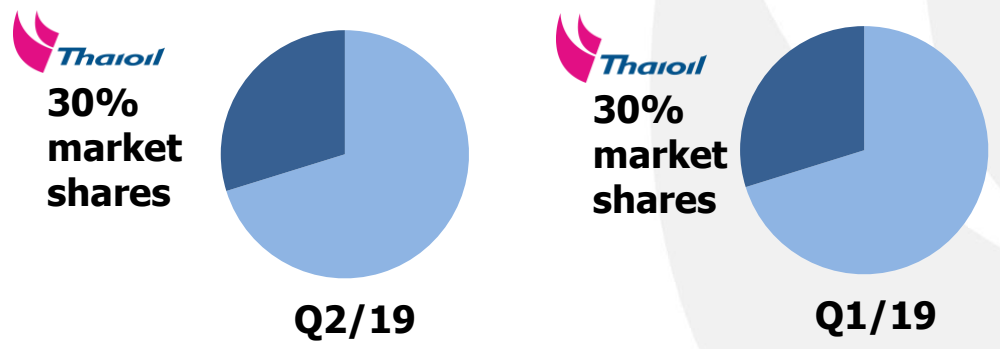


One of Region's Leading Refineries

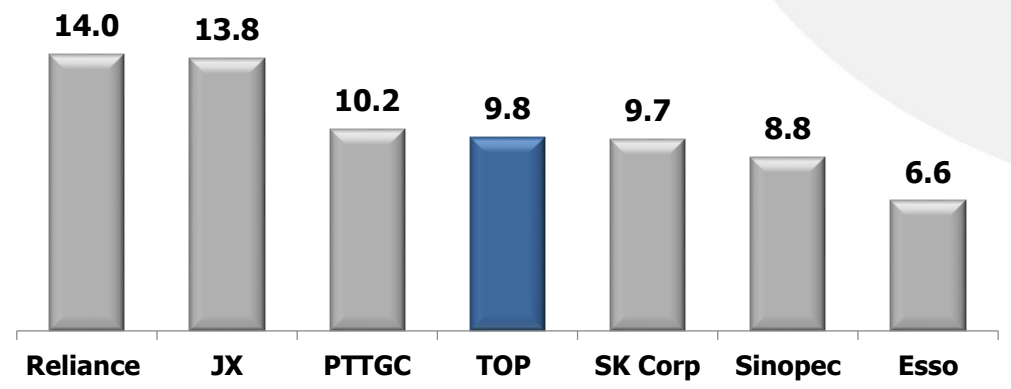
Total Thailand crude refining capacity 1,235 kbd



Market shares for refined petroleum product³



Nelson Index - Regional Comparison⁴



- Remarks:
- Nelson Complexity Index measures refinery's upgrading capability for comparison
 - It is the ratio of complexity barrels divided by crude distillation capacity

Note: 1. Source: Energy Policy and Planning Office (EPPO), Ministry of Energy Thailand as of March 2018
 2. PTT holds a 48.1% interest in IRPC, a 48.8% interest in PTTGC as at 31 Mar 18
 3. Calculate by total domestic sales of refined petroleum products (excluding by product & LPG) of Thai Oil divided by total sales of petroleum products in Thailand excl LPG. Source from EPPO
 4. Source: Worldwide Refinery Survey and Complexity Analysis 2015 from Oil & Gas Journal and company information

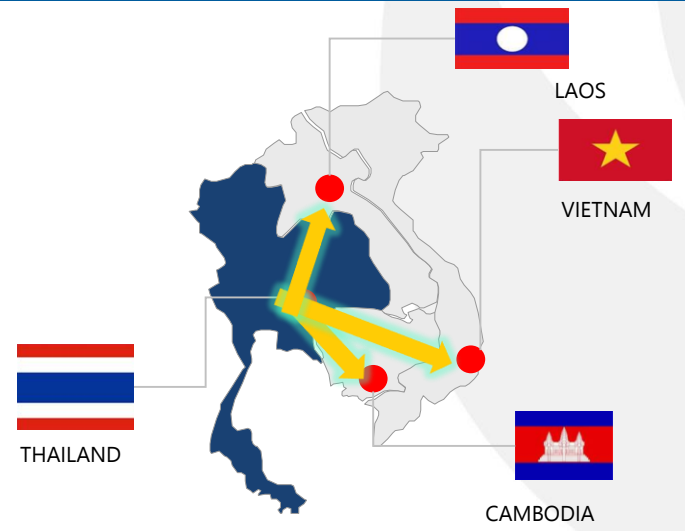
Strategic Location with Competitive Advantages in Access to Key Markets

Close proximity to the key domestic markets

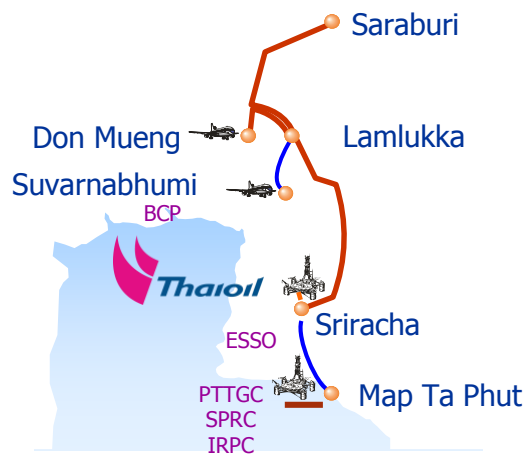
Access to Indochina markets through deep water ports and trucks

Our strategic location provide us with

1. Close proximity with the key domestic markets and Indochina
2. Direct access to deep water ports
3. Direct connection with multi-product pipelines



Direct connection with product pipeline system



Product pipeline system

- ✓ Our plants are located within the Sriracha Complex
- ✓ SBM provides direct access to deep water ports, and ability to receive feedstock directly from VLCC
- ✓ We also enjoy available connections to delivery networks such as multi-product pipelines, including Thappline

Optimized & Flexible Operations...Superior Performance

Crude Assays based on TOP configuration*



Sources of Crude

Product output

Reference Price



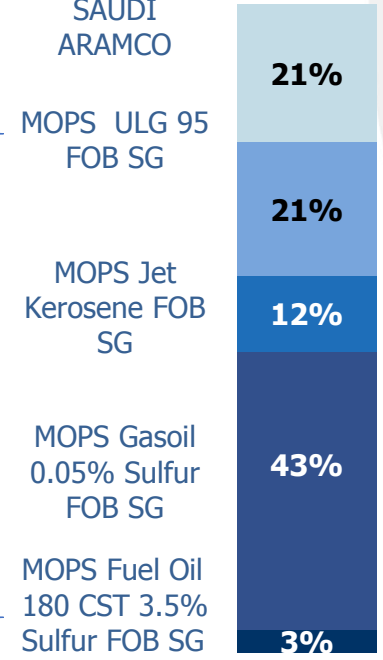
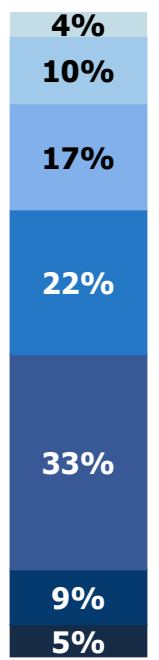
Domestic demand for petroleum products**

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

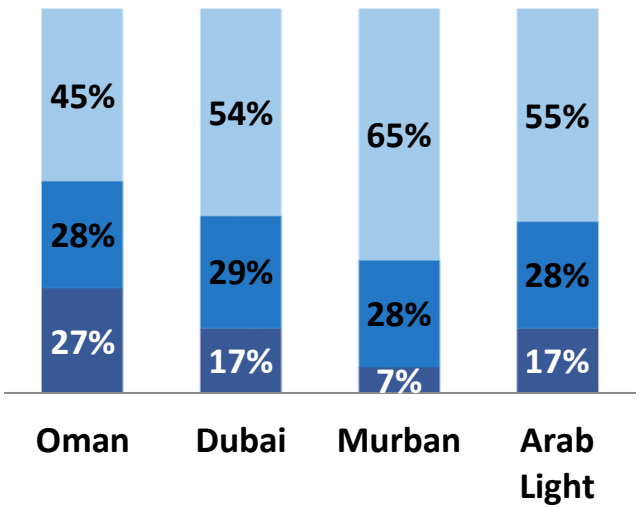
% S = 1.43 API = 32.0	% S = 2.52 API = 31.2	% S = 0.78 API = 39.4	% S = 1.97 API = 32.8
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Others***
Far East
Local

Middle East



■ Short Residue ■ Waxy ■ Gasoline/Distillates



Q2/19

Q2/19

- 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

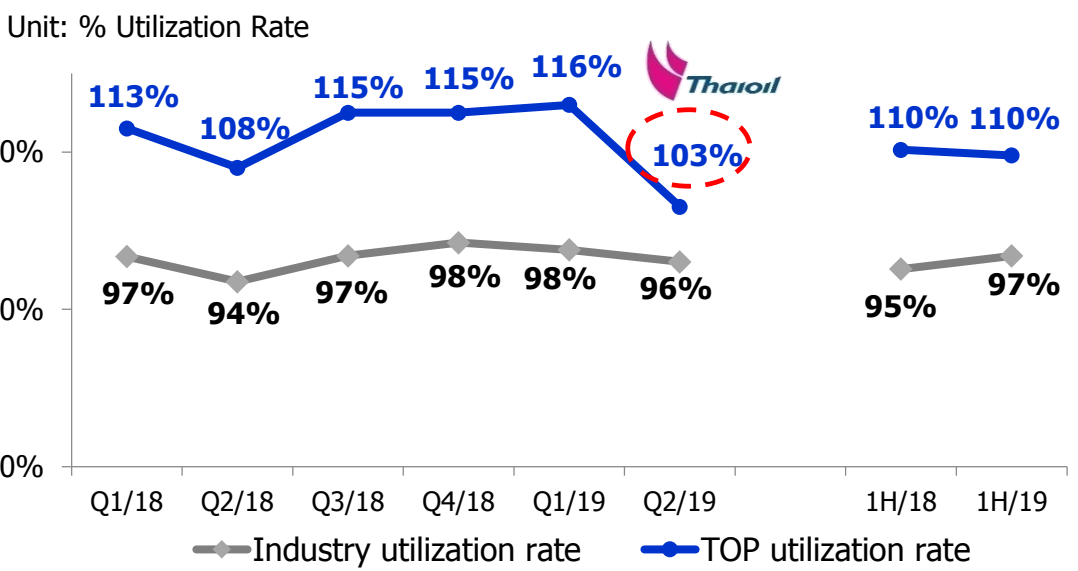
*Crude yield as per assay in Spiral as of Feb 2016

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

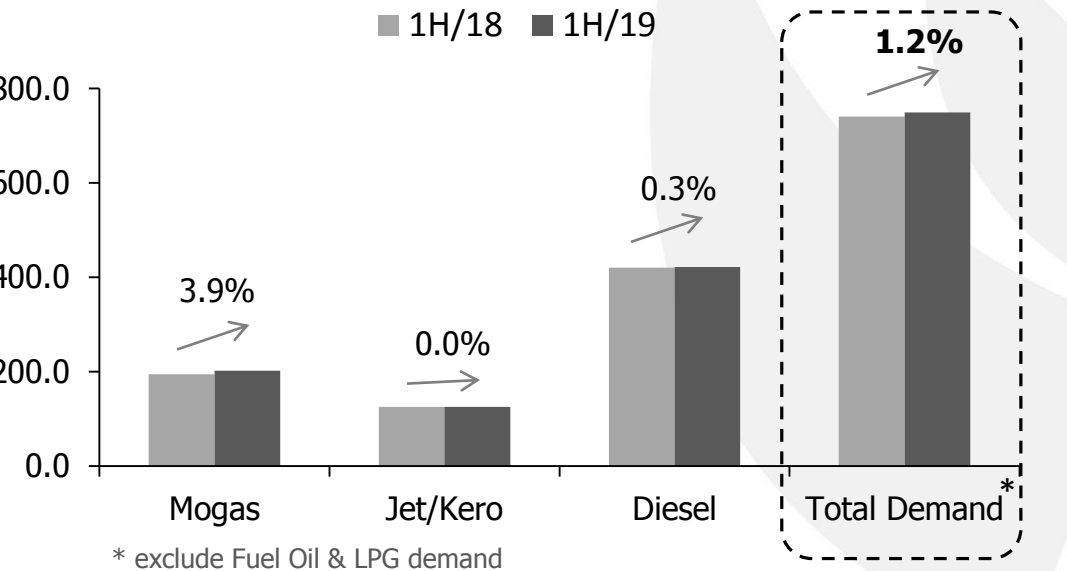
*** Including Nigeria, Russia and others

Refinery: High U-Rate Operation and Robust Domestic & CLMV Sales

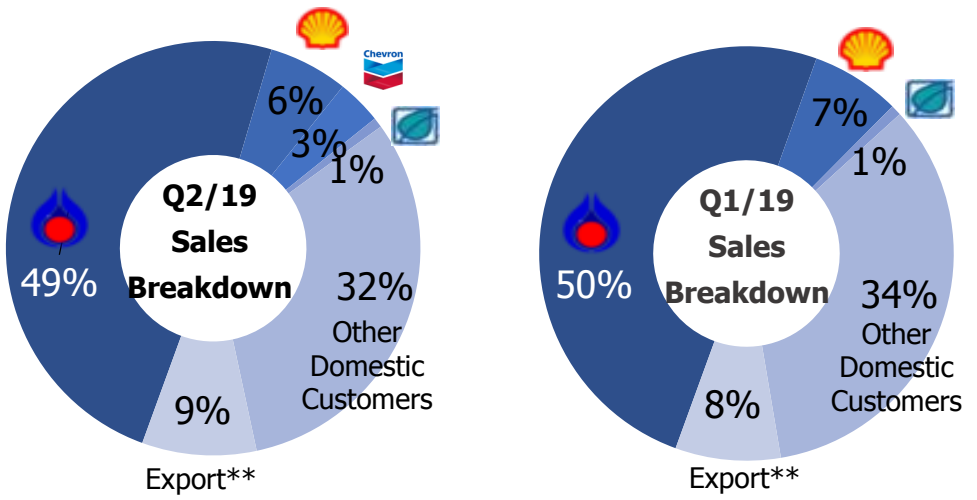
TOP/ Domestic Refinery Utilization Rate



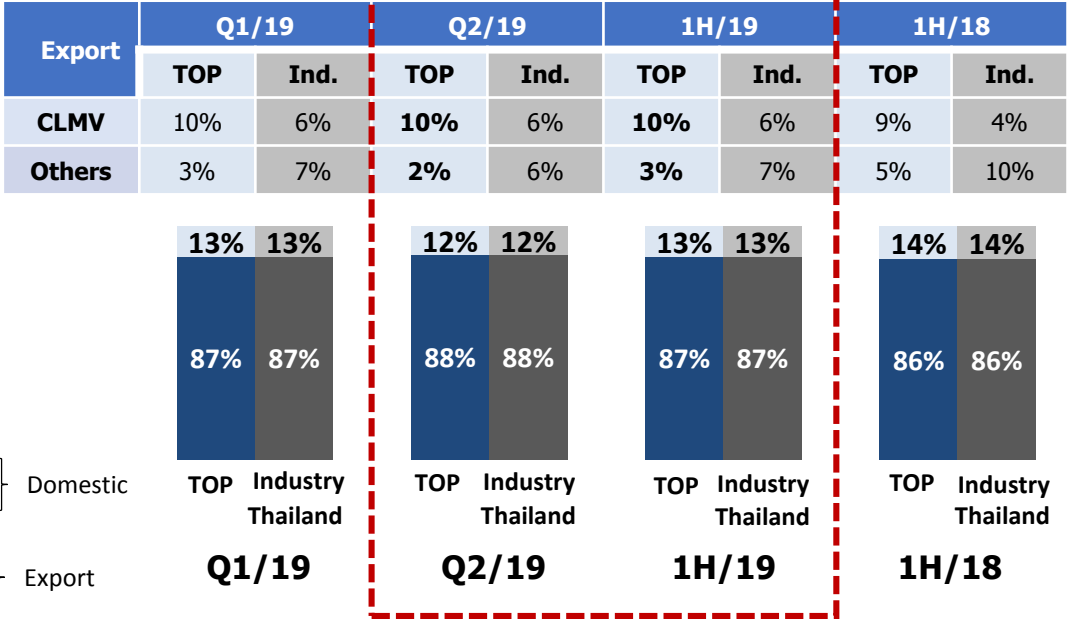
Domestic Oil Demand



Sales breakdown by customers



TOP's Domestic Sale vs Industry***



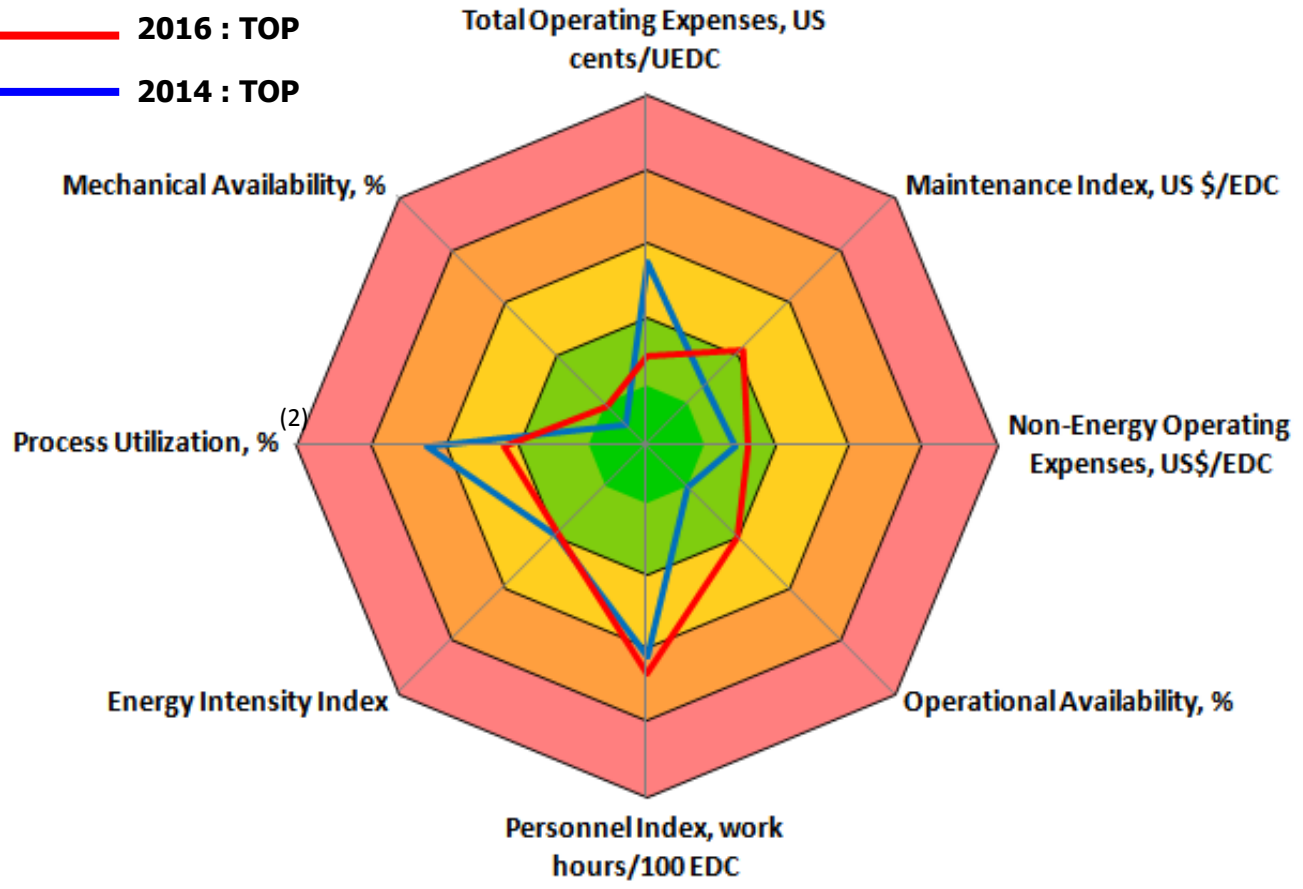
** Excludes export sale through PTT

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

Competitive Performance Benchmarking

Solomon for GOC 3⁽¹⁾ Category

— 2016 : TOP
— 2014 : TOP



Solomon Associates is the independent 3rd party who applies Comparative Performance Analysis methodology to industry peers in the area of reliability, equipment, utilization, operating expense, gross margin and overall performance range and come up with comparative ranking

Remark :

⁽¹⁾ GOC 3 stands for Gas Oil Conversion Group 3, under which refineries in this group have equivalence distillation capacity 1,800 – 2,999 KEDC

⁽²⁾ In 2014, Thai Oil had Major turnaround for CDU-3 46 days and 2014FY refinery utilization was at 98%

TOP Group Key Highlights



Thailand's largest and one of the region's most advanced and competitive refineries

1

Diversified earnings through integration with, and significant contribution from, our subsidiaries

2

Strategic relationship and operational integration with PTT as the Group's principal refiner

3

Strategic location with competitive advantages in access to key markets

4

Industry with high barriers to entry and strong market positioning

5

Technological superiority, logistical advantages & cost leadership

6

Highly experienced management team

7

Strong financial profile


8



KEY FINANCIAL HIGHLIGHTS

Q2/19 Key Market Drivers Highlights

Refinery




- **Soften refinery margins** pressured by **higher crude premium** due to supply tightness as OPEC's production cut and **soften middle distillates margin** due to higher inventory and lower demand. But negative impact was partially offset by **improved gasoline spread** due to higher demand from U.S. driving season and rising demand in Middle East ahead of Ramadan
- **Lower crude price** pressured by **U.S. - China trade war and increasing U.S. oil production**

Implication

- **Mkt GRM at 2.6 \$/bbl¹⁾**
(Q1/19 = 3.0 \$/bbl)
¹⁾ Include Margin and Productivity Improvement
- **(0.2) \$/bbl inventory loss²⁾**
(from stock gain 2.7 \$/bbl in Q1/19)
²⁾ Based on refinery intake

Aromatics & LAB



- **Soften aromatics contribution** pressured by **increasing supply** as plant in China start running Phase I (2.25 MTA) and ramping up Phase II (2.25 MTA) in May'19

- **Soften Aromatics & LAB Margins³⁾**
(GIM contribution 1.0 \$/bbl from 2.0 \$/bbl in Q1/19)
³⁾ Aromatic contribution including LAB

Lube Base



- **Improved Bitumen spread** supported by **firm regional demand**
- **Soften Base Oil spread** pressured by **lower demand** due to weaker economy from ongoing trade tensions and **additional base oil Gr. 2 & 3 supply** mainly from China (0.6 MTA)

- + **Improved Lube Base Contribution**
(GIM contribution 0.7 \$/bbl from 0.2 \$/bbl in Q1/19)

Refinery + Aromatics & LAB + Lube Base

\$/BBL	Q1/19	Q2/19
Market GIM	5.2	↓ 4.2
Inventory Gains/ (Loss) ⁴⁾	2.7	↓ (0.2)
Accounting GIM	7.9	↓ 4.0

⁴⁾ Based on integrated intake

Q2/19 Key Highlights

Key Highlights Q2/19

Operational Excellence



Growth & Profitability Improvement



Sustainability & Awards



Maintain high reliable production

	Q2/19	Q1/19
Refinery	103 %*	116 %
Aromatic	64 % *	92 %
Base Oil	85 %	89 %

* Planned MTA CDU-3, TPX Complex (Jun-Jul'19)

Capture high local & Indochina sales

	Q2/19	Q1/19
Local	88 %	87 %
Indochina	10 %	10 %
Other exports	2 %	3 %

Successfully transform TTC to IBC & Set up TOP Ventures Co Ltd. (TH & HK) to invest in CVC & start up area of manufacturing, tech green & human tech & hydrocarbon disruption

CDU-3 & TPX Complex start to return from scheduled maintenance (30 and 45 days, respectively)

Major Turnaround completed on time (Jul'19)

CDU-3 & TPX Complex start to return from scheduled maintenance (30 and 45 days, respectively)

One time expenditure in Q2'19

- Severance payment 384 MB
- Maintenance cost 352 MB

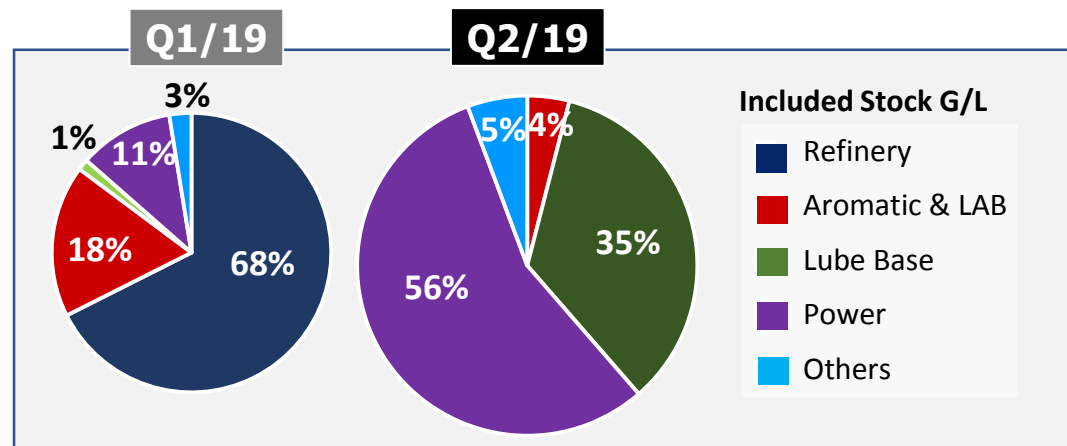
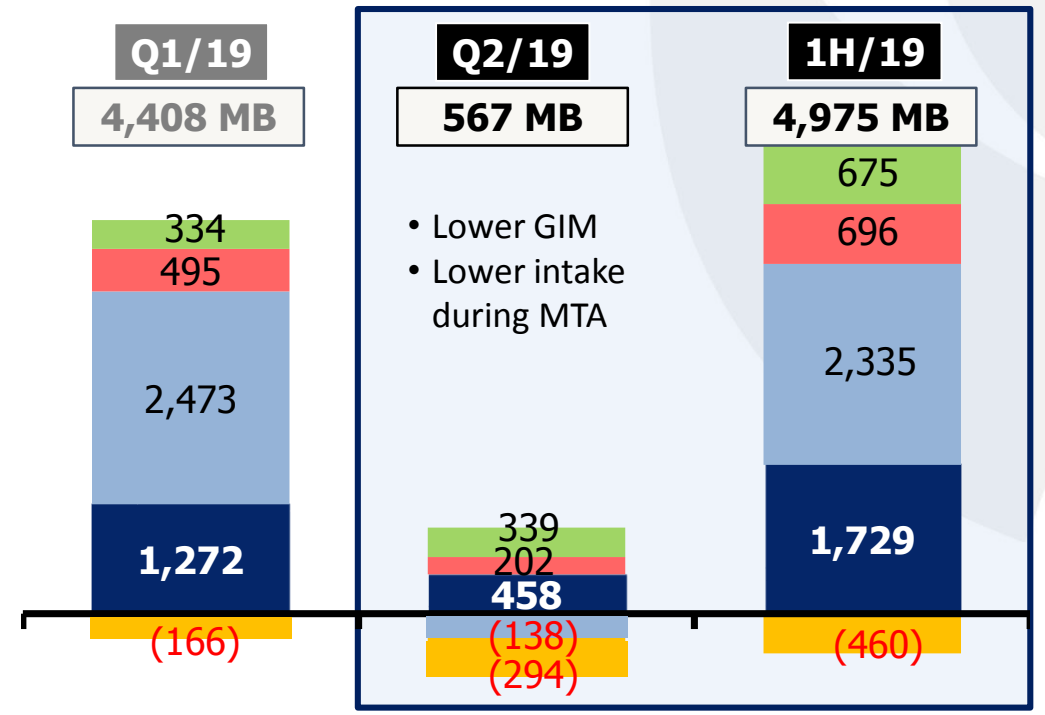
TOP's local rating is upgraded to AA by Fitch (Thailand), and BBB+ by S&P, and maintain at Baa1 by Moody's,

Asian Excellence Award 2019 Asia's Best CEO (IR), Best CFO (IR) & Best IR Company in Thailand

TOP Group Net Profit





Unit : million THB (MB)

- Net Operating Profit
- Stock gain/(loss)
- Reversal of Crude NRV /(Crude NRV) & Adjusted to cost
- F/X Risk management gain/(loss)
- Others i.e. Hedging gain/(loss) & Non-recurring items



1H/19 Margin and Productivity Improvement (VS Corporate Plan)

Margin Improvement (Hydrocarbon Management : HMR) and Productivity Improvement (Non HMR)

- ✓ **37%** Crude Enhancement 
- ✓ **24%** Higher domestic and Indochina sales/ better product premium 
- ✓ **6%** Plant optimization 
- ✓ **1%** Energy improvement 
Energy
- ✓ **6%** Others

Cost Management

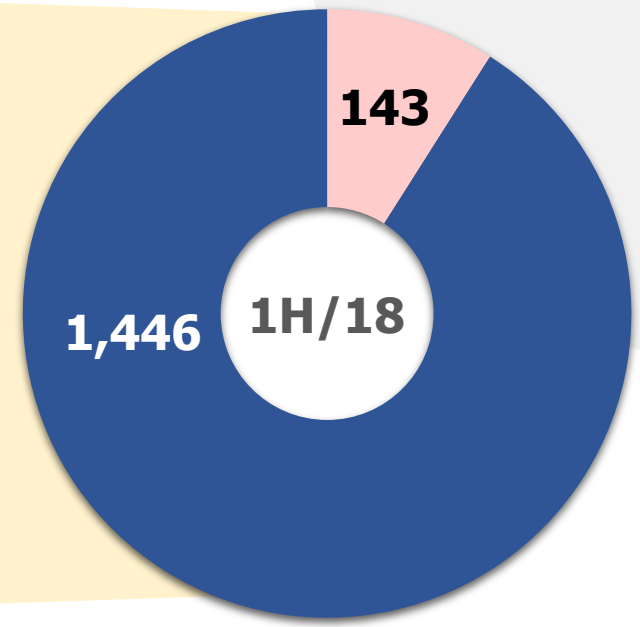
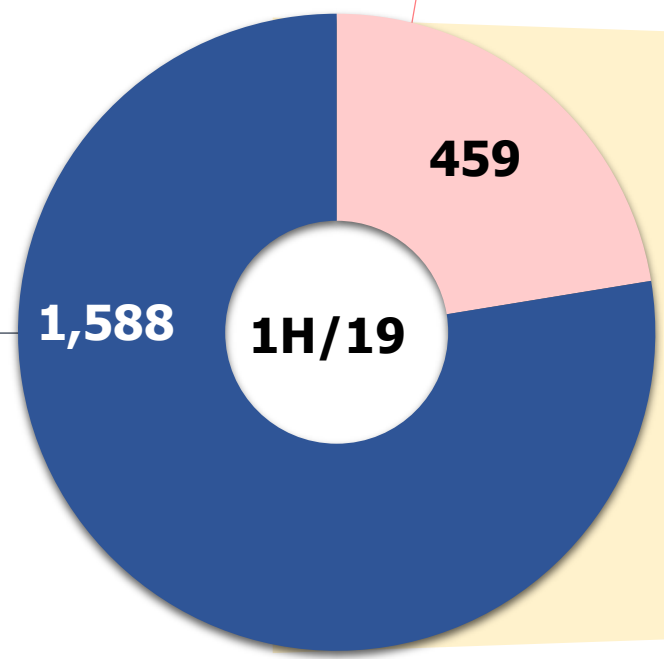
ORCHESTRA

Symphony

✓ **175 MB** ✓ **284 MB**

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

Unit: million THB



THB 2,047 mn*

THB 1,589 mn*

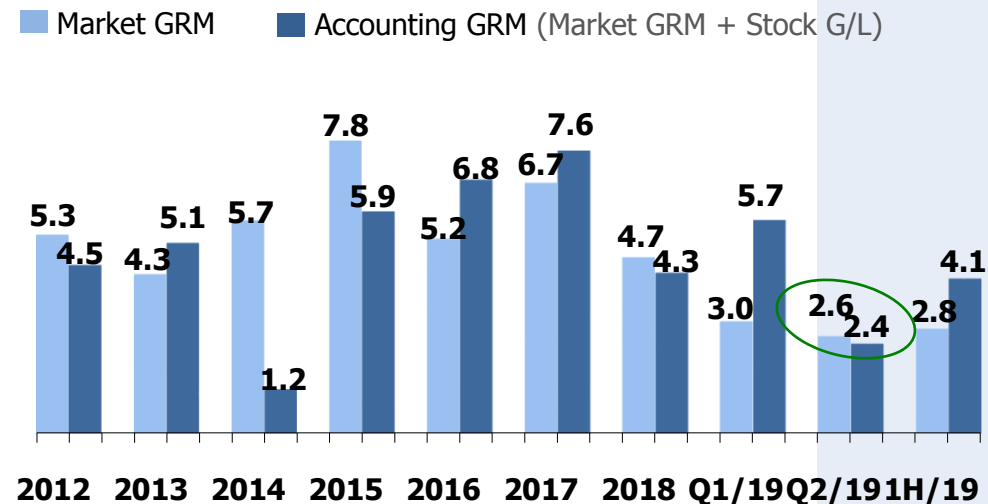


* Compared with Corp. plan

Integrated Margin & Competitive Cash Cost

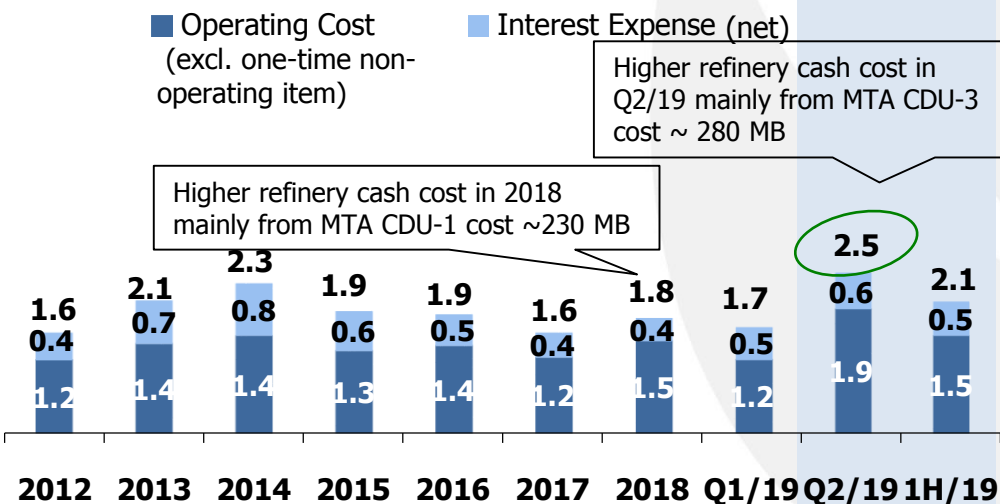
Gross Refining Margin

(Unit: US\$/bbl)



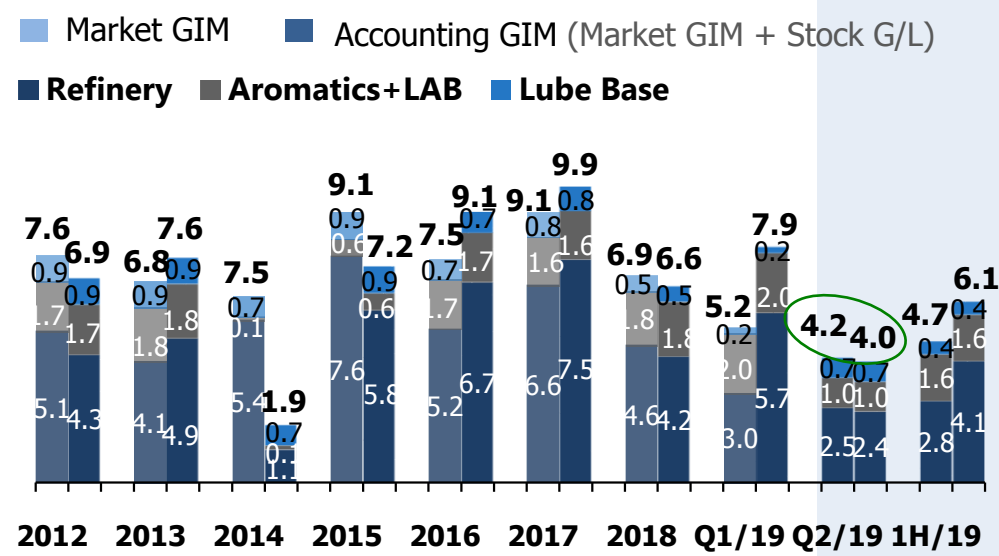
Refinery's Cash Cost

(Unit: US\$/bbl)



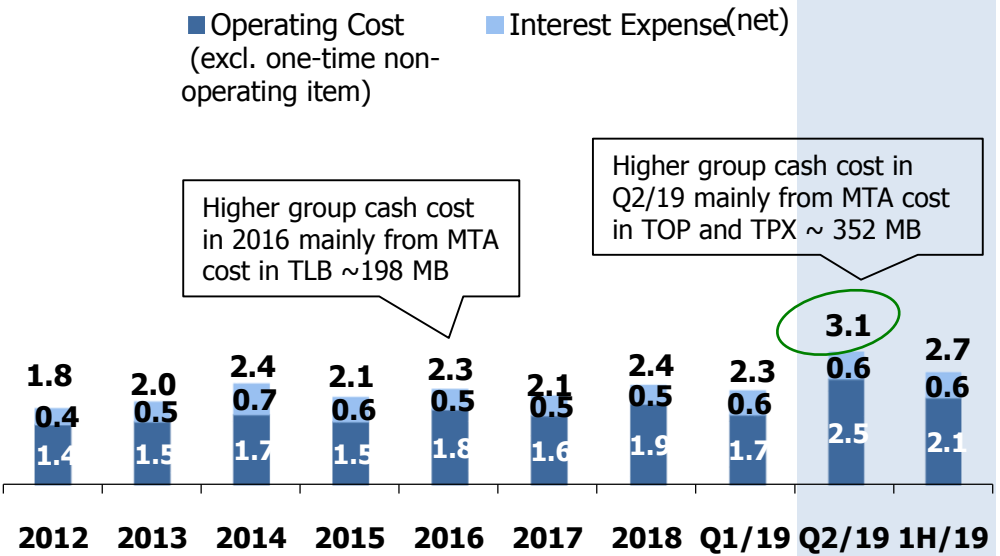
Gross Integrated Margin

(Unit: US\$/bbl)



Group's Cash Cost

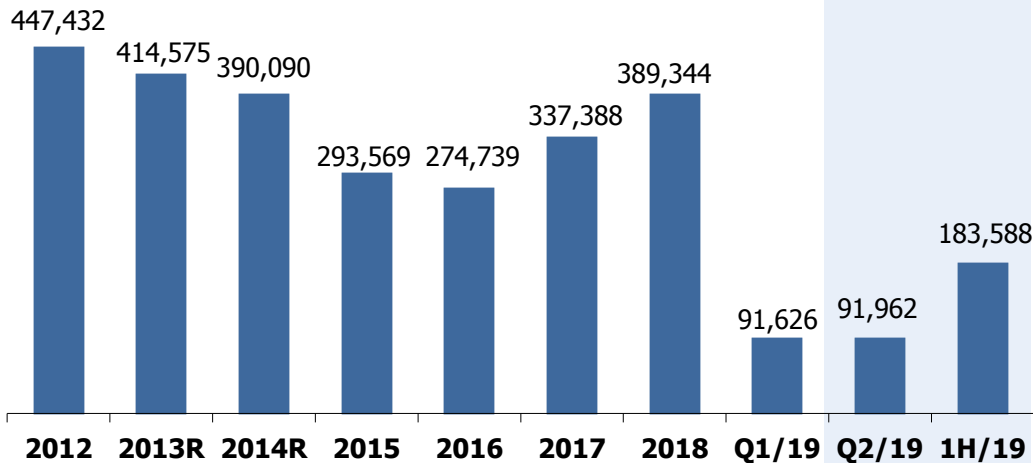
(Unit: US\$/bbl)



Financial Performance

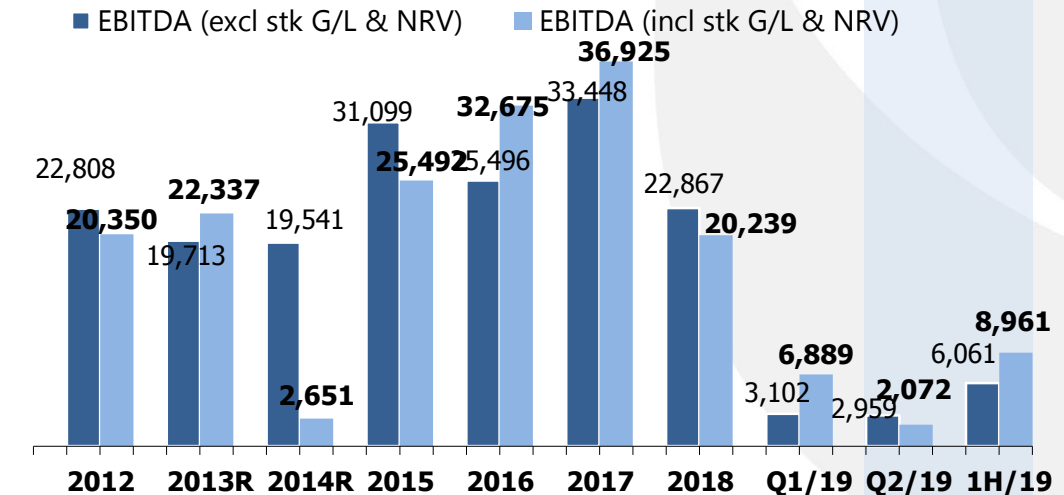
Sales Revenue

Unit: Million THB



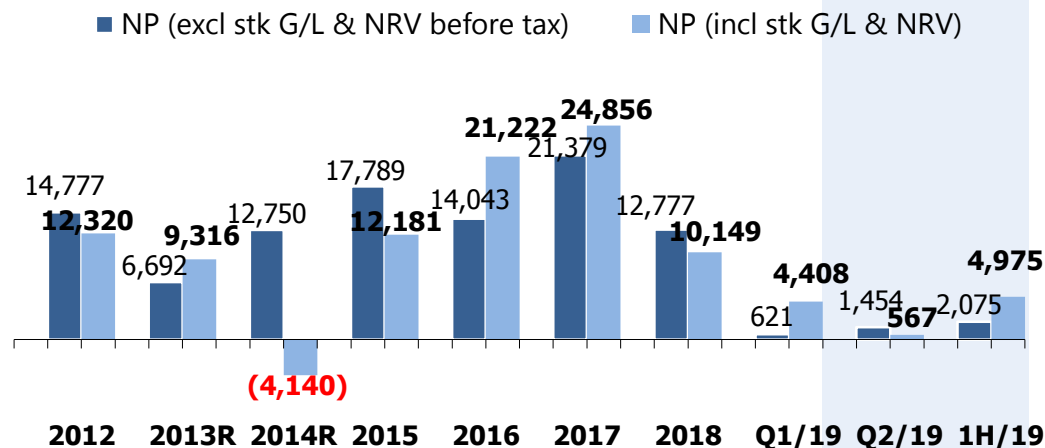
EBITDA

Unit: Million THB



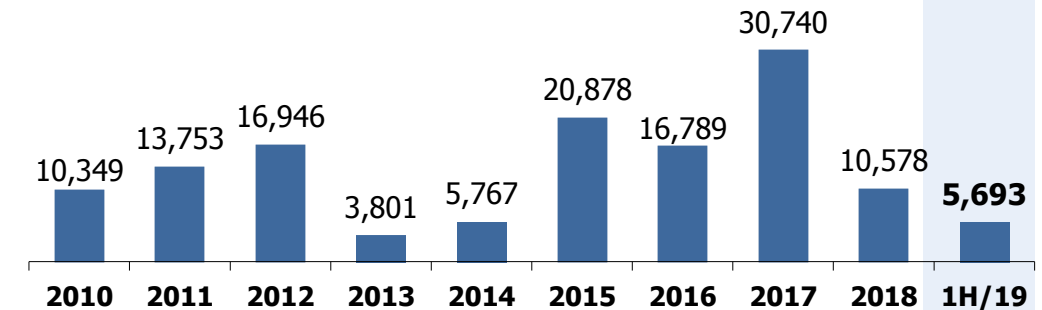
Net Profit

Unit: Million THB



Free Cash Flow*

Unit: Million THB



CAPEX (PP&E)-Net

3,187	3,850	6,103	12,330	18,666	10,830	6,392	3,677	7,735	2,954
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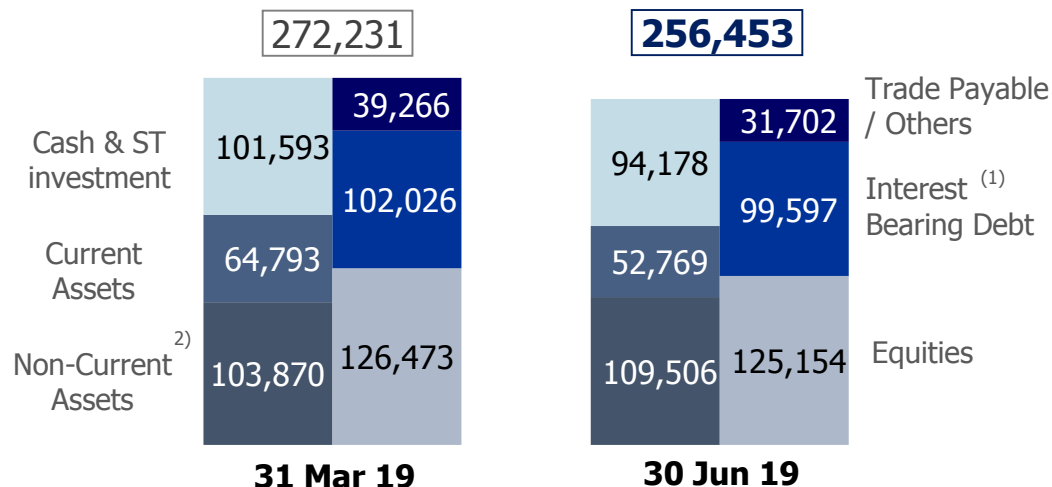
^R Restated financial statement

* Free Cash Flow (FCF) = Operating cash flow – CAPEX(PP&E)-Net

Q2/19 TOP Group Strong Financial Position & Financial Ratios

Statements of Financial Position

(Unit: million THB)



ROE	7.0 %	3.7 %*
ROIC	8.3 %	5.1 %*

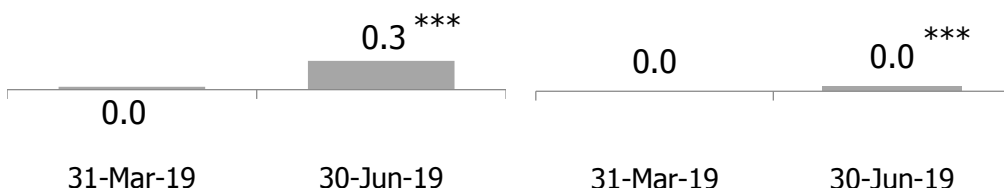
(1) Including current portion of Long-Term Debt

(2) Including investment held as available for sale 31 Mar 19 = 380 MB, 30 Jun 19 = 397 MB

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))

*** As of 30 Jun 19 Net Debt 5,419 MB or 169 M\$

Consolidated Long-Term Debt as at 30 Jun 19

Total IBD

99,597 million THB
(US\$ 3,114 million equivalence)

Net Debt

5,419 million THB
(US\$ 169 million equivalence)

As at 28 Jun 19 (30.92 THB/US\$)

	Value (Million)	Portion
US\$ Bond & US\$ Loan ⁽³⁾	USD 1,991	63%
THB Bond	THB 20,500	21%
THB Loan	THB 15,681	16%

(3) Including VND Loan equivalent to USD

Interest Rate	Portion
Float	10%
Fixed	90%
TOP avg.debt life	13.73 Yrs

Cost of Debt	
TOP Group (Net***)	2.56% ⁽⁴⁾
TOP Group (Gross)	4.93%

(4) Due to yield enhancement

MOODY'S
Baa1
Stable Outlook

STANDARD & POOR'S
BBB+
Stable Outlook

FitchRatings
AA (Tha)
Stable Outlook

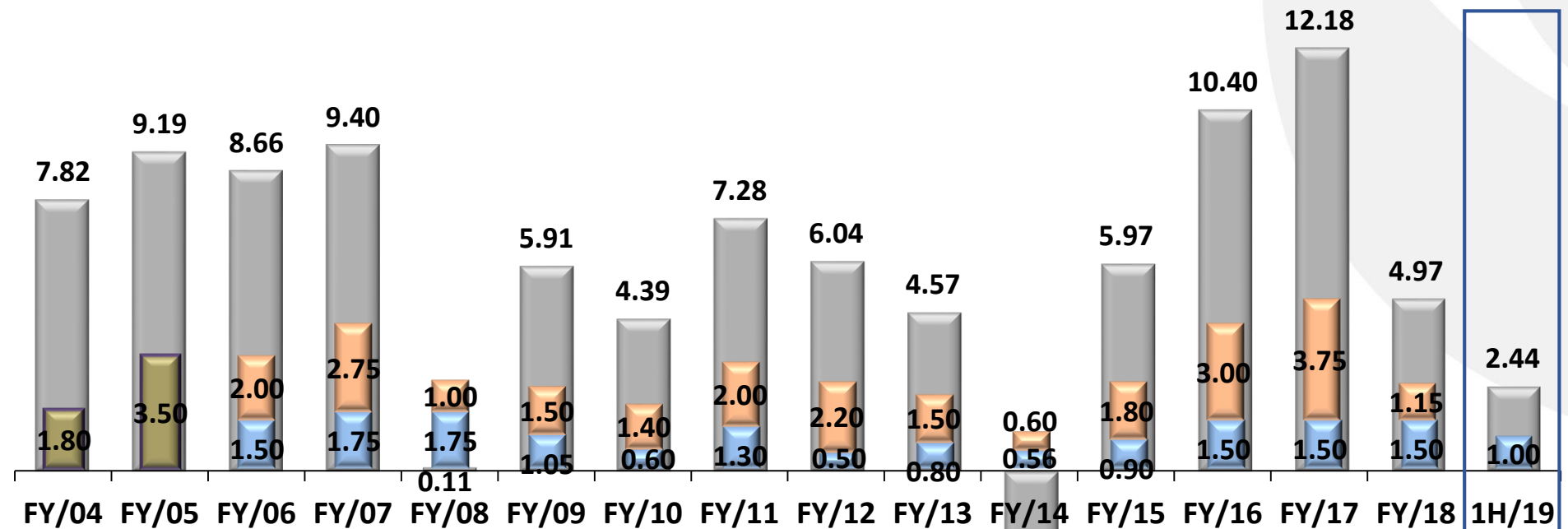
2018 Dividend Payment

Dividend Policy :

Not less than 25% of consolidated net profit after deducting reserves, subject to cash flow and investment plan

Unit : THB/Share

 EPS^R
 2H dividend
 1H dividend
  Year Dividend



Annual DPS
(Baht/share)

	1.80	3.50	3.50	4.50	2.75	2.55	2.00	3.30	2.70	2.30	-2.03	2.70	4.50	5.25	2.65
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Dividend
Payout

	23%**	38%	40%**	48%	n.a.	43%	45%	45%	45%	50%**	n.a.	45%	43%	43%	53%	41%
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Dividend
Yield*

	4.0%	5.6%	5.6%	6.2%	5.2%	7.1%	4.0%	4.7%	4.2%	3.6%	2.3%	5.0%	6.7%	6.2%	3.1%	1.5%
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Avg TOP price

	44.7	63.0	62.7	72.7	53.3	35.9	49.9	69.8	65.1	64.6	50.4	53.5	66.7	84.2	86.9	68.5
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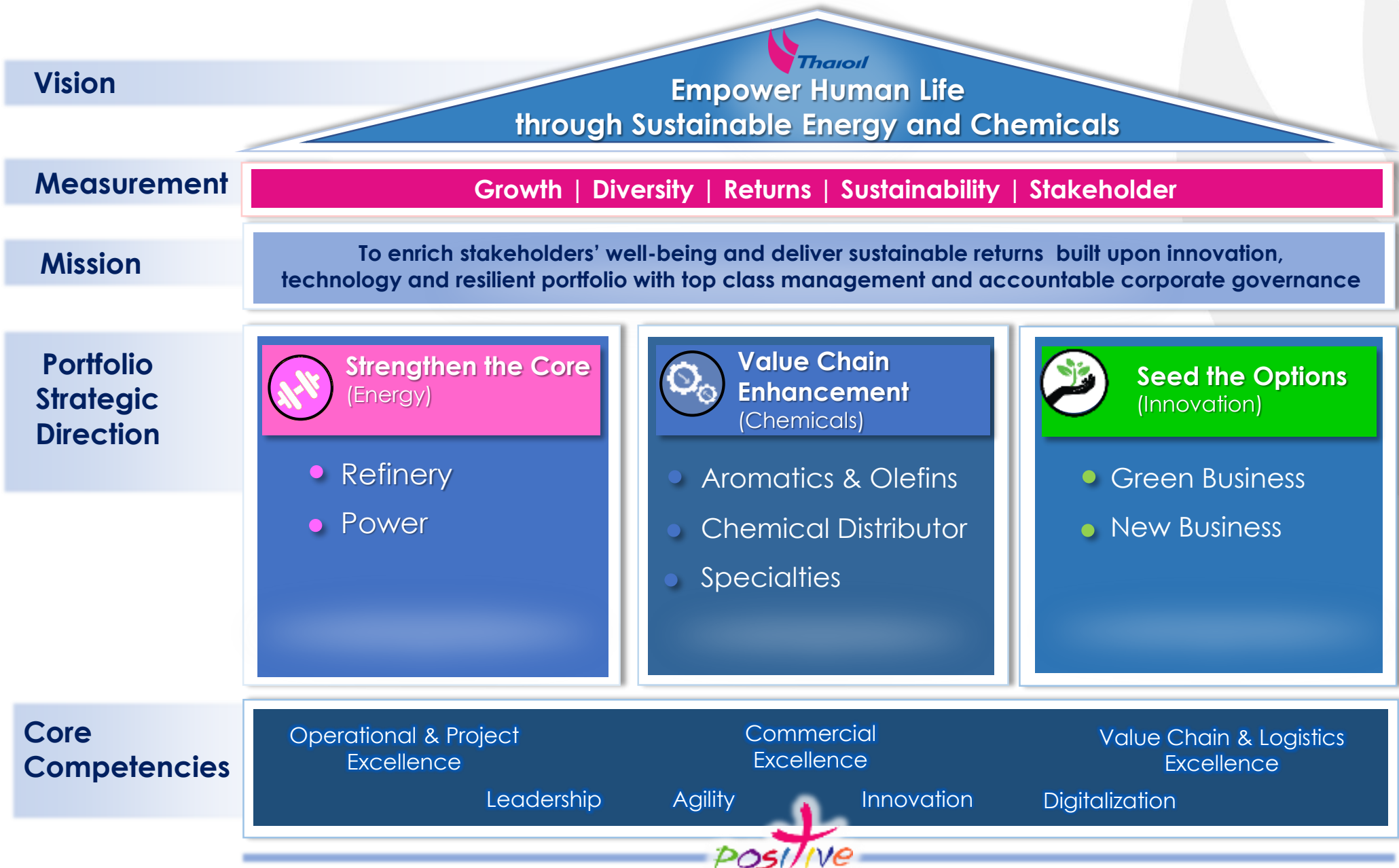
^R Based on restated financial statement

* Based on average TOP share price in each year ** Dividend payout before restated ; 2004 = 25% , 2006 = 43% , 2013 = 45%



STRATEGIC INVESTMENT PLANS

Thaioil Strategic Direction 2018 – 2030



Strategic Investment Plan Approved by Board of Directors

CAPEX Plan (Unit US\$ million)

Project	Total 2019 - 2023	Planned capital investment				
		2019	2020	2021	2022	2023
Reliability, Efficiency and Flexibility Improvement		50	17	2		
Infrastructure Improvement						
- Jetty 7&8 / Improvement		65	5			
- Office Relocation & New Crude Tank		28	17			
- Site office preparation for fire water & fire water improvement		21	16			
- New Bangphra Raw Water Line		4	16	8		
Other Investments (i.e. Digital Transformation)		3	35	5	3	4
Total Ongoing CAPEX	<u>299</u>	171	106	15	3	4
CFP project *	<u>3,961</u>	1,280	1,788	875	624	(606)
GPSC's Equity Injection **	<u>574</u>	574				
Total CAPEX (including CFP)	<u>4,834</u>	2,025	1,894	890	627	(602)

* CAPEX of CFP Project including the disposal of asset to transfer ownership in the Energy Recovery Unit (ERU) which is a part of the CFP Project

** Subjected to GPSC's EGM on 28 Aug 19

Updated as of July 2019 Notes: Excluding approximately 40 M\$/year for annual maintenance

Clean Fuel Project (CFP) : Rationale & Timeline

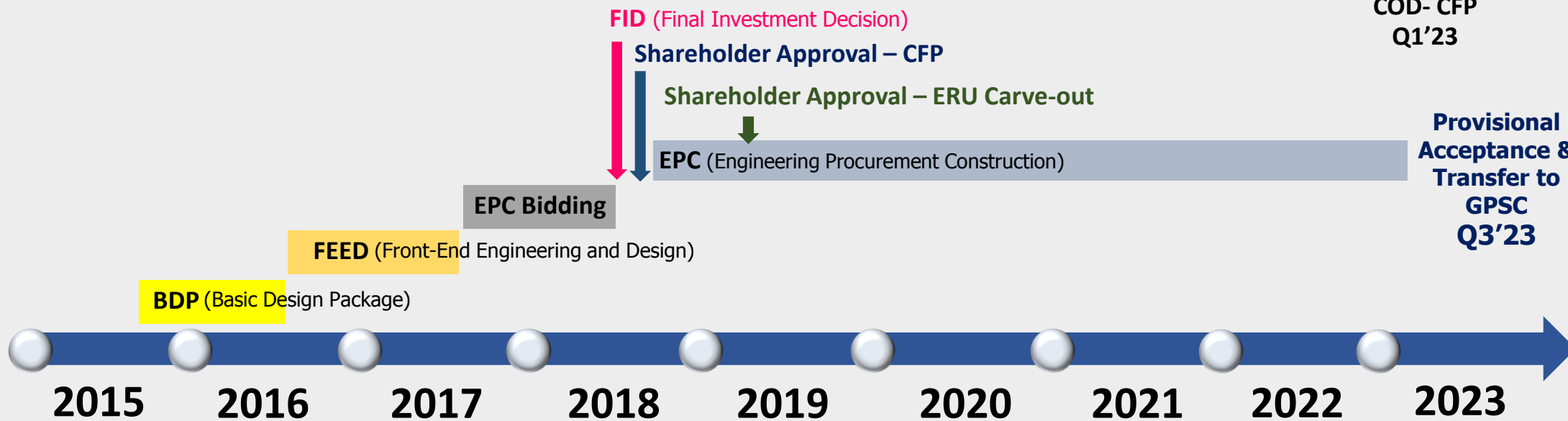
Project Rationale

- Risk of losing competitiveness to others regional refineries as more new refineries with higher capacity and more advanced technologies are on stream.
- Adjust product portfolio by producing high demand and clean product to serve customer needs and country's energy stability.
- Replace units i.e. CDU 1,2 which have been operating more than 50 and 40 years respectively.

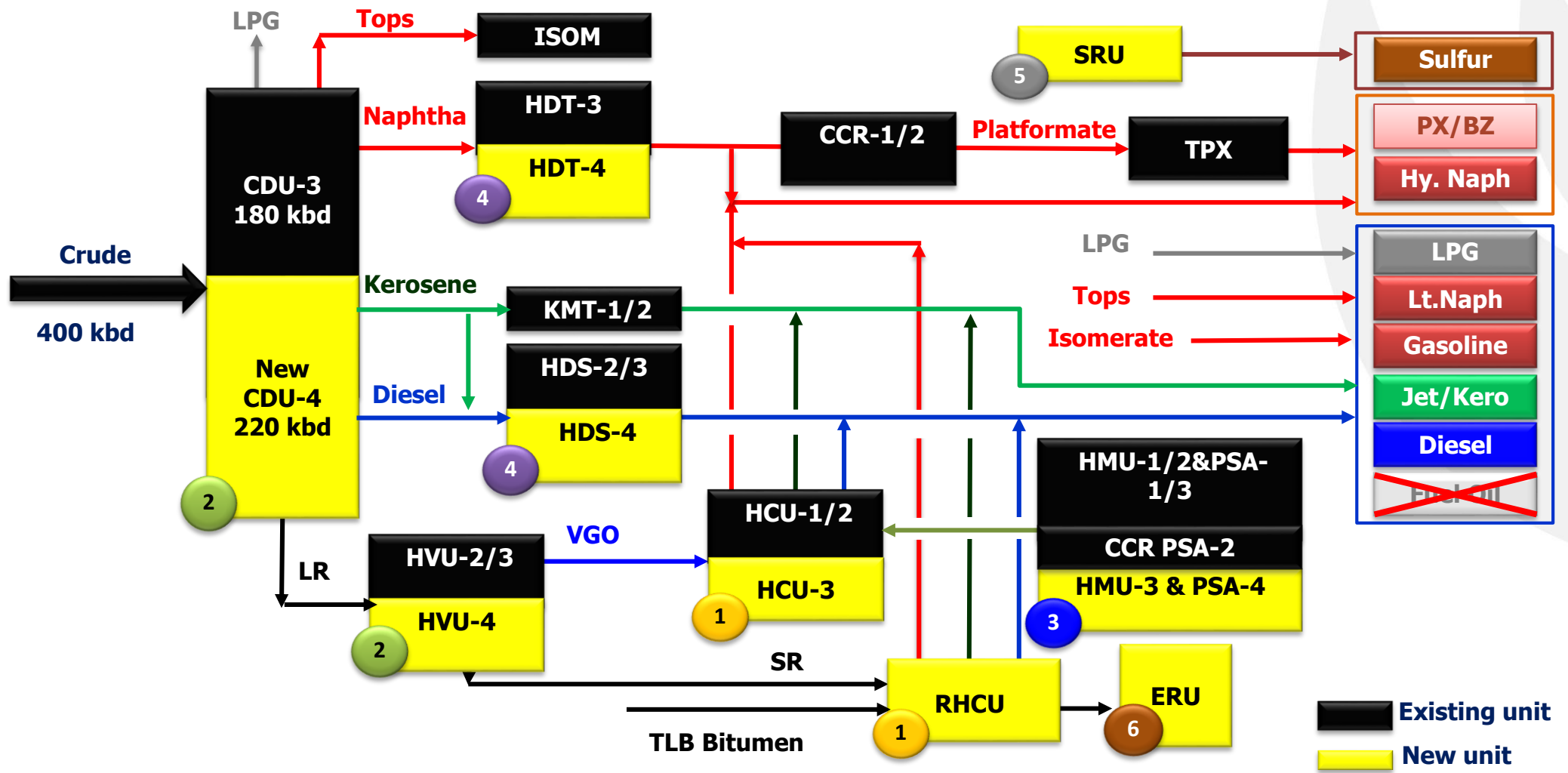
CFP & ERU Carve-out Timeline


COD- CFP
Q1'23

**Provisional
 Acceptance &
 Transfer to
 GPSC**
Q3'23



Scope of CFP & Technical Aspect



- (1) New Upgrading Unit
- (2) New Distillation Unit
- (3) New Hydrogen Manufacturing Unit
- (4) New Treating Unit
- (5) New Sulphur Recovery Unit
- (6) New Energy Recovery Unit



CFP Competitiveness

Without CFP

- **CDU Capacity**

275,000 bbl per day

- **Upgrading Ratio** **28 %**
(upgrading capacity⁽¹⁾ over CDU capacity)

With CFP

- **CDU Capacity**

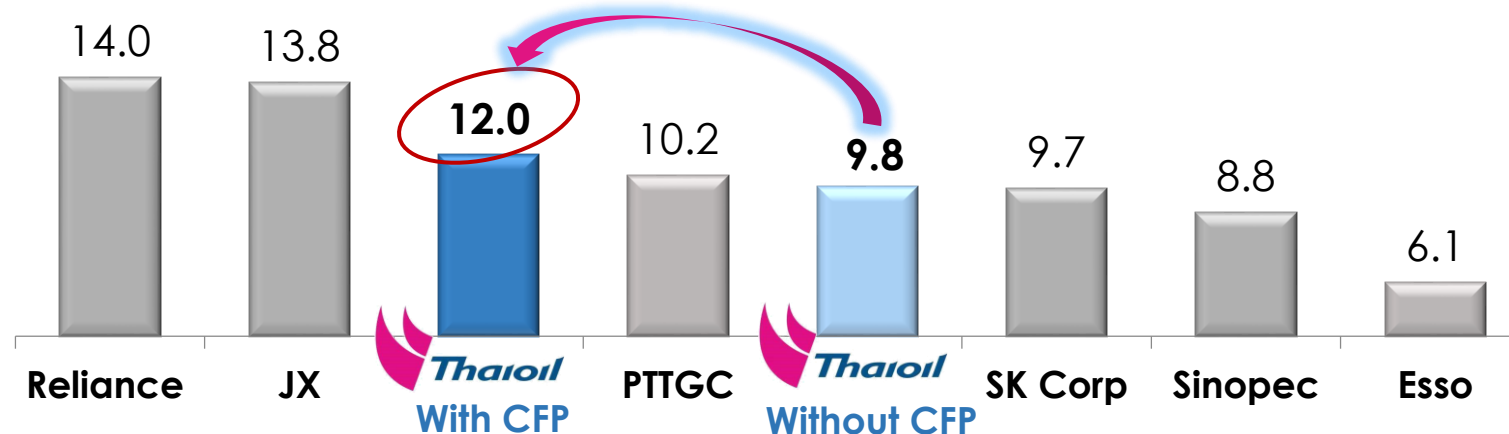
400,000 bbl per day

- **Upgrading Ratio** **50%**
(upgrading capacity⁽²⁾ over CDU capacity)

- **Power Plant** **250 MW**

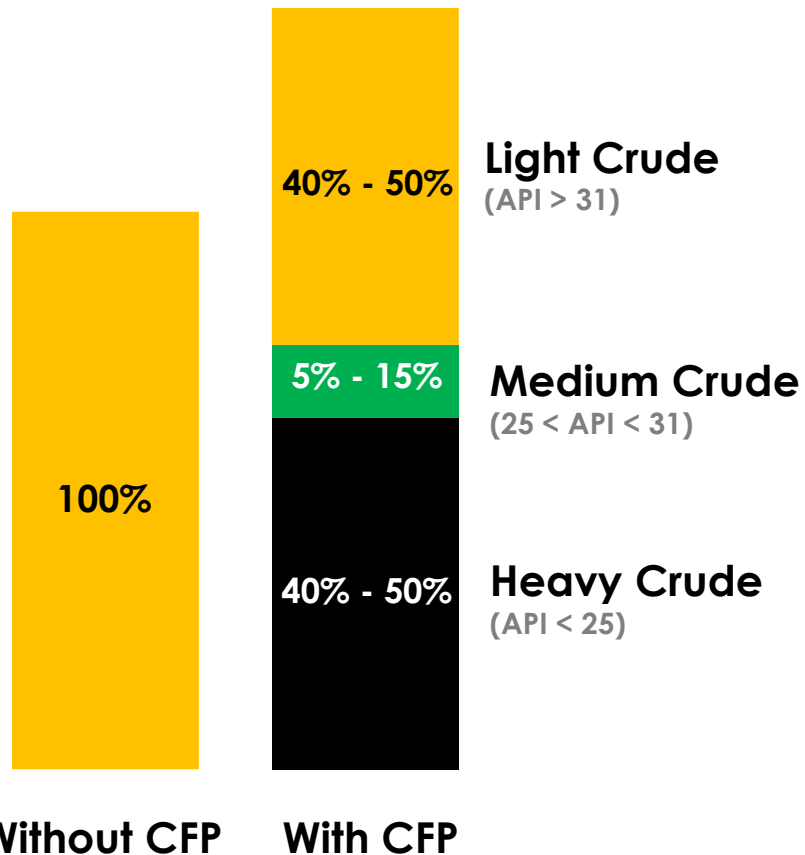
Remark : (1) including HCU 1/2, FCCU, TCU (2) including HCU 1/2/3, RHCU

Nelson Index - Regional Comparison



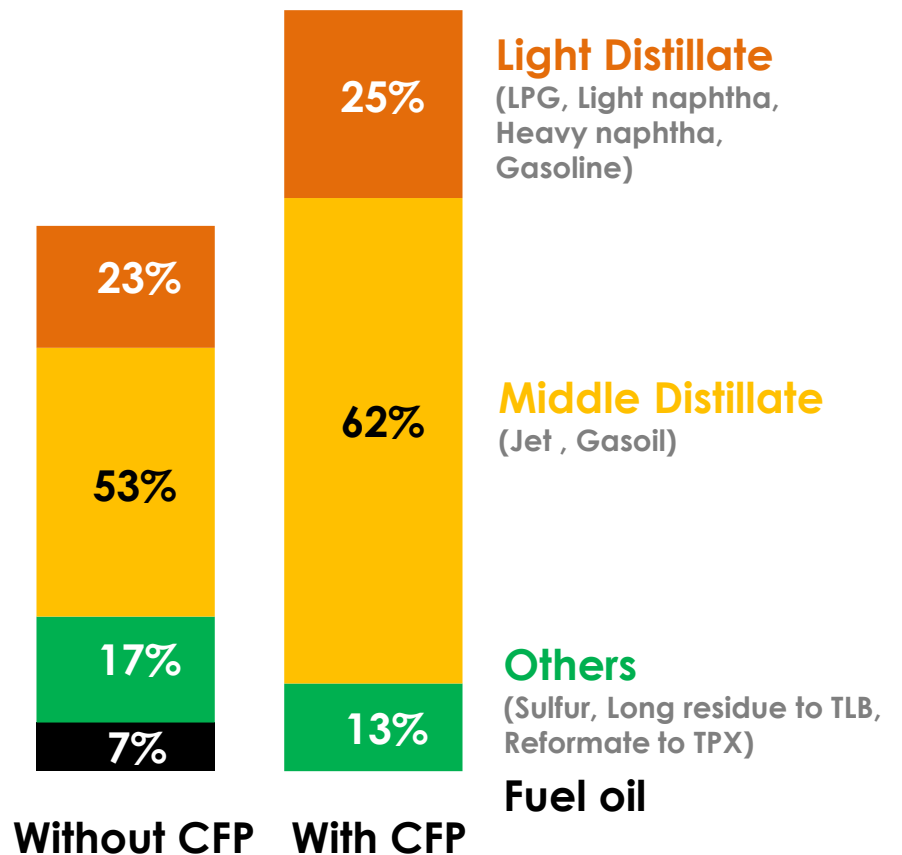
CFP Value Proposition

Flexibility of crude intake



Unit in %Vol.

Product Upgrading



Unit in %Vol.

Note : After CFP, all products based on average data 2023-2043



Q4-19 MARKET OUTLOOK

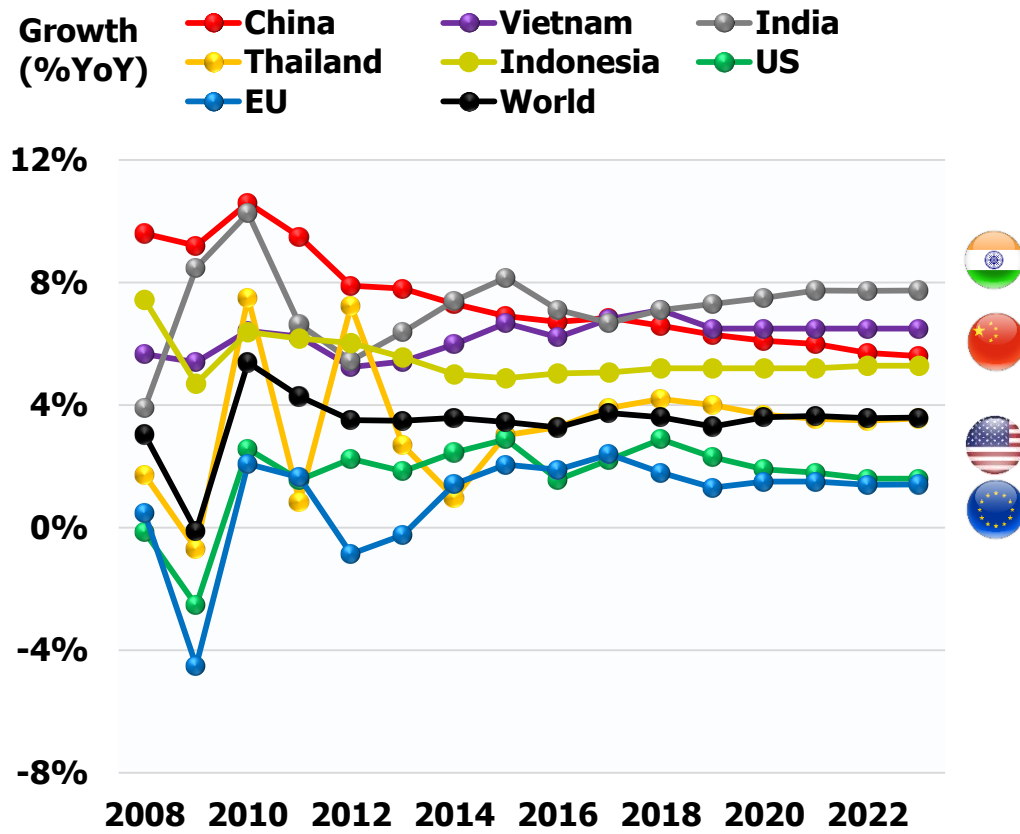
- *Crude Oil*
- *Petroleum Products*
- *Aromatics*
- *Base Oil & Bitumen*
- *Linear Alkyl Benzene (LAB)*

CRUDE OIL



Global Economic Outlook

Weaker GDP growth from 3.6% to 3.3% in 2019 led by downside risks such as trade tension between U.S. and China

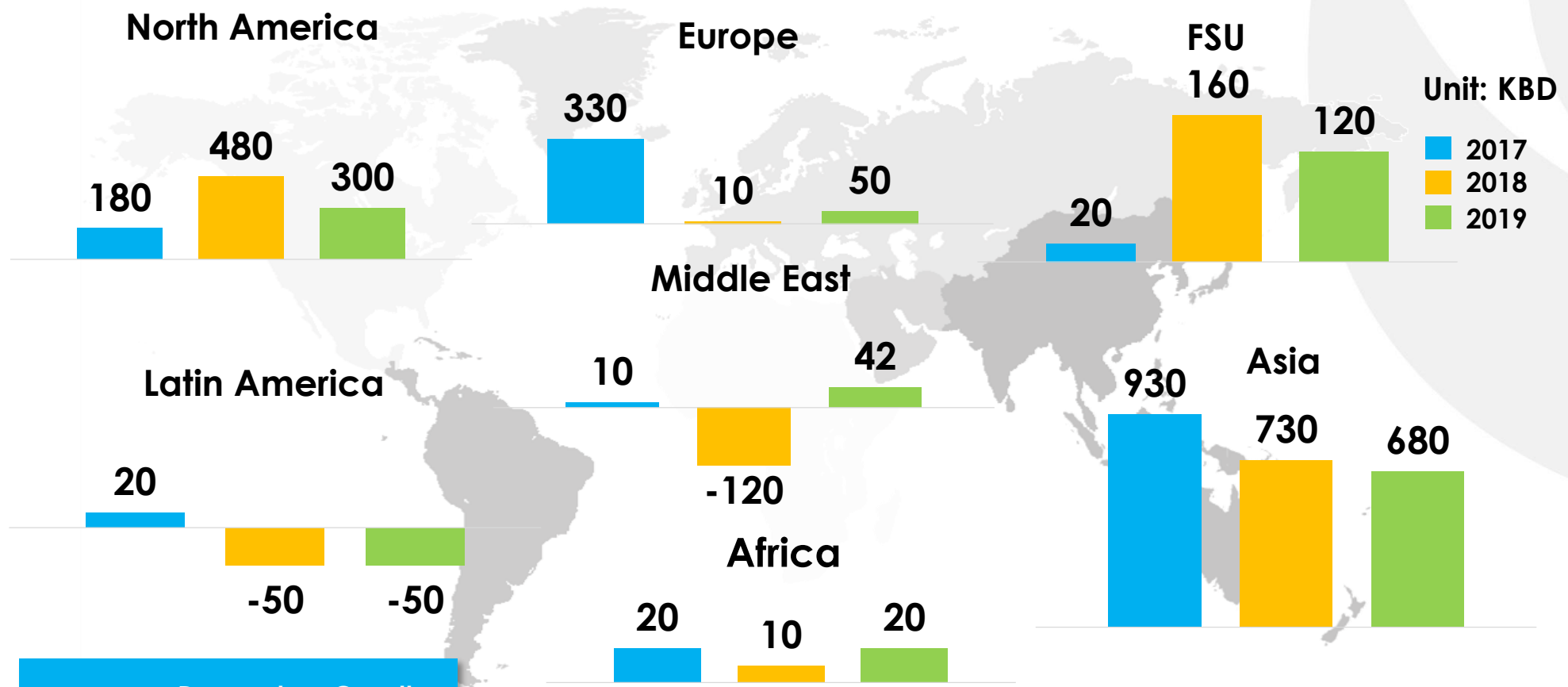


INTERNATIONAL MONETARY FUND	2018	2019	2020-23
	Apr-19 ⁽¹⁾	Apr-19 ⁽¹⁾	Apr-19 ⁽¹⁾
US	2.9%	2.3%	1.7%
EU	1.8%	1.3%	1.5%
China	6.6%	6.3%	5.9%
India	7.1%	7.3%	7.7%
Thailand	4.1% ⁽²⁾	4.0% ⁽²⁾	3.6% ⁽¹⁾
Indonesia	5.2%	5.2%	5.3%
Vietnam	7.1%	6.5%	6.5%
World	3.6%	3.3%	3.6%

Sources : 1) IMF Apr'19 (2) NESDB Feb'19

Global Oil Demand Growth Projection

IEA forecasts global oil demand to grow by 1.2 MBD in 2019

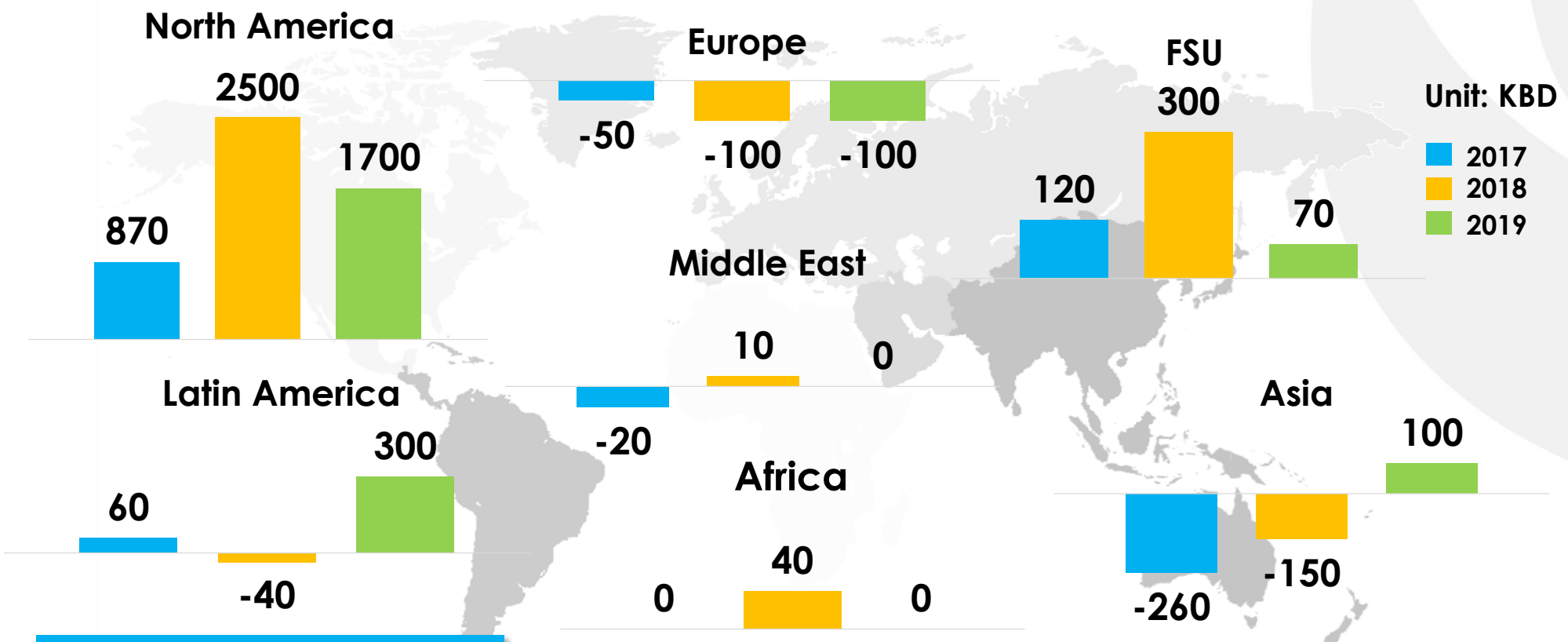


IEA	Demand (MBD)	Growth (MBD)
2017	97.9	1.5
2018	99.2	1.3
2019	100.4	1.2

■ The global oil demand will grow by **1.2 MBD in 2019**, pressured by softer global economy due to U.S.-China Trade War

Non-OPEC Supply Growth Projection

IEA estimated Non-OPEC supply growth to grow by 1.7 MBD in 2019



Unit: KBD

- 2017
- 2018
- 2019

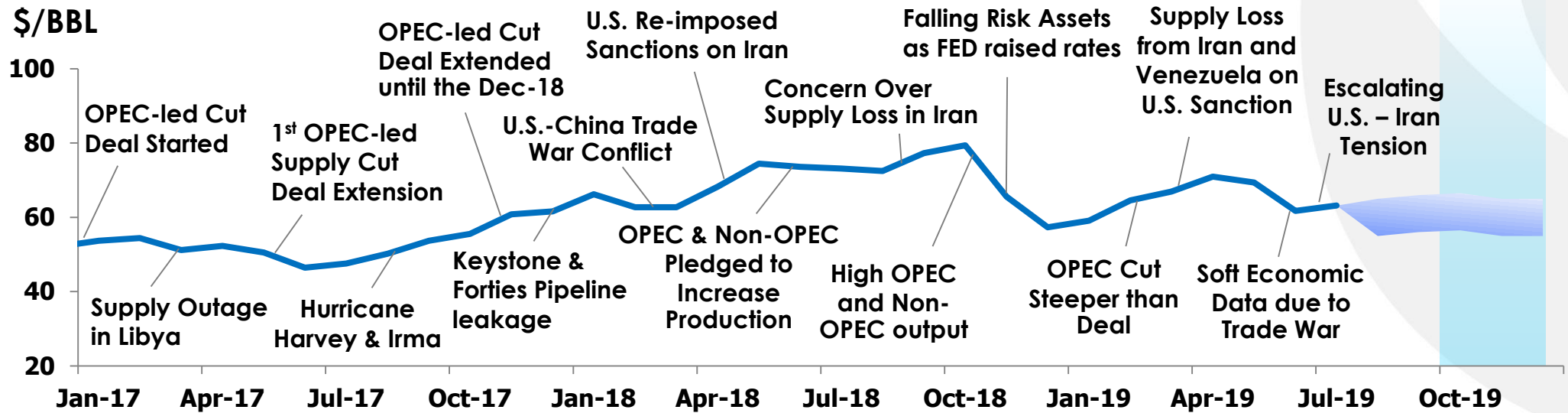
IEA	Non OPEC Supply (MBD)	Growth (MBD)
2017	60.1	0.9
2018	62.9	2.8
2019	64.9	2.0

Remarks: Regional Non-OPEC Supply excl. Biofuels/Processing G/(L)

■ Non-OPEC oil supply is forecasted to expand by **2.0 MBD in 2019**, where the U.S. will be the largest contributor to growth.

Softer Crude Price on Lower Oil Demand following Weak Economy

Dubai Price Movement



*Q3TD'19 (as of 13 Sep): \$60.4/BBL

Key Highlights in Q4-2019

1

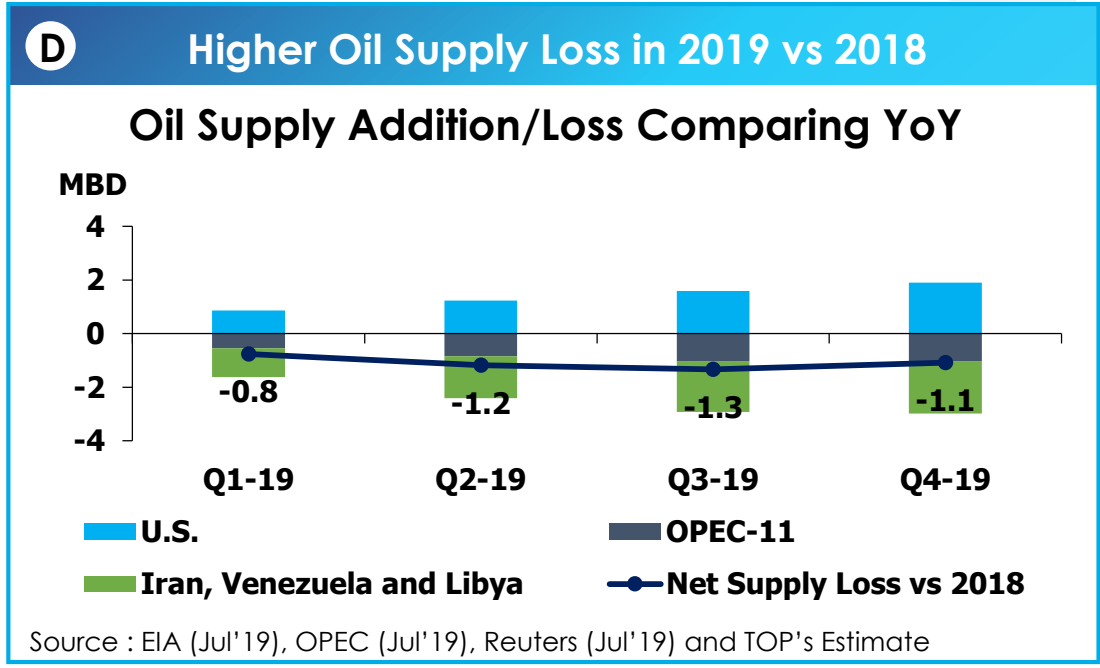
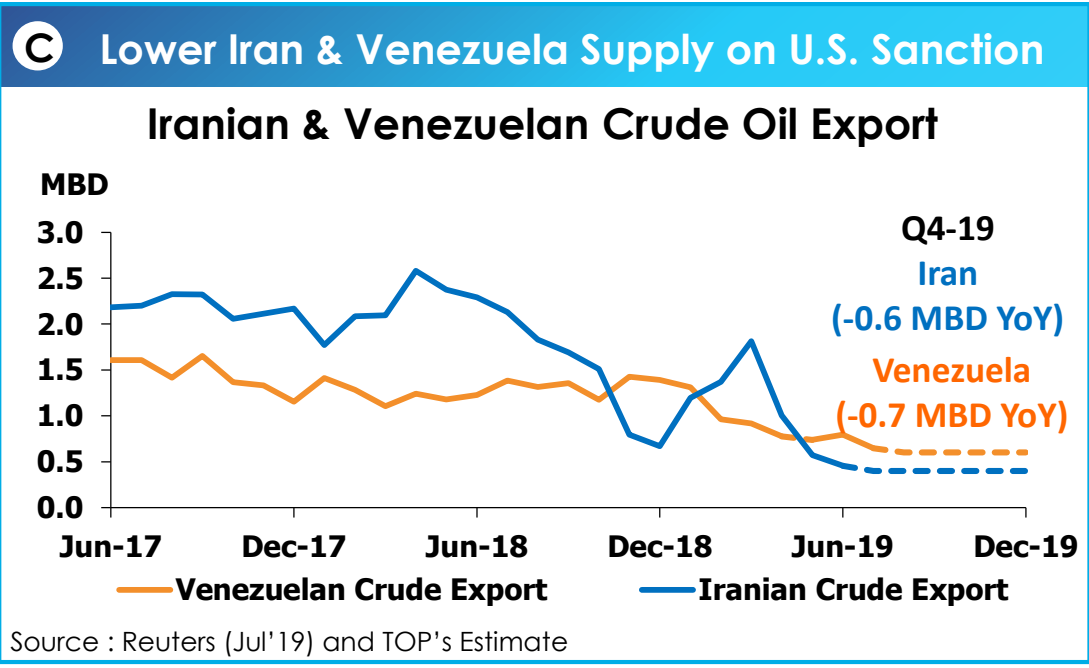
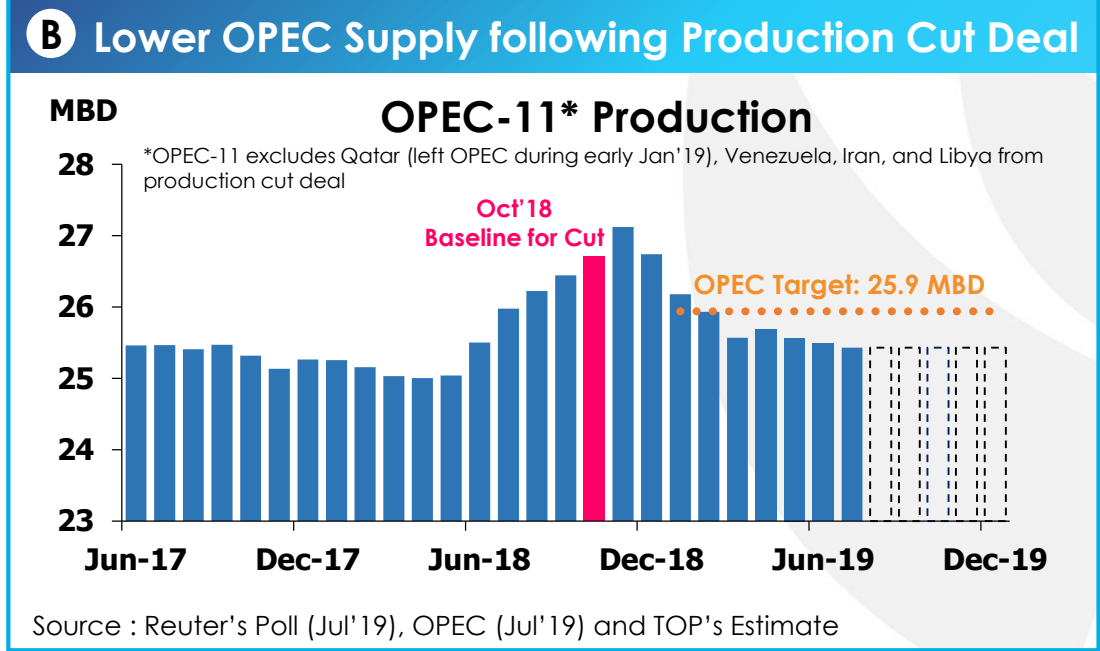
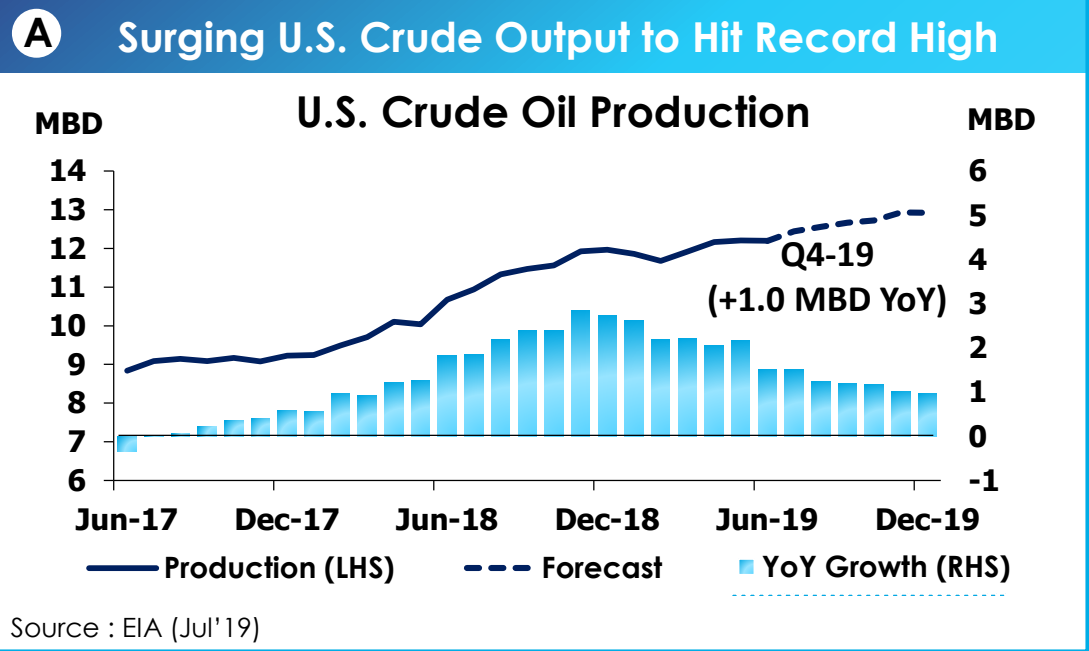
Rising U.S. Production Counterbalanced by OPEC Production Cut and Supply Loss from Iran and Venezuela

2

Soft Oil Demand due to Lower Economic Growth

1

Rising U.S. Production Counterbalanced by OPEC Production Cut and Supply Loss from Iran and Venezuela



2 Soft Oil Demand due to Lower Economic Growth

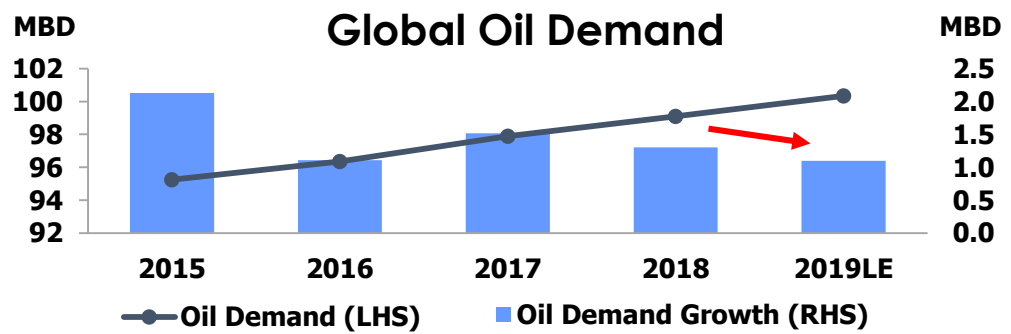
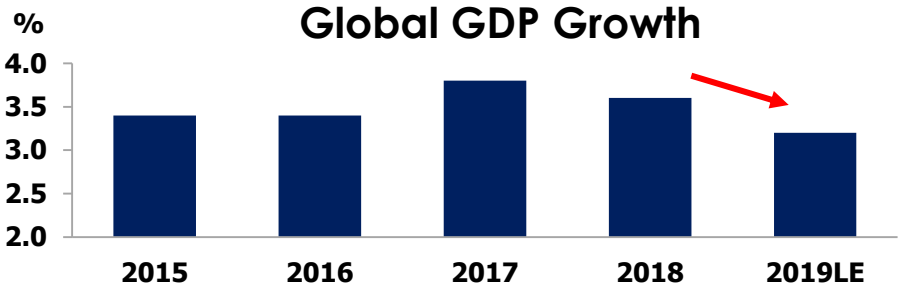
A Trade War Dragged Economic Growth Down

Cumulative Tariffs between the U.S. and China

U.S. tariffs on Chinese imports
\$250 bn
 + ~\$300 bn
 Plan to start on 1 Sep'19



Chinese tariffs on U.S. imports
\$110 bn
 +Yuan devaluation

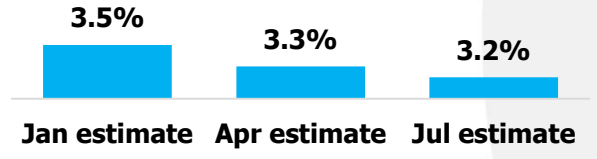


Source : IMF (Jul'19) and IEA (Jul'19)

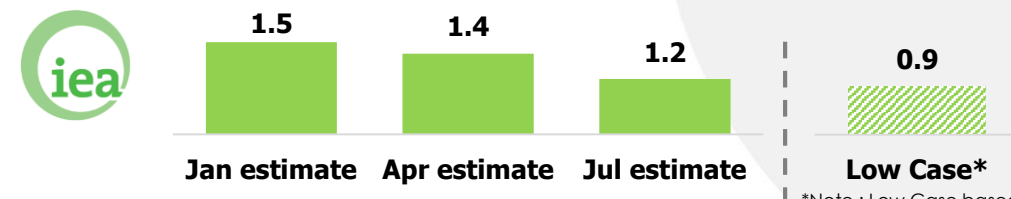
B Lower Oil Demand Growth on Slowing Economy



Global GDP Growth in 2019 (%)



Global Oil Demand Growth in 2019 (Mbbbl)

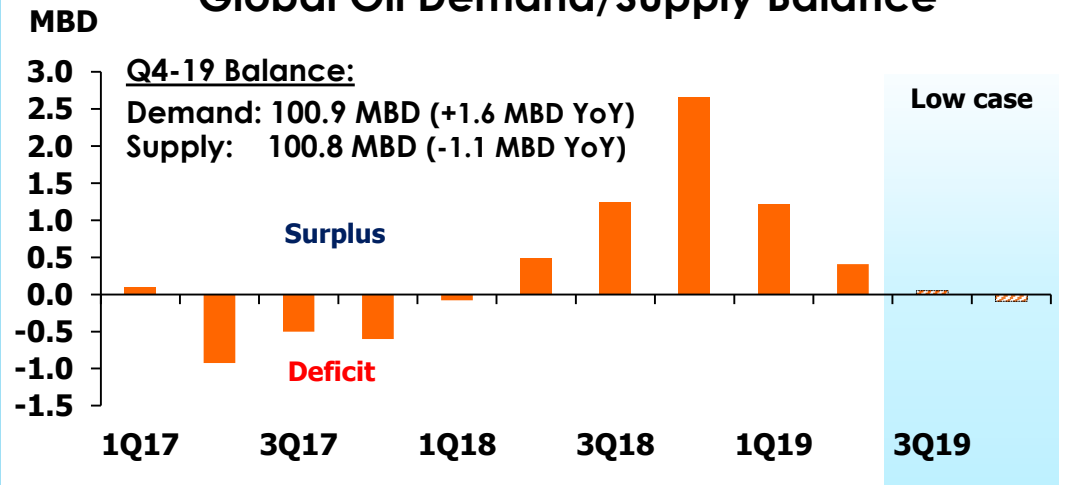


*Note : Low Case based on impact of additional tariff from the U.S. and Yuan devaluation

Source : IMF (Jul'19) and IEA (Jul'19)

C Oil Market Slightly Surplus on Soft Demand

Global Oil Demand/Supply Balance



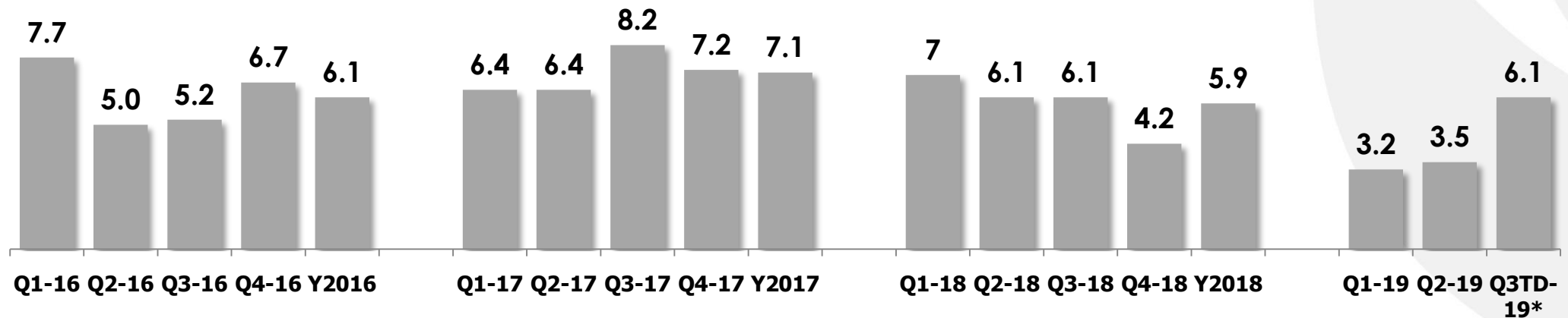
Source : IEA (Jul'19), OPEC (Jul'19) and TOP's Estimate

PETROLEUM PRODUCTS



Refining Margins Boosted by IMO 2020, but Capped by Abundant Light Distillate Supply

Singapore Cracking GRM (\$/BBL)



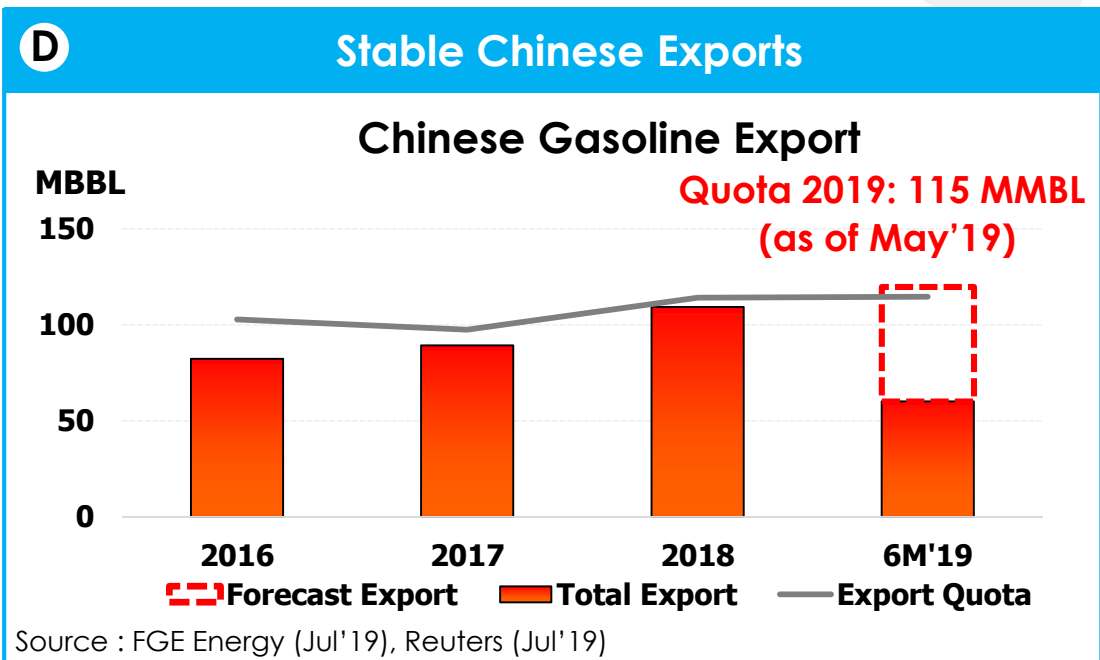
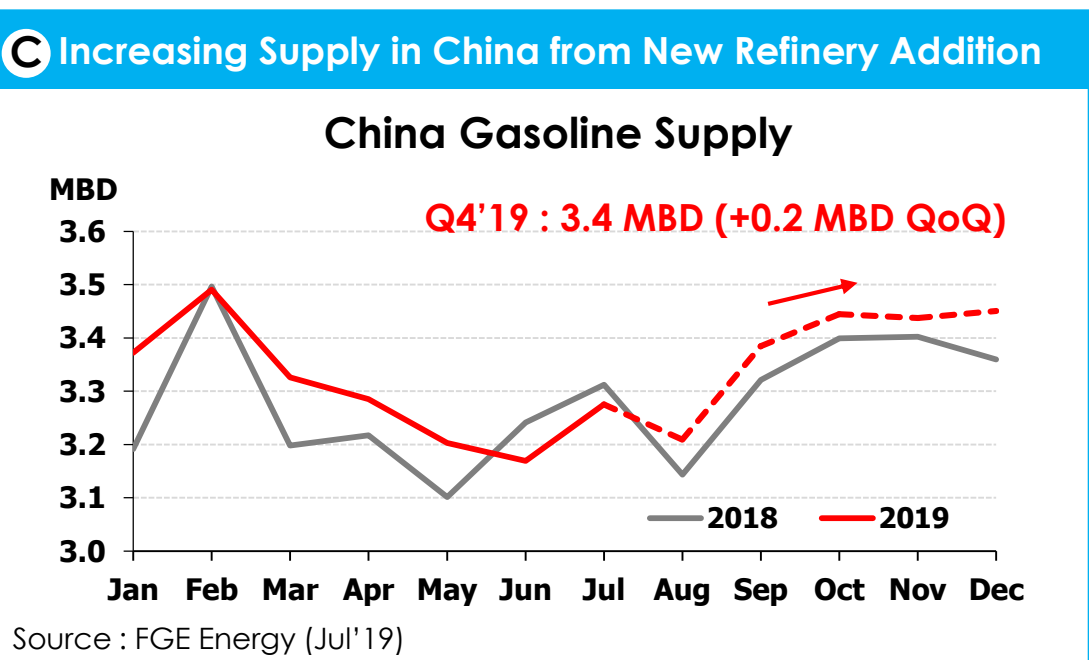
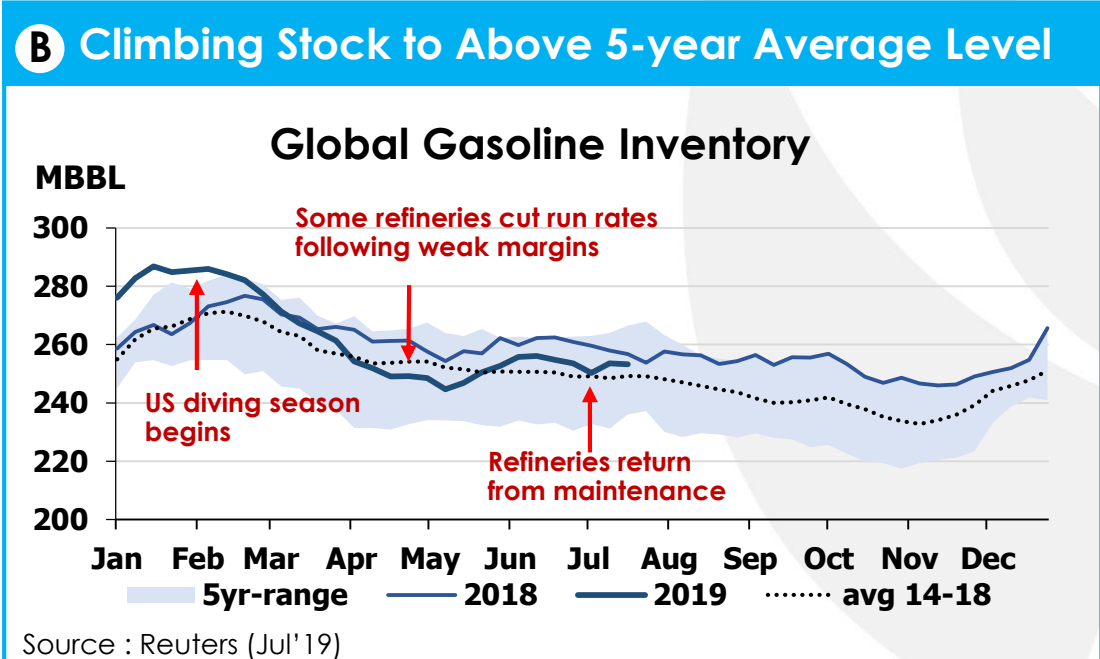
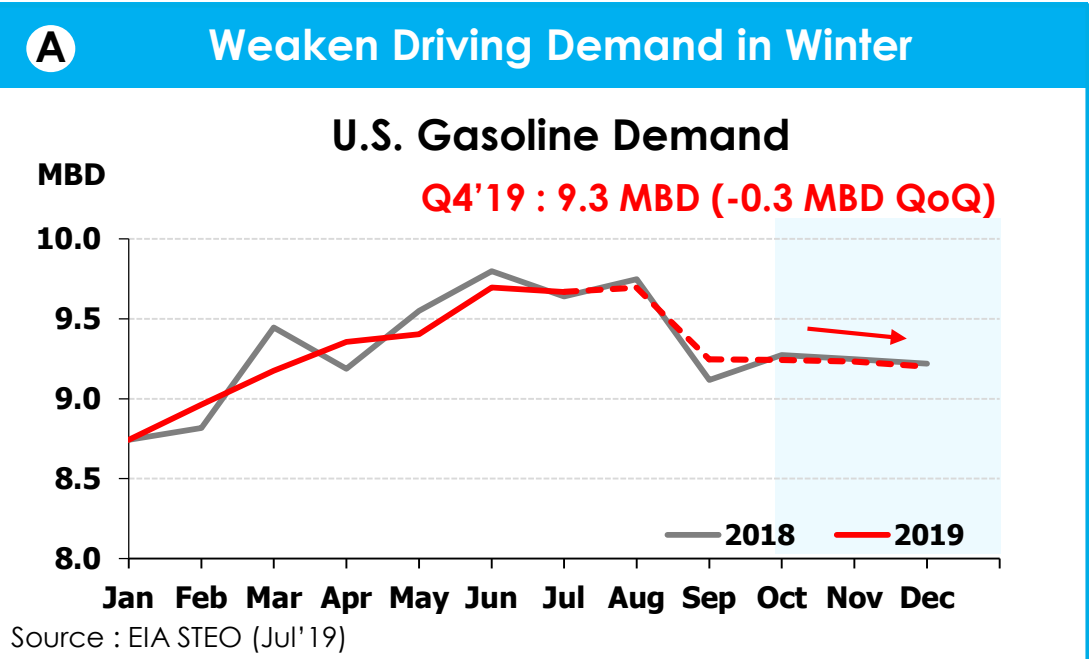
(\$/BBL)	Q2-18	Q3-18	Q4-18	2018	Q1-19	Q2-19	Q3TD-19*
ULG95-DB	12.2	11.5	4.9	10.6	3.7	7.5	11.0
JET-DB	15.3	14.5	15.7	15.4	13.0	12.2	15.7
GO-DB	14.6	14.3	15.0	14.7	12.8	12.4	15.3
HSFO-DB	(4.5)	(2.5)	1.3	(2.6)	0.6	(2.3)	0.0

Remarks: *Q3TD-19 as of 13 Sep 19

Key Highlights in Q4-19

- 1 Gasoline Cracks Pressured by Increasing Supply and Softer Seasonal Demand**
- 2 Strong Middle Distillate Cracks from Firm Seasonal Demand and IMO Impact**
- 3 Demand Growth Outpacing Supply Addition**

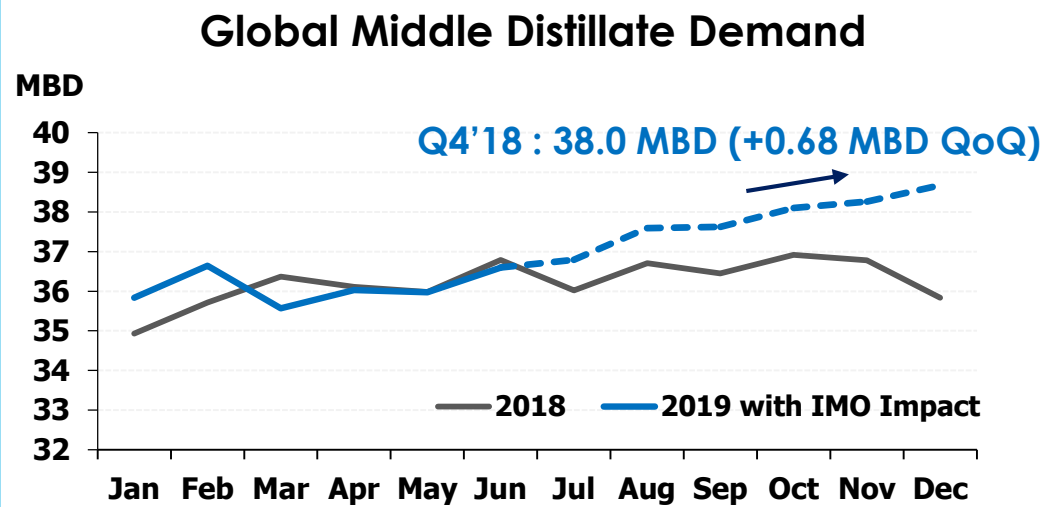
1 Weaker Gasoline Cracks Q-o-Q due to Rising Supply from China and Softer Seasonal Demand



2

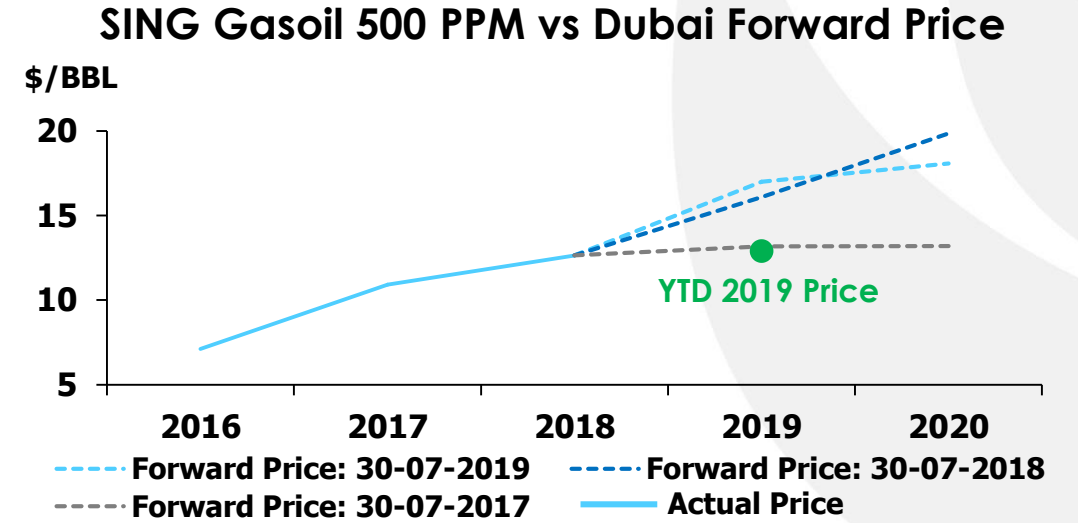
Stronger Middle Distillate Cracks Q-o-Q from Firm Seasonal Demand and IMO Impact

A Surging Seasonal Demand with IMO Impact



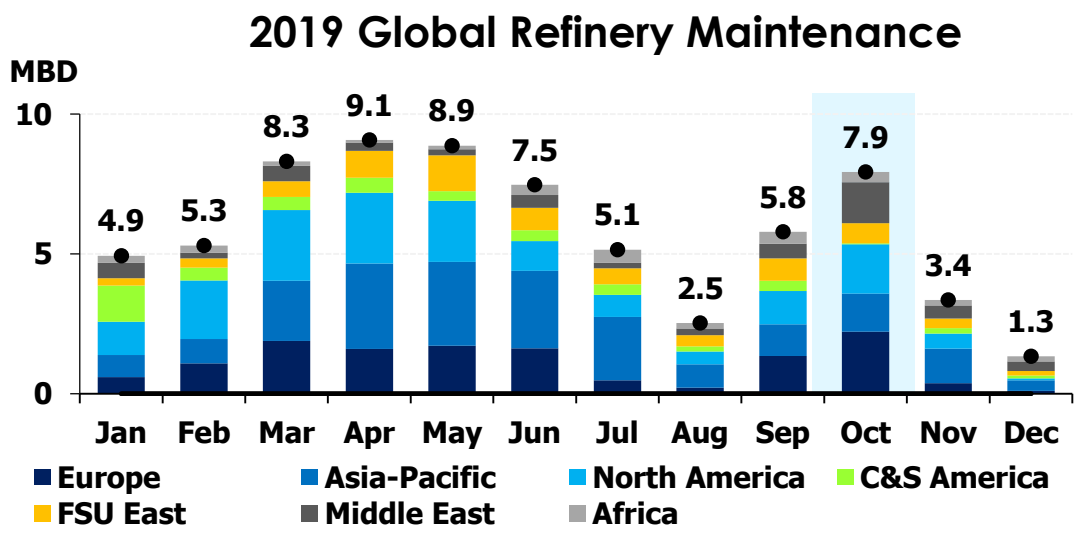
Source : Energy Aspects (Jul'19)

B Positive Sentiment Ahead of IMO Sulfur Cap



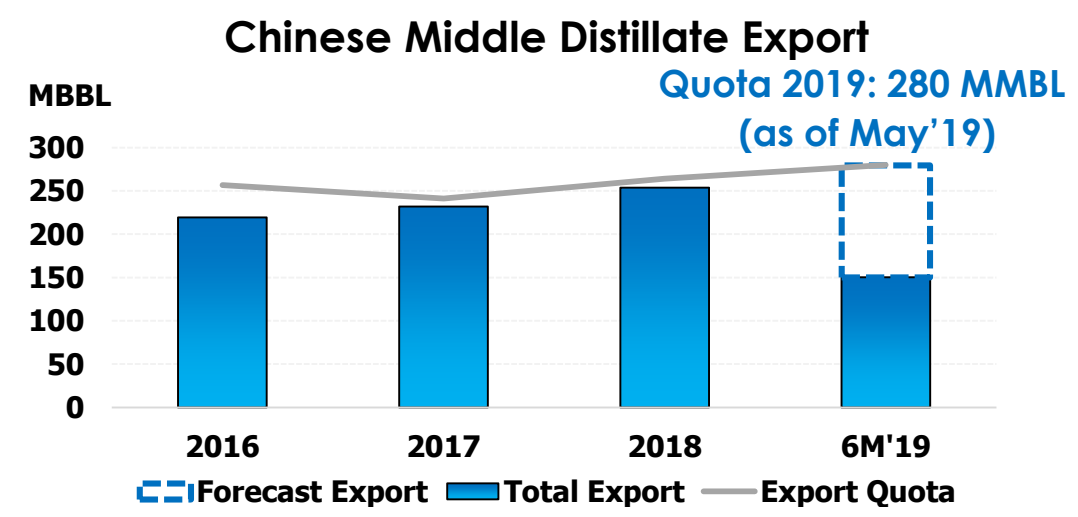
Source : Reuters (Jul'19)

C Limited Supply during Refinery Maintenance



Source : Energy Aspects (Jul'19)

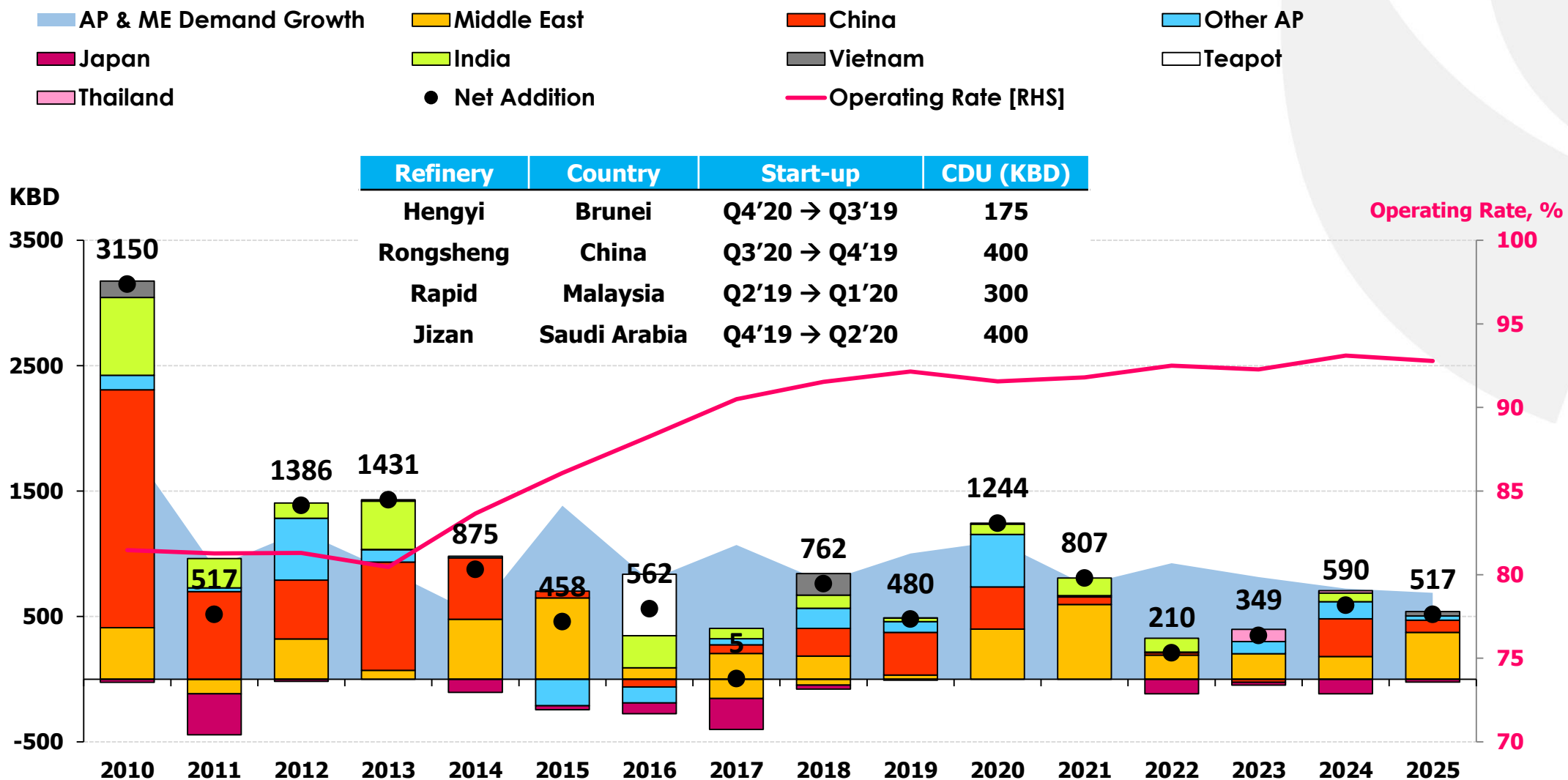
D Stable Chinese Exports



Source : FGE Energy (Jul'19), Reuters (Jul'19)

3 Demand Growth Outpacing Supply Addition

Asia Pacific and Middle East Effective CDU Addition VS Additional Demand



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

Thailand Oil Demand Growth

Thailand Oil Demand Growth



YoY	Y2016 ^(B)	Y2017 ^(B)	Y2018 ^(B)	1H2019 ^(B) VS 1H2018	Reasons
Mogas ^(A)	+10.1%	+3.4%	+3.3%	+3.9%	Low gasoline price
Jet/Kero	+7.0%	+4.1%	+5.4%	0.0%	Decreased number of tourists
Diesel ^(E)	+3.4%	+2.7%	+1.5%	+0.3%	Slower Thailand's Exports
Total	+5.4%	+3.4%	+2.6%	+1.2%	
GDP	+3.2% ^(C)	+4.0% ^(C)	+4.1% ^(C)	+2.9% ^(C)	

Remarks: (A) Included Ethanol (D) BOT's Estimation (July'19)
 (B) DOEB (E) Included B100, Excluded Marine diesel
 (C) BOT

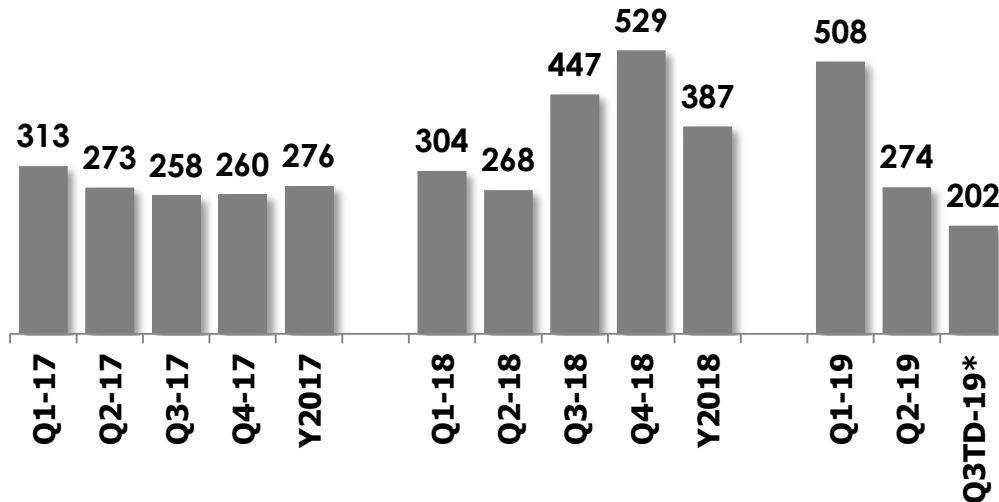
AROMATICS



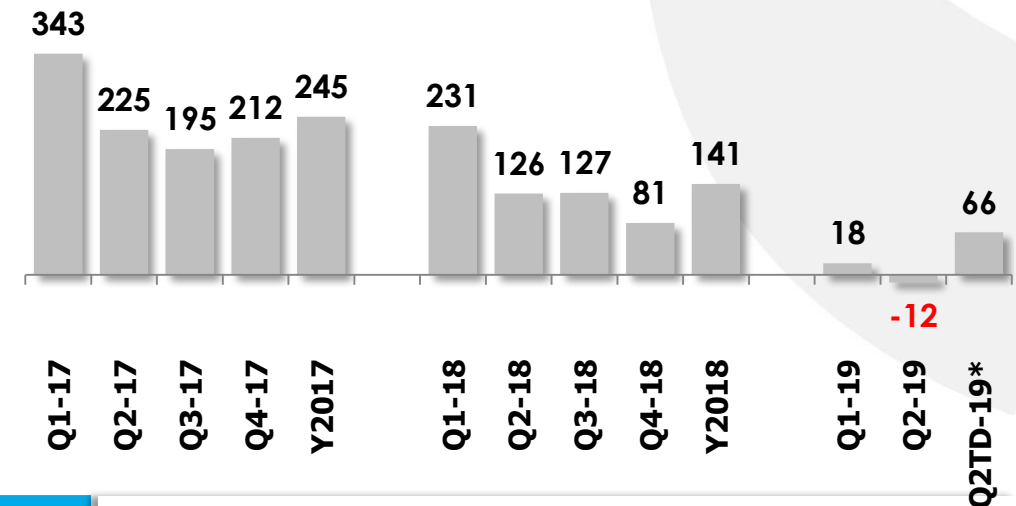
Stable-to-Soft Aromatics Market due to High Capacity Addition in Q4 amid New Downstream Start-Up

Aromatics Market

PX CFR Taiwan-ULG95 (\$/TON)



BZ FOB Korea-ULG95 (\$/TON)



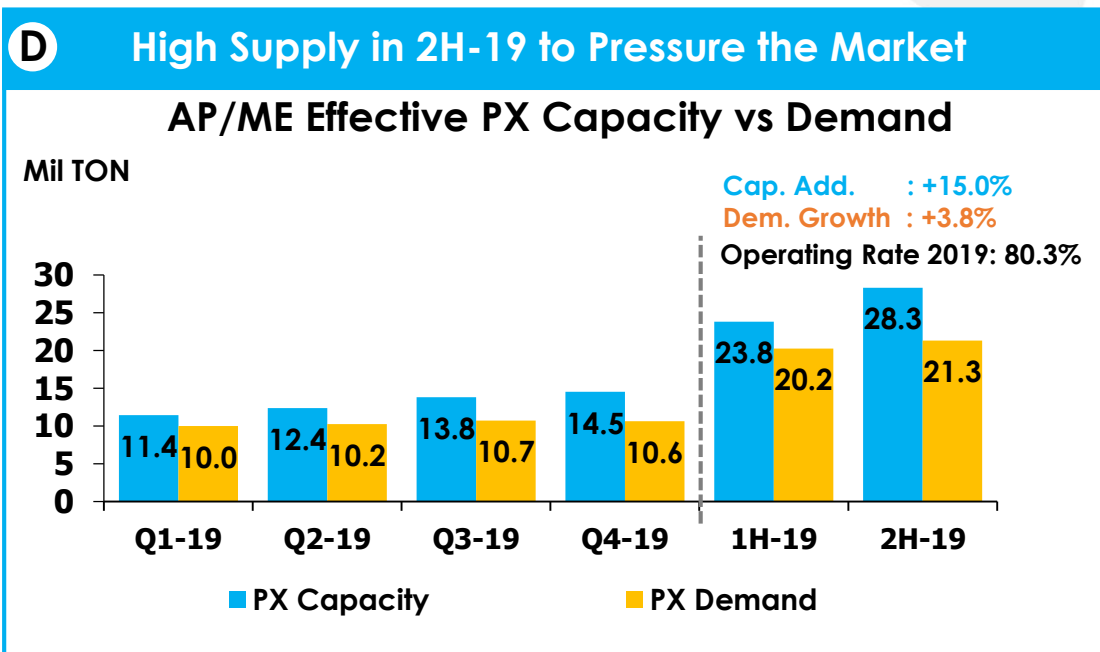
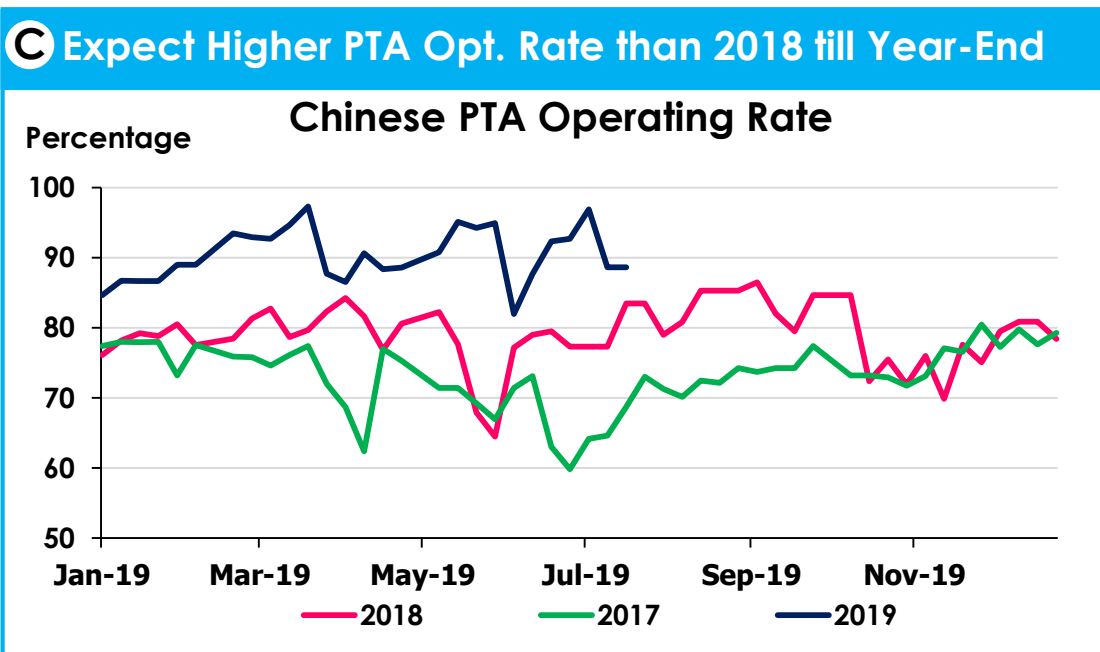
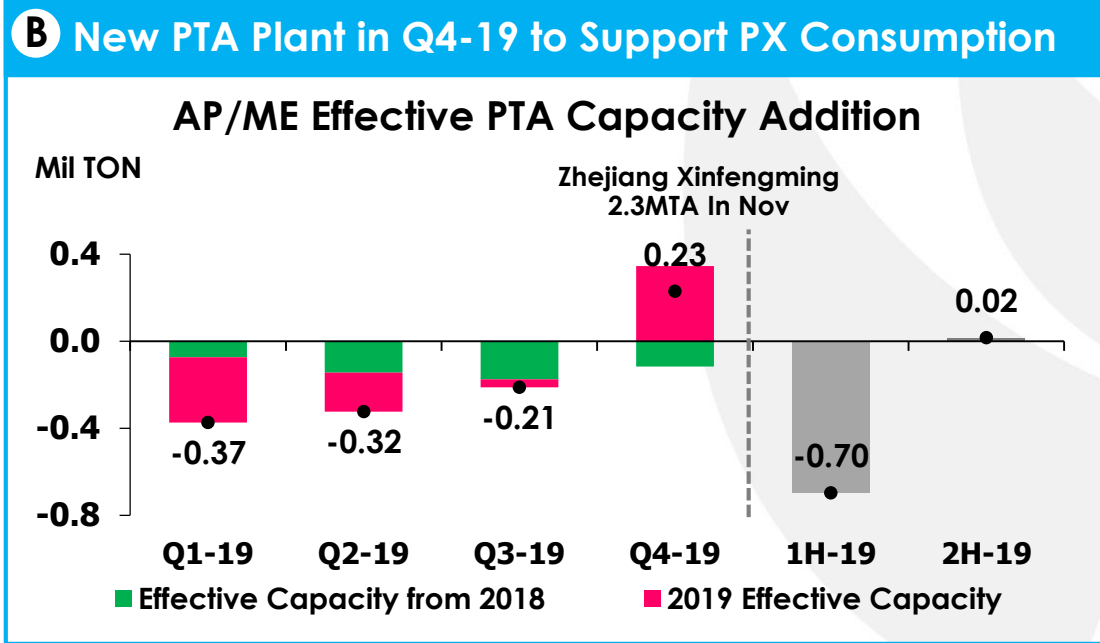
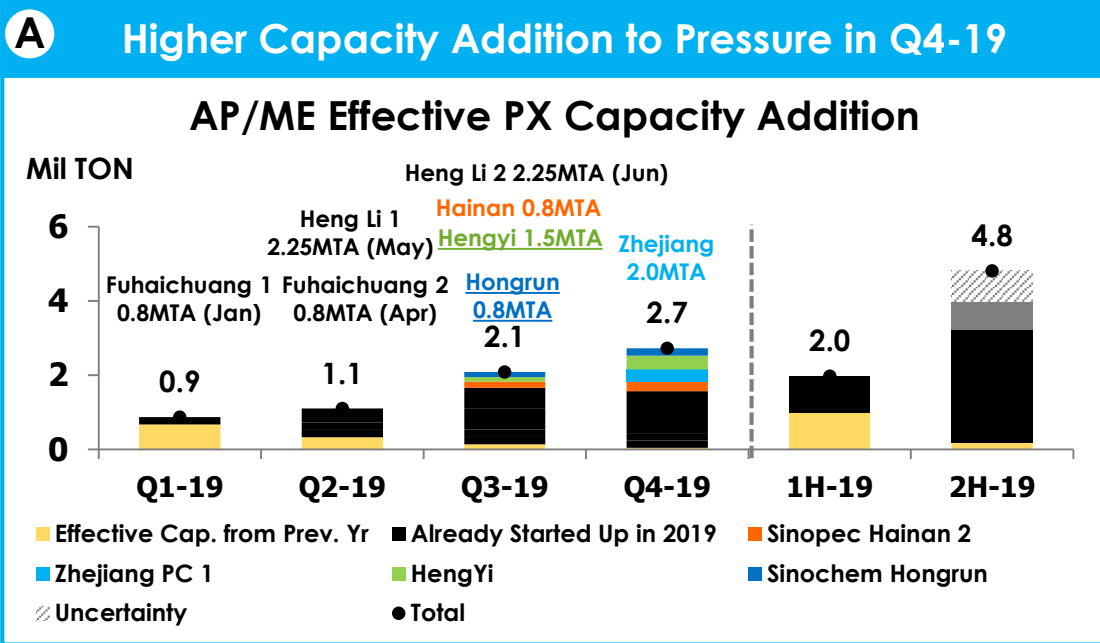
(\$/TON)	Q1-18	Q2-18	Q3-18	Q4-18	2018	Q1-19	Q2-19	Q3TD-19*
PX-ULG95	304	268	447	529	387	508	274	202
BZ-ULG95	231	126	127	81	141	18	-12	66

Remarks: *Q3TD-19 as of 13 Sep 19

Key Highlights in Q4-2019

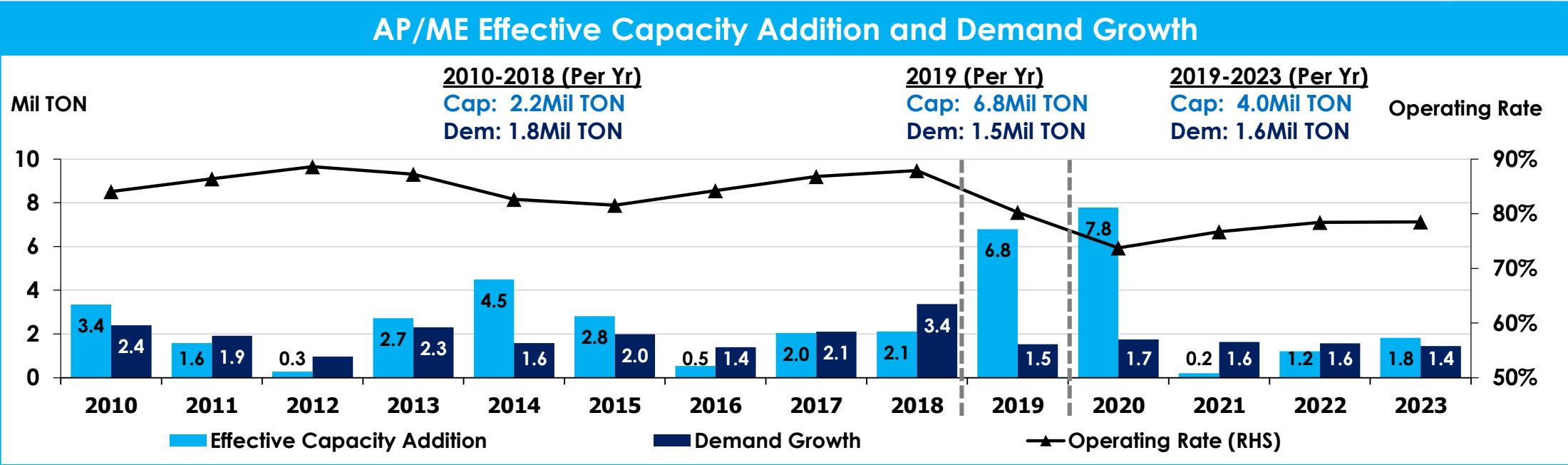
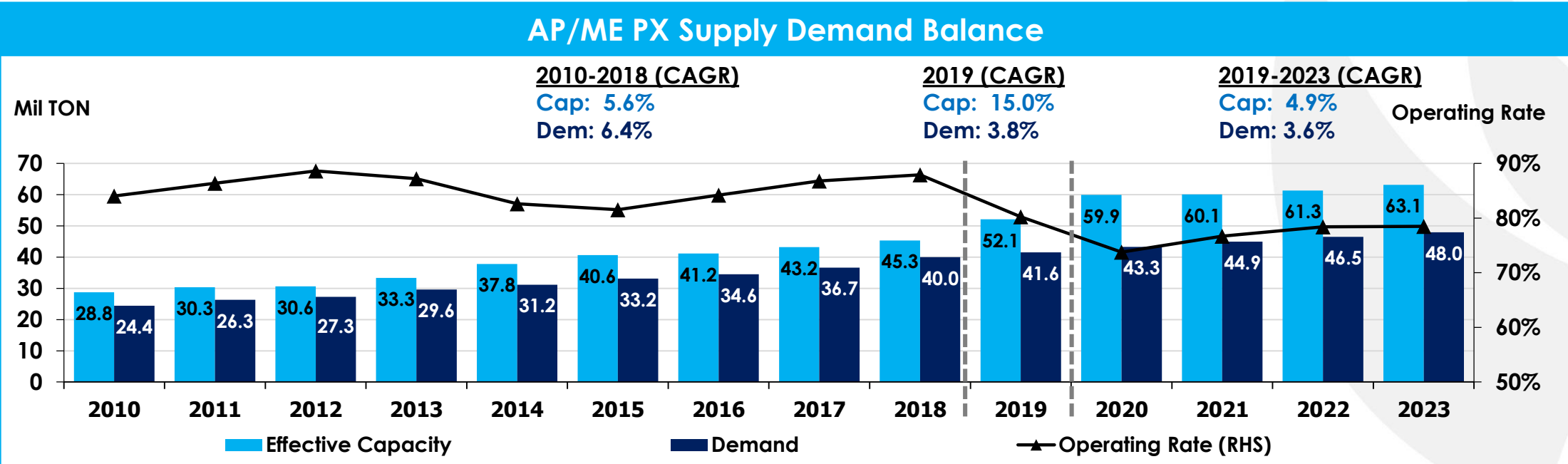
- 1 Soft PX Market due to New Capacity Concerns amid a New PTA Plant
- 2 Stable BZ Market due to Concerns of New Capacity amid a New SM Plant

1 Soft PX Market due to New Capacity Concerns amid a New PTA Plant



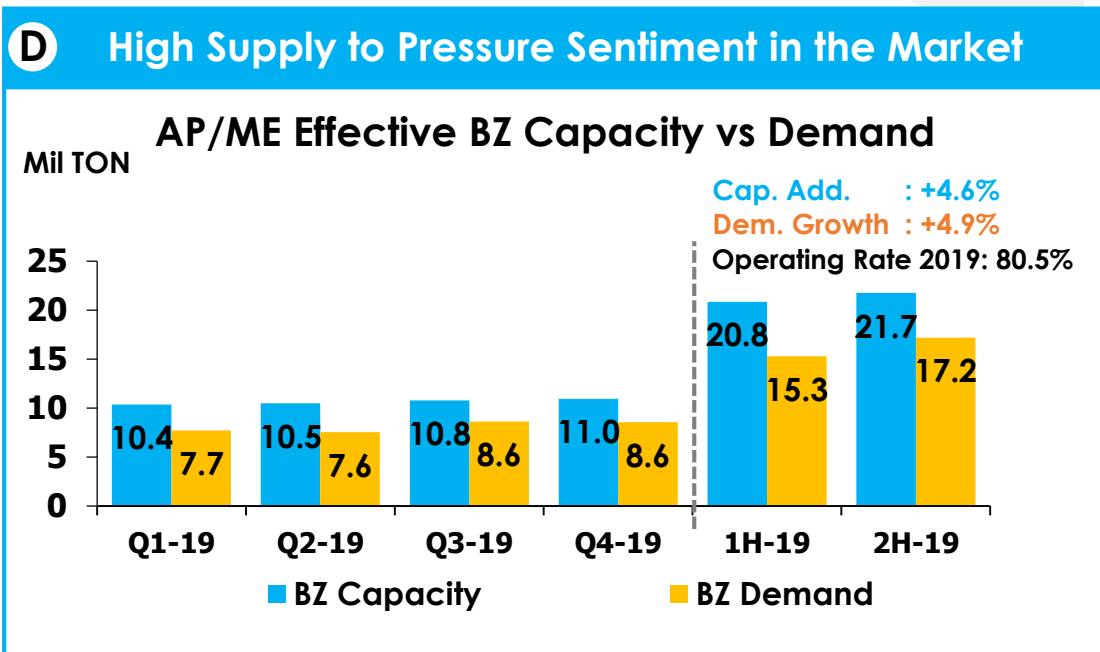
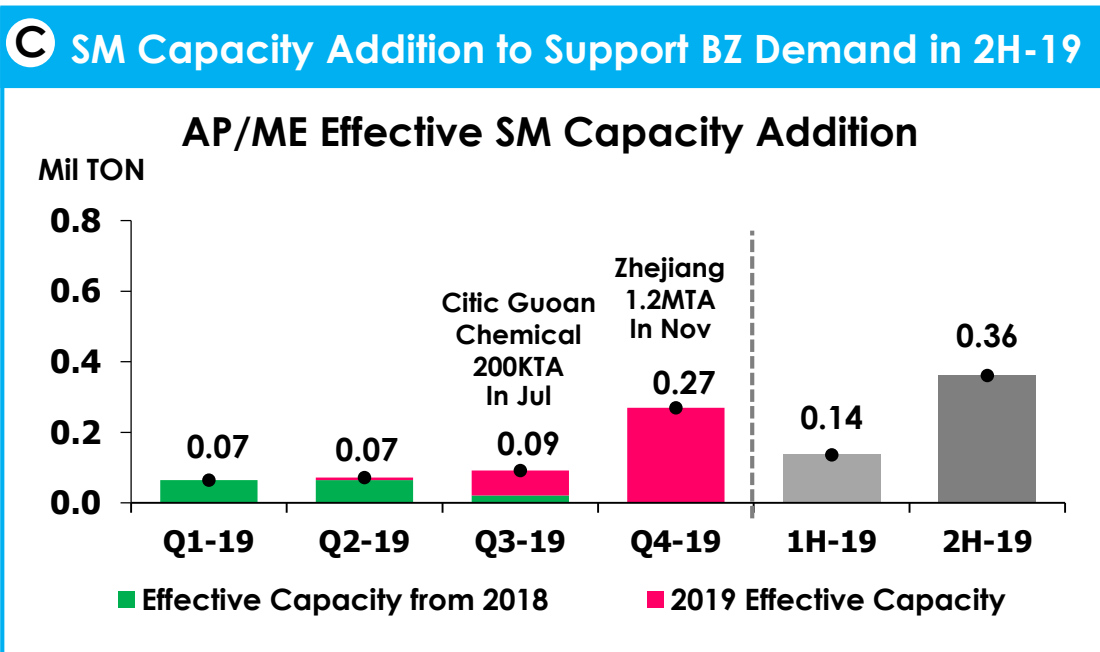
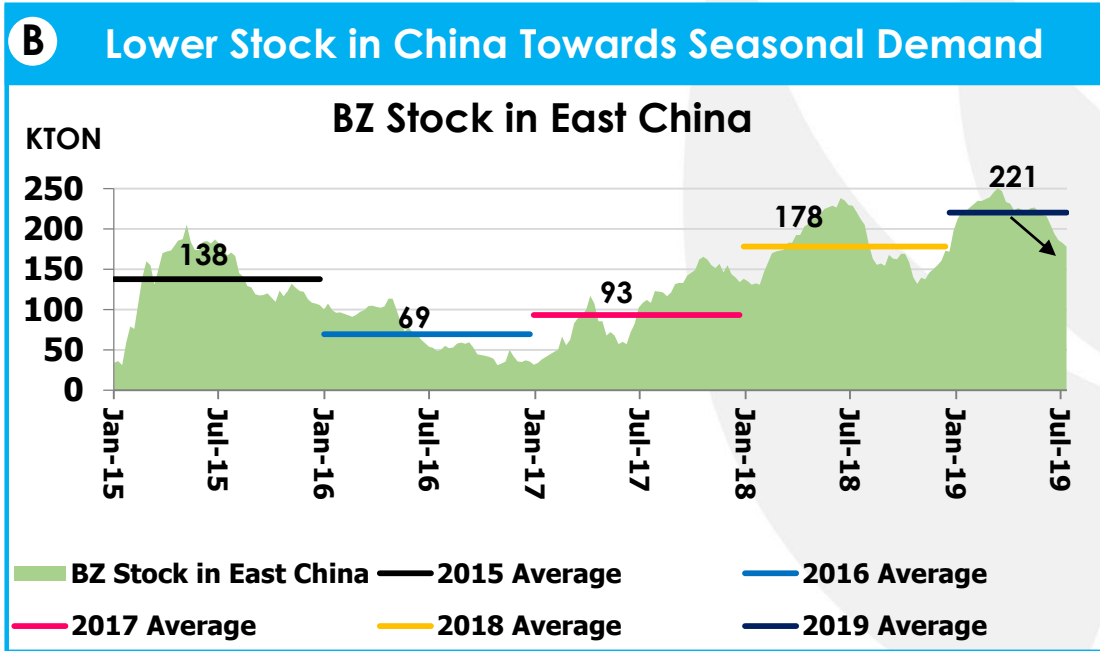
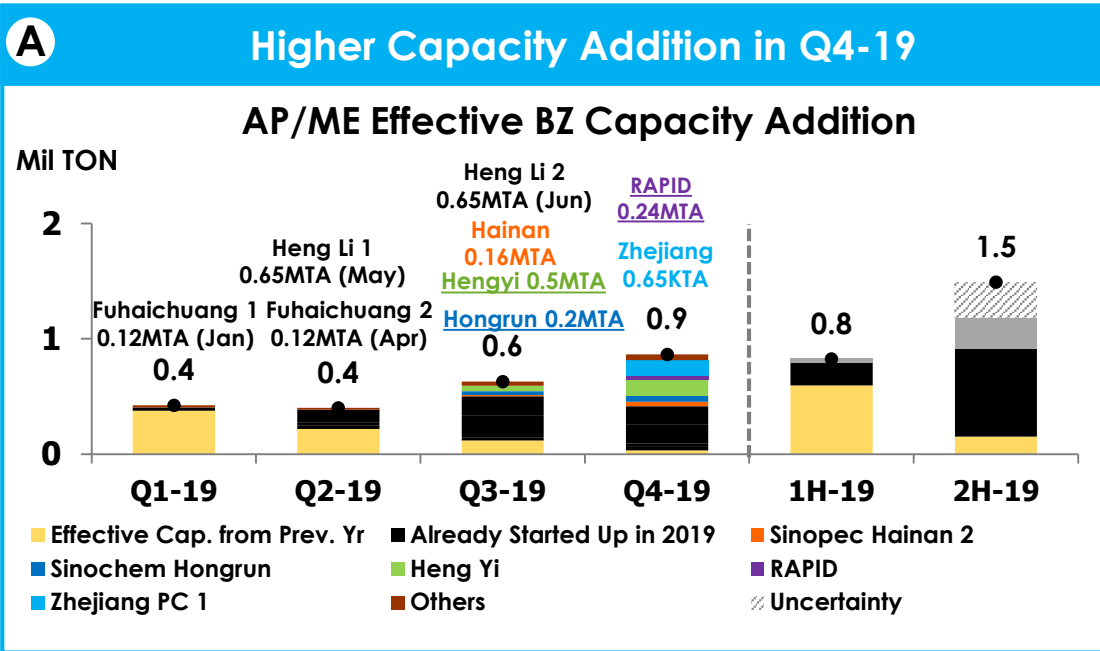
Source: WM Chemicals (Jun'19) and TOP's Estimate

AP/ME PX Balance



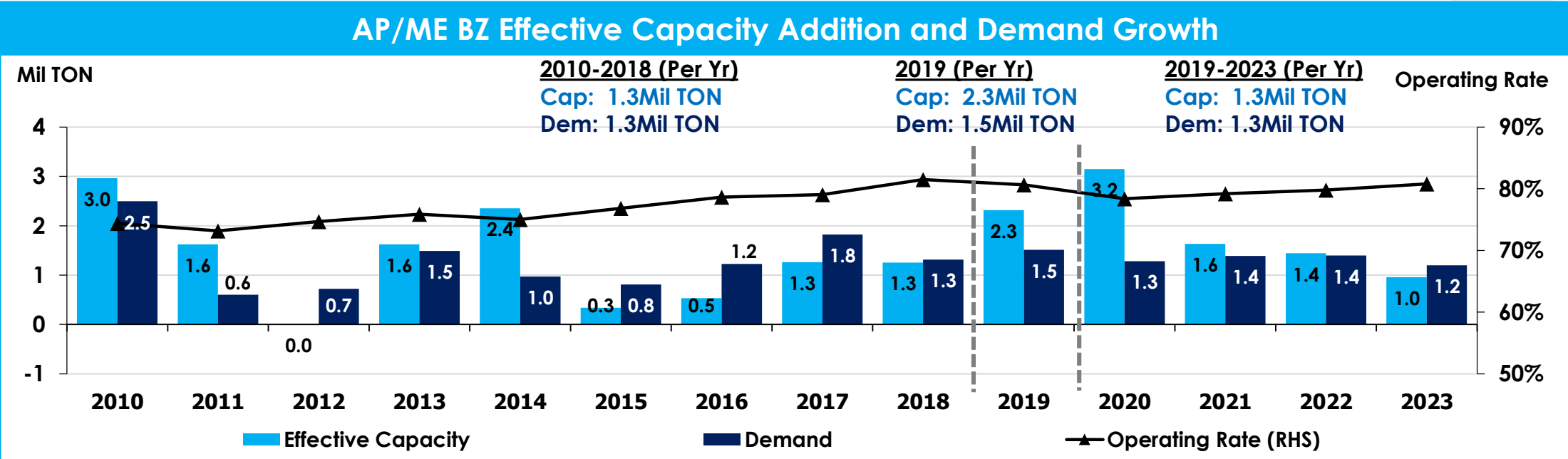
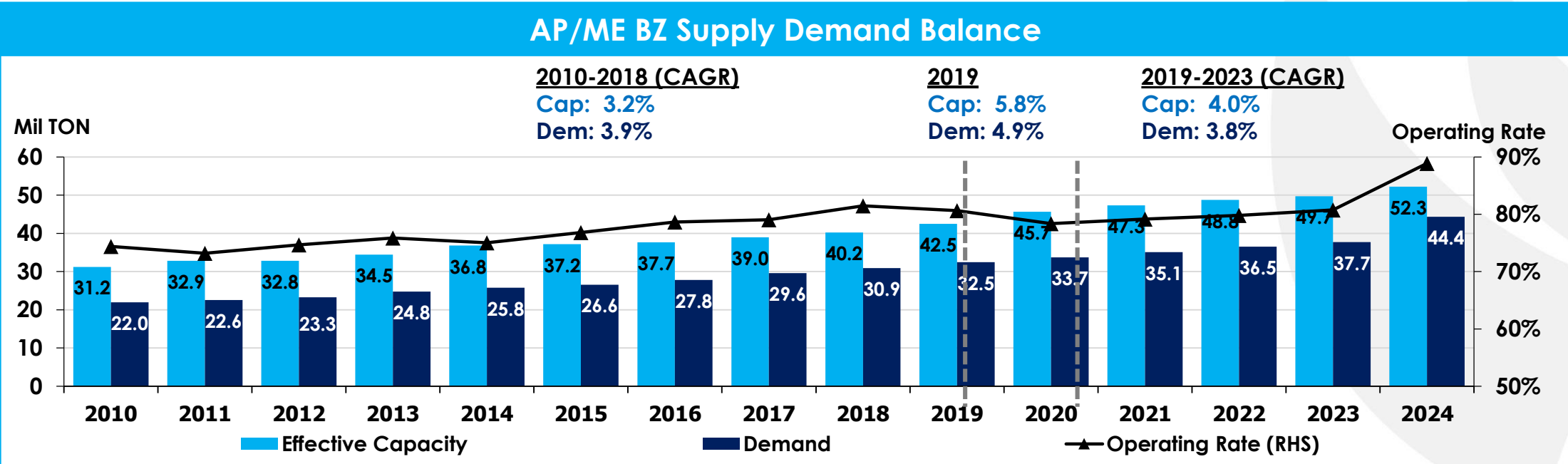
Sources: WM Chemicals (Feb'19) and TOP's Estimate

2 Stable BZ Market due to Concerns of New Capacity amid a New SM Plant



Source: WM Chemicals (Jun'19), IHS (Feb'19) and TOP's Estimate

AP/ME BZ Balance



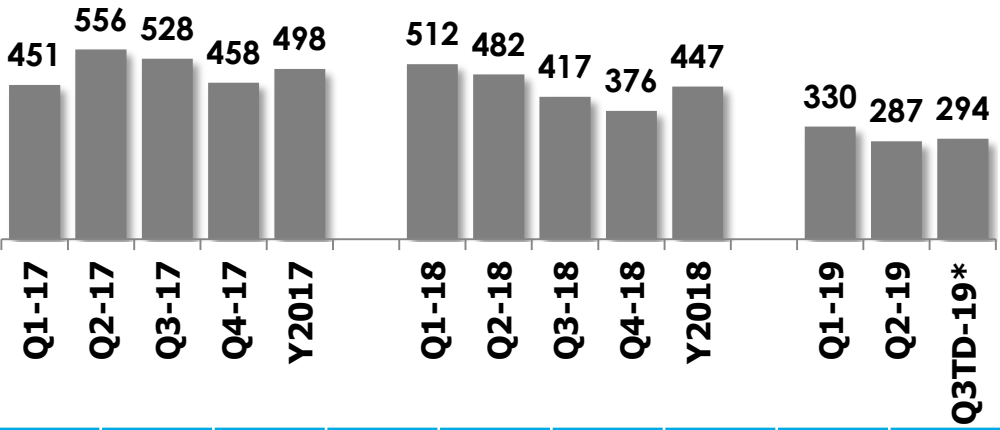
Source: IHS (Feb'19) and TOP's Estimate

BASE OIL & BITUMEN



Stable Base Oil Market on High Supply in Asia

500SN – HSFO (\$/TON)



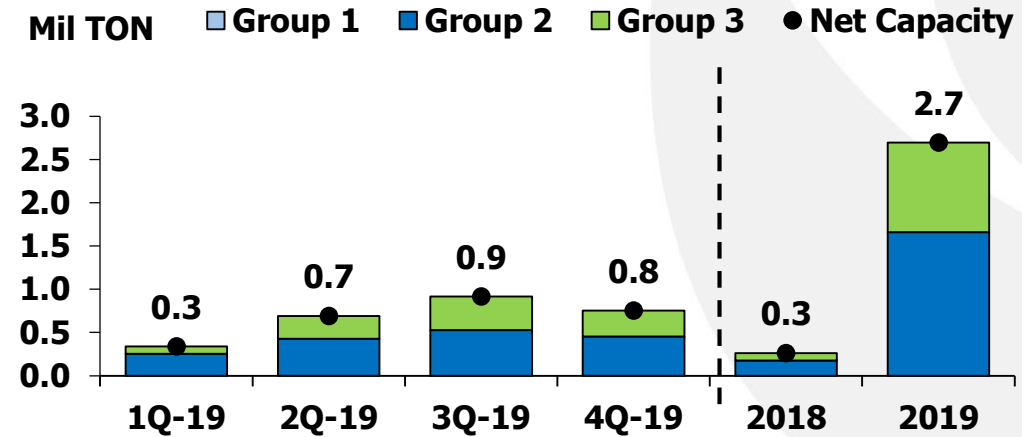
(\$/TON)	Q1-18	Q2-18	Q3-18	Q4-18	2018	Q1-19	Q2-19	Q3TD-19*
500SN -HSFO	512	482	417	376	447	330	287	294

Remarks: *Q3TD-19 as of 13 Sep 19

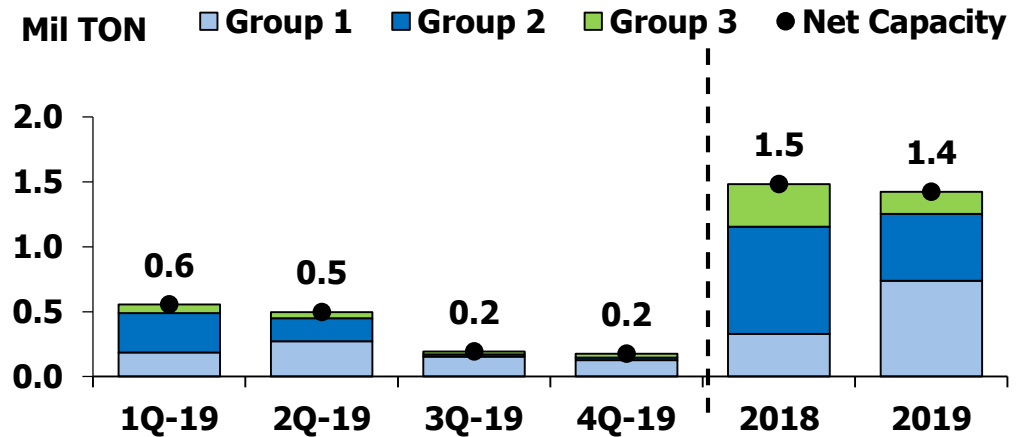
Key Highlights in Q4-2019

- 1 Higher Supply on New Supply Addition and Stable Plant Maintenance
- 2 Soft Demand during Winter Season for Heavy Grade

1 AP Base Oil Effective Capacity Addition

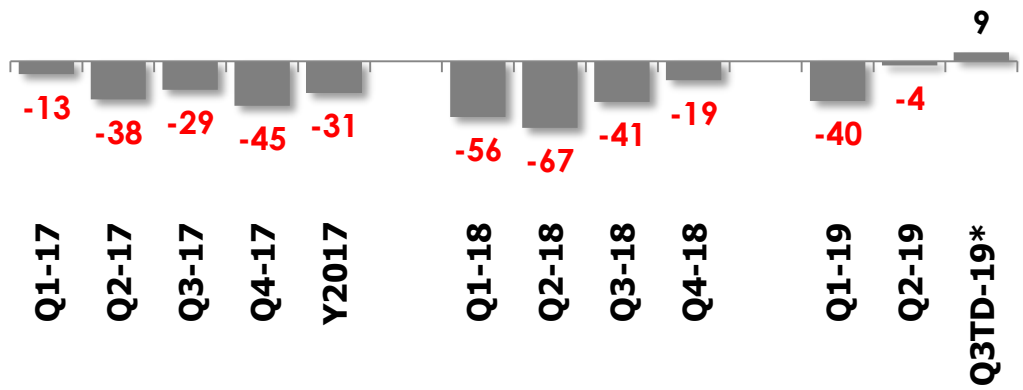


2 AP Plant Maintenance



Stable Bitumen Market on Firmer Demand

Bitumen-HSFO (\$/TON)



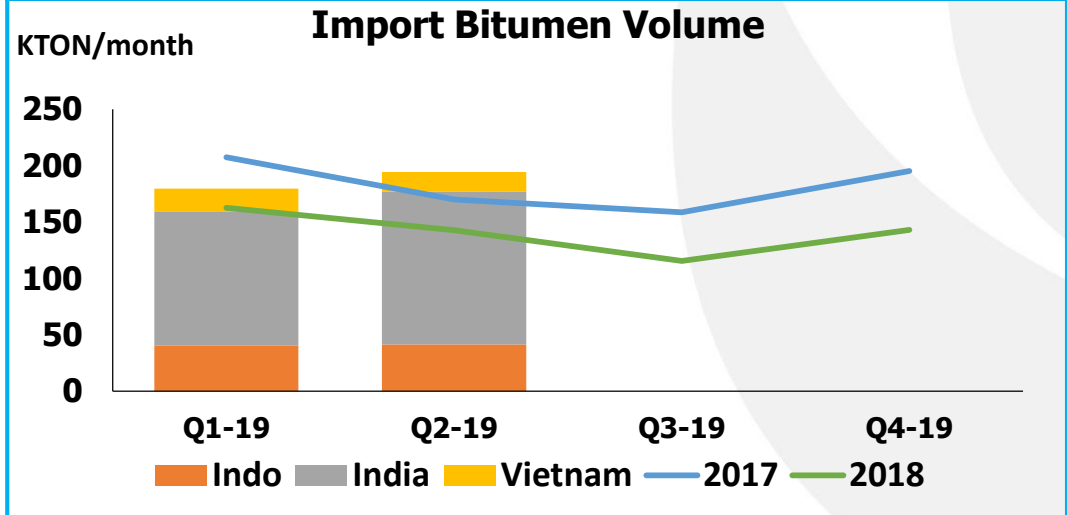
(\$/TON)	Q1-18	Q2-18	Q3-18	Q4-18	2018	Q1-19	Q2-19	Q3TD-19*
Bitumen-HSFO	-56	-67	-41	-19	-46	-40	-4	9

Remarks: *Q3TD-19 as of 13 Sep 19

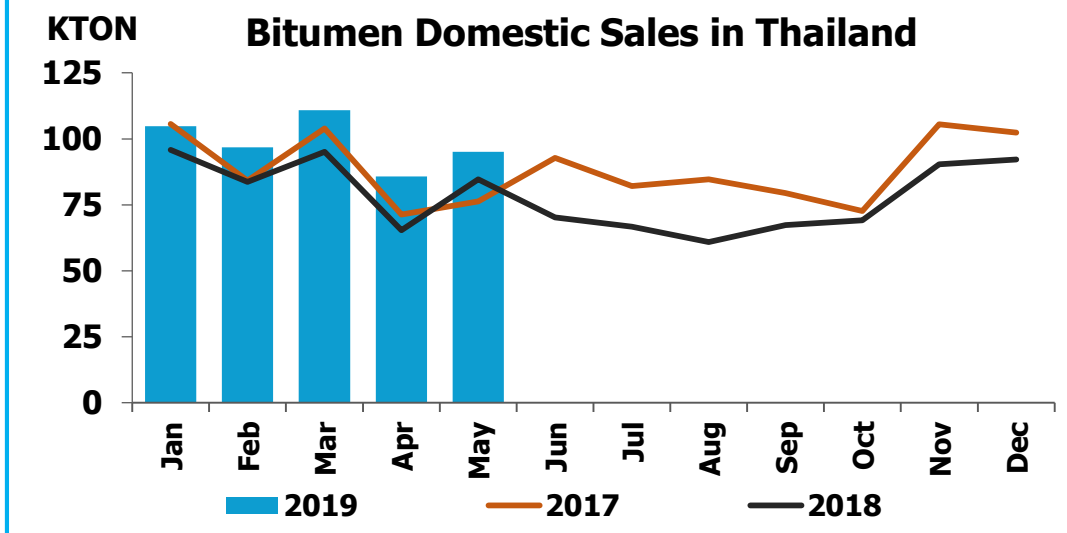
Key Highlights in Q4-2019

- 1 **Firmer Demand after Rainy Season in S. Asia**
- 2 **Improving Thai Demand after Rainy Season**

1 Better Demand after Rainy Season



2 Higher Bitumen Demand in Q4



Sources: Petrosil (Jul'19), Bureau of maintenance (Mar'19)

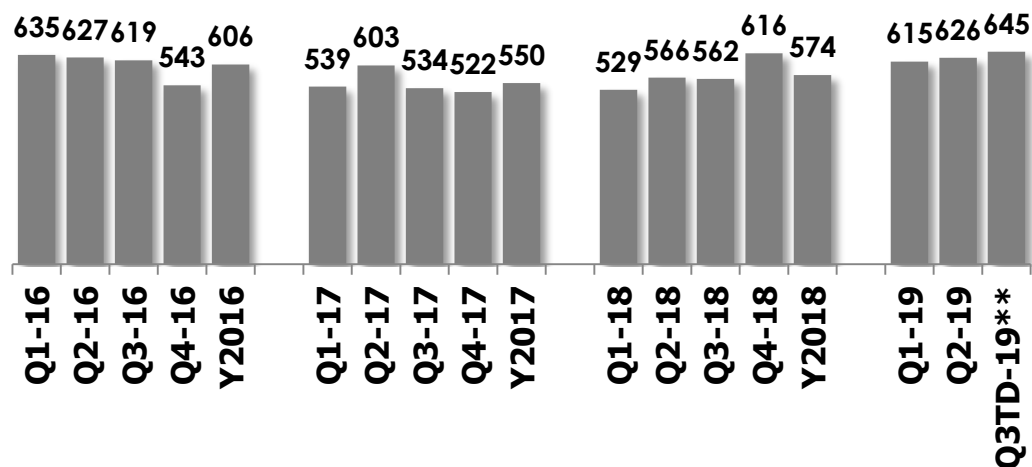
Linear Alkyl Benzene (LAB)



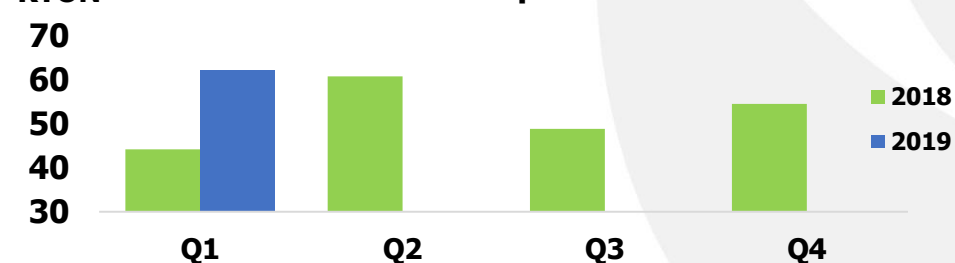
Stable-to-firm LAB Market After Rainy Season and Supported by Still High Regional LAB Maintenance/Closure

LAB Market

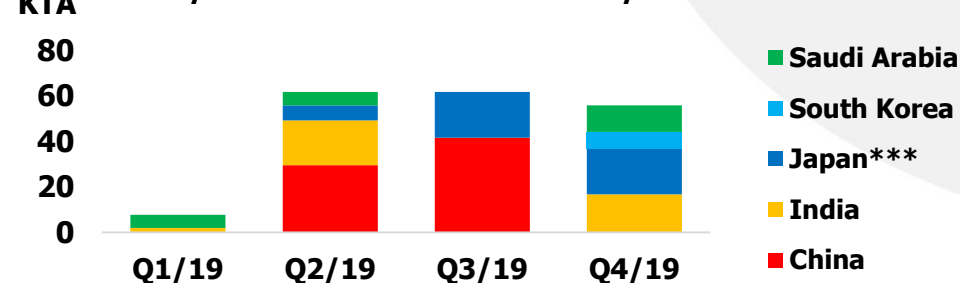
LAB Spread* (\$/TON)



India LAB Import Volume



AP/ME Effective Maintenance/Closure



(\$/TON)	Q1-18	Q2-18	Q3-18	Q4-18	2018	Q1-19	Q2-19	Q3TD-19**
LAB Spread	529	566	562	640	574	615	626	645

Remarks: *Estimated indicator
 **Q3TD-19 as of 13 Sep 19
 *** Permanent closure

Key Highlights in Q4-2019

- 1 Recover Demand After Rainy Season
- 2 Still High Level AP/ME LAB Plants Maintenance

CONCLUSION



Q4-2019 Market Outlook Conclusion

(vs. Q3-2019)



Crude Oil

Softer Oil Price due to Soft Global Oil Demand on Weak Economic Growth



Refinery

Higher Refining Margins Supported by Increasing Middle Distillate Demand in Preparation for IMO 2020



Aromatics

Stable-to-Soft Aromatics Market due to High Capacity Addition amid New Downstream Start-Up



Lube Base

**Soft Base Oil Market on High Supply in Asia
Stable Bitumen Market on Firmer Demand**



LAB

Stable-to-firm LAB Market After Rainy Season and Supported by Still High Regional LAB Maintenance/Closure

Thank You

Any queries, please contact:



at email: ir@thaioilgroup.com

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

Fax: 662-797-2976





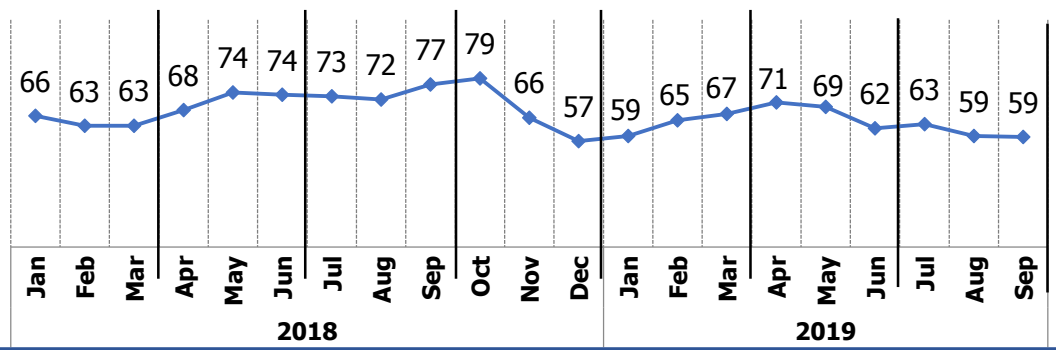
APPENDIX

- Q2/19 Performance analysis
- CDU Addition VS Additional Demand – AP & ME
- World GRM / Inventories
- Thailand petroleum demand by products

Q2/19: Lower Mkt GRM pressured by Higher Crude Premium

Dubai Crude Price & Key Petroleum Product Spreads

\$/bbl	2018				2019				2018
	Q1	Q2	Q3	Q4	Q1	Q2	1H	Q3TD*	FY18
DUBAI (DB)	63.9	72.1	74.3	67.4	63.5	67.4↑	65.4	60.4	69.4
ULG95 - DB	13.7	12.1	11.6	4.7	3.7	7.5↑	5.6	11.0	10.5
JET - DB	16.1	15.3	14.5	15.6	13.0	12.2↓	12.6	15.7	15.4
GO - DB	14.8	14.6	14.4	14.8	12.8	12.4↓	12.6	15.3	14.6
HSFO - DB	(4.9)	(4.4)	(2.5)	1.4	0.6	(2.3)↓	(0.9)	0.0	(2.6)



*As of 13 Sep 19

Refinery Utilization		
Q1/19	Q2/19	1H/19
116%	103%	110%
% MB Intake/OSP*		
36%/1.8	28%/2.7	32%/2.2

*Murban OSP over Dubai (\$/bbl)

Q2/19 Market GRM

- + **Improved gasoline spread** supported by driving season demand and permanent close of Philadelphia refinery
- **Lower middle distillate margin** as low demand and high inventory
- **Higher crude premium** due to abundant light crude tightness from OPEC production cut and oil field maintenance in Europe
- **Lower crude price** as increasing supply from U.S.

Gross Refinery Margins - GRM

\$/bbl	2018				2019			2018
	Q1	Q2	Q3	Q4	Q1	Q2	1H	FY18
Market GRM	5.7	4.0	5.0	3.9	3.0	2.6	2.8	4.7
Stock G/(L)	0.4	5.0	1.2	(7.5)	2.7	(0.2)	1.3	(0.4)
Accounting GRM	6.2	9.0	6.2	(3.6)	5.7	2.4	4.1	4.3

Q2/19 Performance

- **Lower refinery run rate at 103% due to MTA CDU-3**

Q2/19: Softer Aromatics Contribution pressured by Lower PX Spread

Aromatics Spreads and Margins

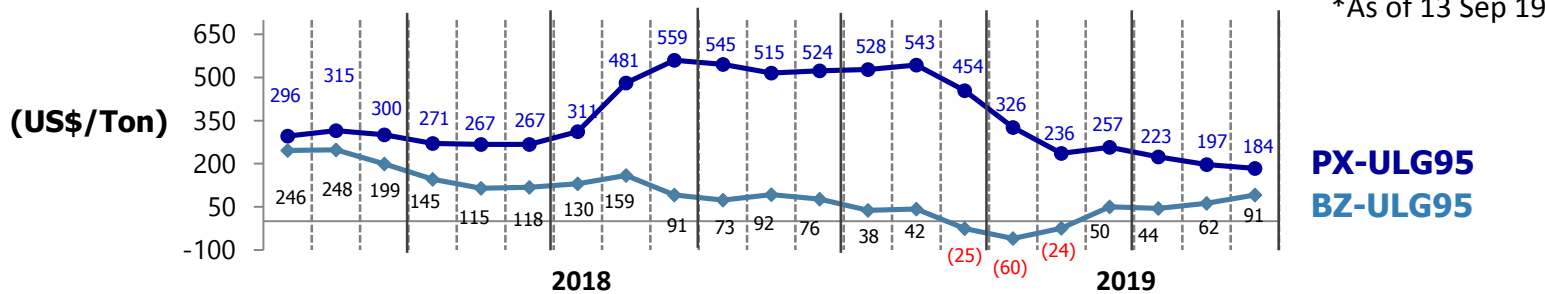
	2018				2019				2018
\$/ton	Q1	Q2	Q3	Q4	Q1	Q2	1H	Q3TD*	FY18
PX**-ULG95	304	268	451	528	508	273 ↓	391	202	388
BZ**-ULG95	231	126	126	81	18	(12) ↓	3	66	141

Aromatics Production

Q1/19	Q2/19	1H/19
92%	64%	78%

Q2/19 Market

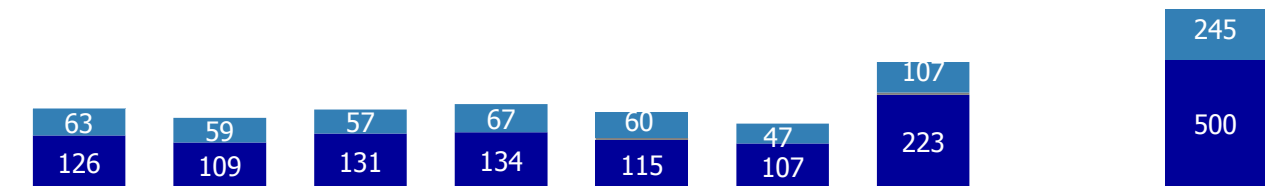
- **Slightly softer PX spread** pressured by new supply from China, Hengli Phase I (2.25 MTA) start full capacity and ramping up Phase II (2.25 MTA) in May'19
- **Weak BZ spread** due to high inventory in China



Aromatic's Sales (excluding by product) & Product-To-Feed Margin (P2F)

(Unit : KTon)

- TL
- BZ
- PX



	2018				2019		
	Q1	Q2	Q3	Q4	Q1	Q2	1H
Aromatic P2F - \$/ton	110	87	129	151	143	76	109
Aromatic P2F - \$/bbl	14.5	11.6	16.9	20.2	18.8	9.9	14.4
GIM contribution***	1.7	1.3	2.0	2.2	2.0	1.0	1.6

2018	245
FY18	500
2018	121
FY18	15.9
2018	1.8

Q2/19 Performance

- **Lower utilization rate** due to MTA – TPX's complex (45 days) and softer product margins

** PX price = CFP Taiwan, BZ price = FOB Korea *** including LAB contribution since 25 Feb 2016

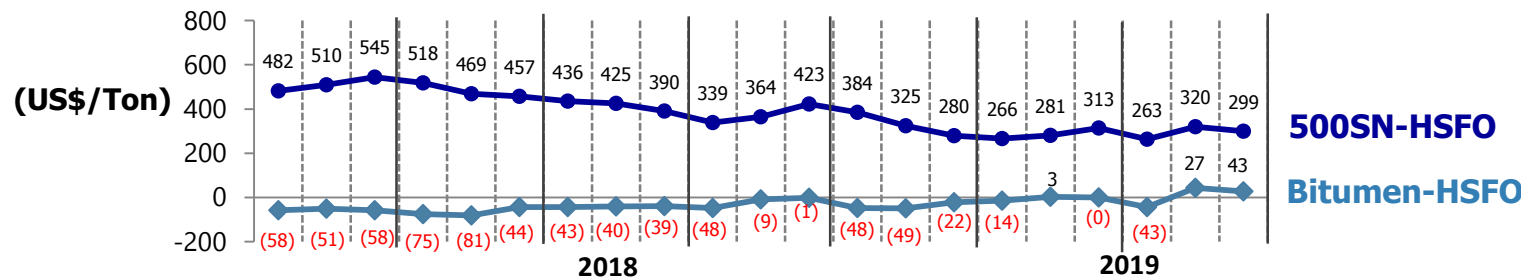
Remark: TOL -ULG95 Q1/19 = 41 \$/ton, Q2/19 = 13 \$/ton, 1H/19 = 27 \$/ton

Q2/19: Recovered Contribution supported by Improved Bitumen Spread

Base Oil & Bitumen Spreads & Margins

	2018				2019				2018
\$/ton	Q1	Q2	Q3	Q4	Q1	Q2	1H	Q3TD*	FY18
500SN-HSFO	512	481	417	376	330	287 ↓	308	294	447
BITUMEN-HSFO	(56)	(67)	(41)	(19)	(40)	(4) ↑	(22)	9	(46)

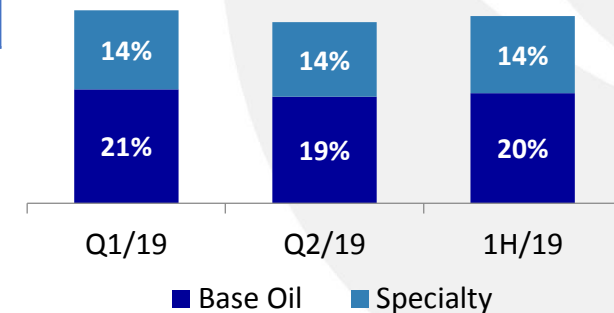
*As of 13 Sep 19



Base oil Production

Q1/19	Q2/19	1H/19
89%	85%	87%

% Base Oil & Specialty Sales Volume

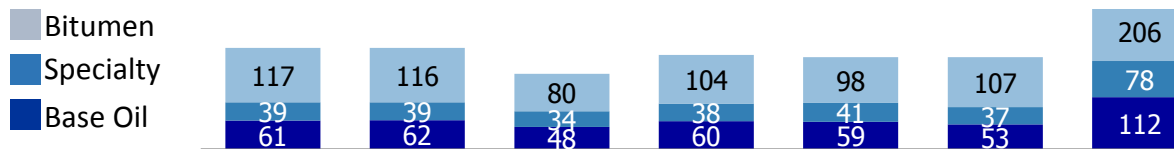


Q2/19 Market

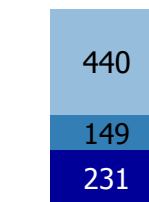
- + **Improved bitumen spread** supported by firm regional demand
- **Soften lube spread** pressured by lower demand due to weaker economy from ongoing trade tensions and new lube group 2,3 supply

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

(Unit : KTon)



	2018				2019		
	Q1	Q2	Q3	Q4	Q1	Q2	1H
P2F -\$/ton	105	97	66	73	59	94	77
P2F -\$/bbl	16.0	14.8	9.9	11.1	9.0	14.3	11.7
GIM contribution	0.7	0.7	0.4	0.4	0.2	0.7	0.4

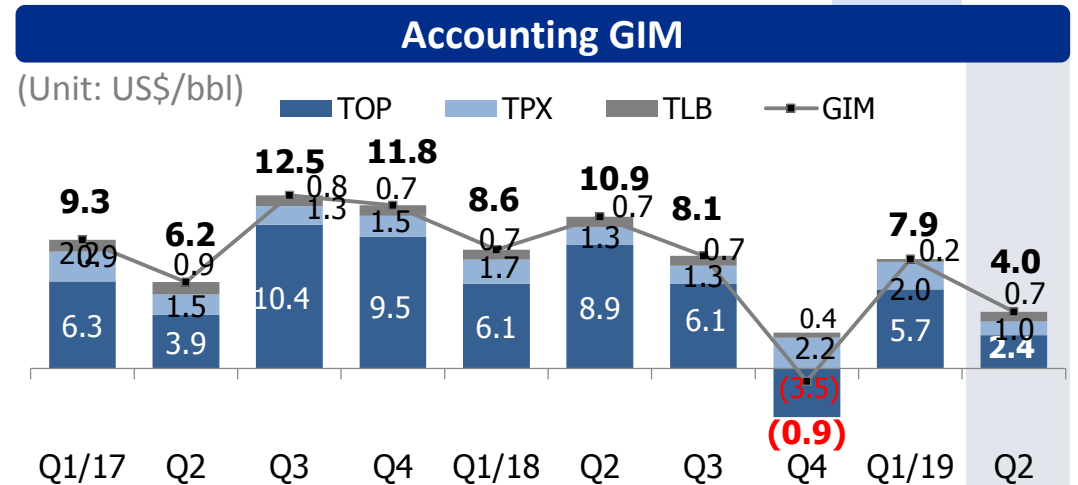
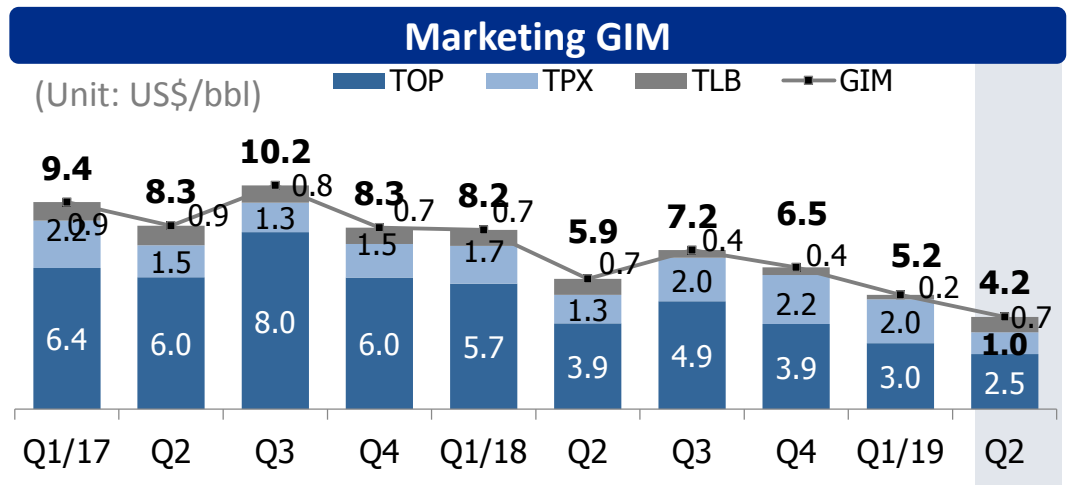
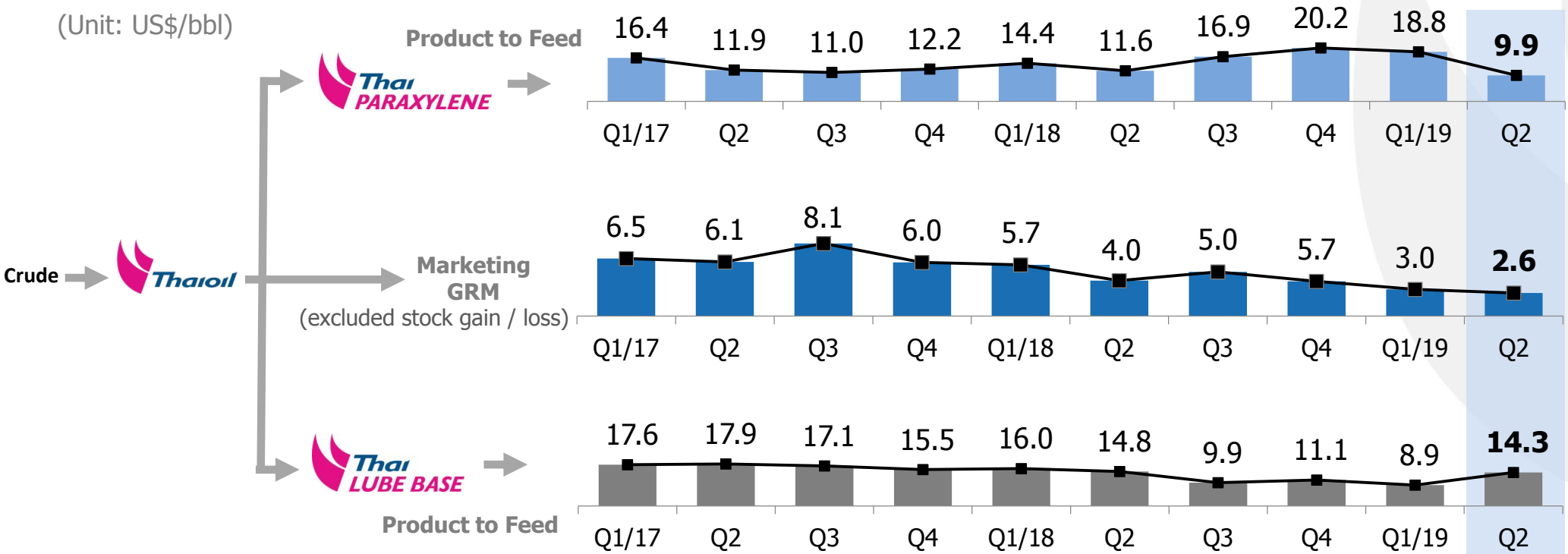


2018
FY18
84
12.8
0.5

Q2/19 Performance

- **Slightly soften utilization rate** at 85% due to soften lube spread

Beauty of Integration...Sustainable GIM



Q2/19 Power Sector Performance...Growing Contribution to the Group

Power Business Sector



Equity holding in



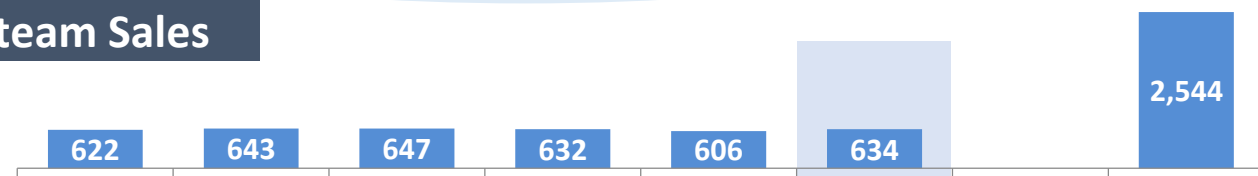
***TOP shareholding 24.29% (8.91% via TOP and 20.79% via TP)
 GPSC is an associate company of TOP. Equity method is applied to recognize share of profit. (EBITDA calculation excludes profit sharing from GPSC)

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

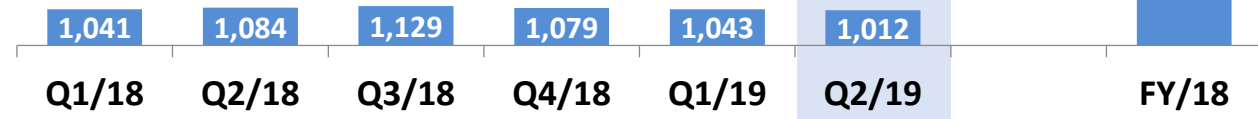
(1) 100% of TP and TOP SPP

Power & Steam Sales

Electricity⁽¹⁾
(GWh)

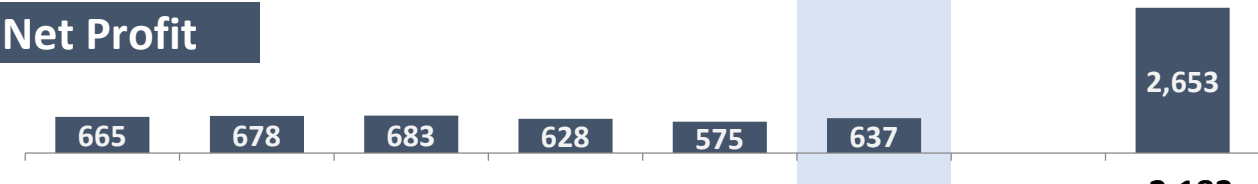


Steam⁽¹⁾
(kton)



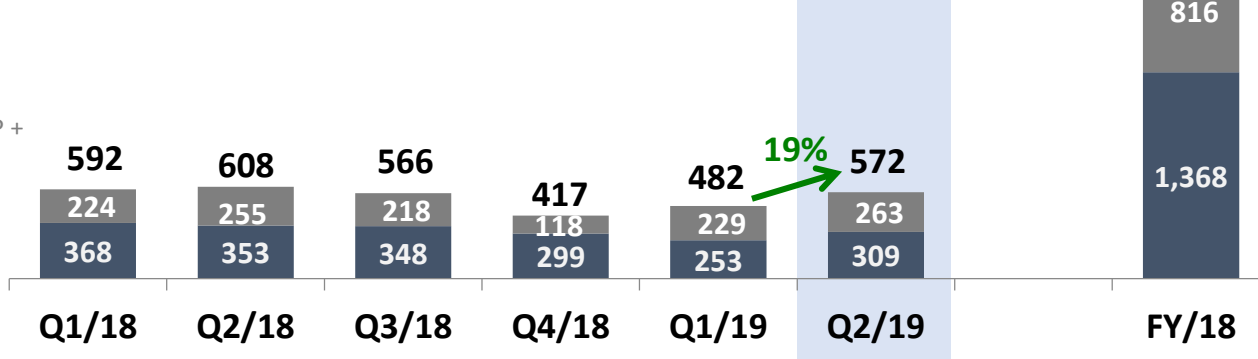
EBITDA & Net Profit

EBITDA³⁾
(THB million)



³⁾ consolidated EBITDA of TP and TOP SPP

Net Profit⁴⁾
(THB million)



⁴⁾ Net profit of 74% TP + 100 % TOP SPP + 24.29% profit sharing from GPSC

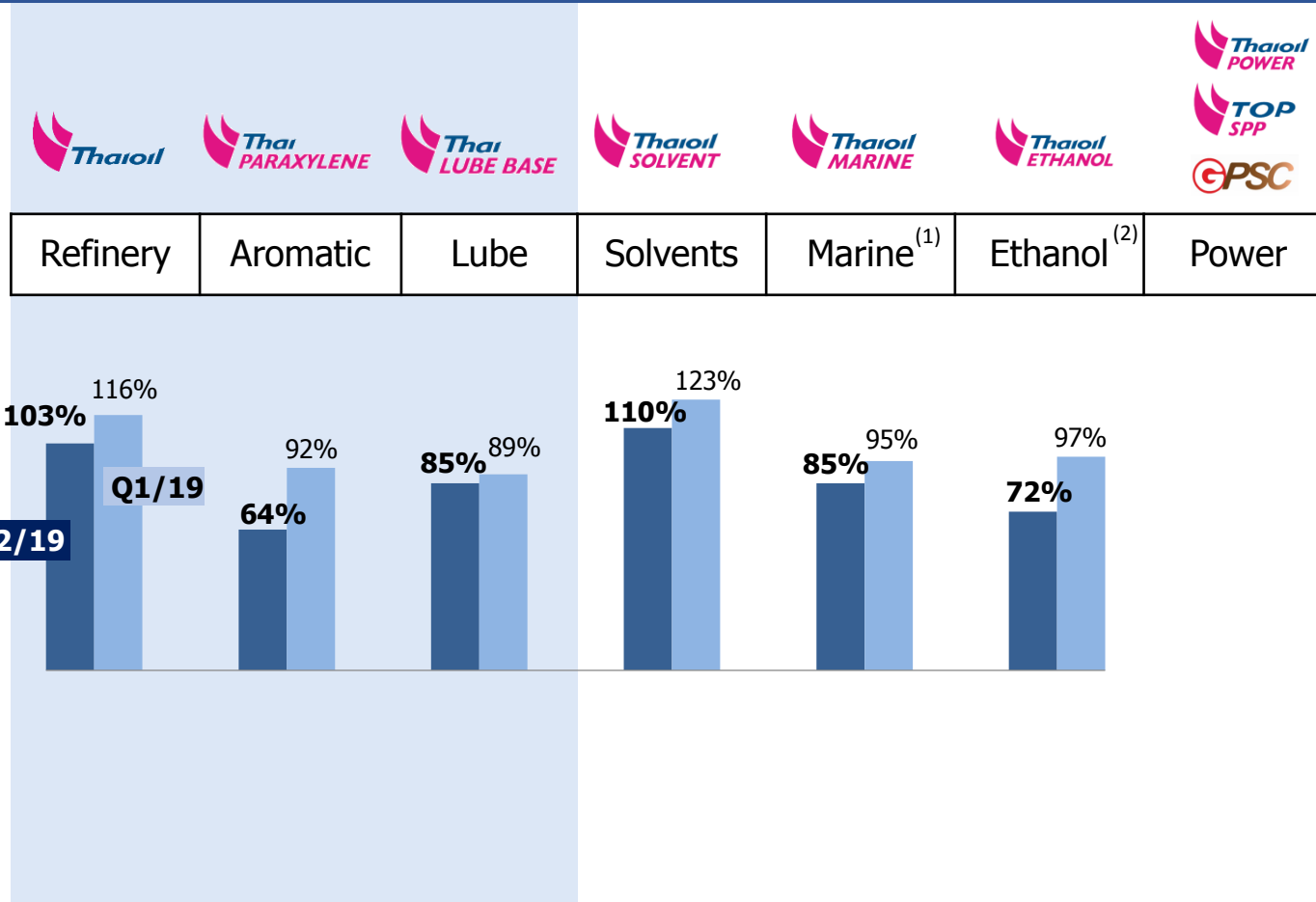
Performance Highlight

+ Higher contribution from TOP SPP's and GPSC's profit sharing



Q2/19: Performance Breakdown by Business Unit

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



Key Points

- **Refinery:** lower utilization due to MTA CDU-3 for 30 days (Mid Jun'19 – Mid Jul'19)
- **Aromatic/LAB:** lower utilization due to maintenance TPX's complex for 45 days (Mid Jun'19 – End of Jul'19)
- **Lube:** higher contribution supported by bitumen spread as firm regional demand
- **Power:** higher contribution mainly from TOP SPP's resumption from maintenance and higher GPSC's profit sharing
- **Solvents:** lower contribution due to high competitive market and weak demand ahead rainy season
- **Marine:** lower contribution as lower utilization due to TM's vessel dry dock and TMS's loss on asset held for sale
- **Ethanol:** lower contribution due to lower ethanol sale price and loss on profit sharing from UBE

Consolidated Net Profit

Q1/19	2,968	774 ⁽³⁾	56	44	(2)	16	482 ⁽⁴⁾	4,408
Q2/19	(441)	40 ⁽³⁾	322	(4)	(70)	(17)	572 ⁽⁴⁾	567
1H/19	2,527	814 ⁽³⁾	378	41	(72)	(1)	1,054 ⁽⁴⁾	4,975

(1) U-rate of 5 Oil & Chemical Tankers (total capacity: 22,800 DWT, acquired 1 LPG vessel in Dec 18 which start operate in Jan 19 onwards)

(2) U-rate of TET Q1/19 includes SAPTHIP 97% and UBE 97%, Q2/19 includes SAPTHIP 106% and UBE 56%, 1H/19 includes SAPTHIP 101% and UBE 76%

(3) Includes 75% of LAB net profit, Q1/19 = (64) MB, Q2/19 = (39) MB, 1H/19 = (103) 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%)

Q2 & 1H/19 TOP Group Consolidated P&L

(Unit : million THB)

	<u>Q2/19</u>	<u>Q1/19</u>	<u>QoQ</u>	<u>Q2/18</u>	<u>YoY</u>	<u>1H/19</u>	<u>1H/18</u>	<u>YoY</u>
Sales Revenue	91,962	91,626	336 (A)	96,637	(4,675)	183,588	188,172	(4,584)
Hedging Gain / (Loss)	90	(166)	256 (B)	70	20	(76)	172	(248)
EBITDA	↓ 2,072	6,889	(4,817) (C)	9,337	(7,265)	↓ 8,961	16,969	(8,008)
Financial Charges	(1,196)	(1,215)	19	(1,270)	74	(2,410)	(2,020)	(390)
FX G/(L) & CCS	594	652	(58)	(1,159)	1,753	1,246	312	934
(Tax Expense)/reversal of income tax	(116)	(1,000)	884	(1,081)	965	(1,116)	(2,290)	1,174
Net Profit / (Loss)	↓ 567	4,408	(3,841)	4,795	(4,228)	↓ 4,975	10,403	(5,428)
EPS (THB/Share)	0.28	2.16	(1.88)	2.35	(2.07)	2.44	5.10	(2.66)
THB/US\$ - average	31.76	31.79	(0.03)	32.12	(0.36)	31.78	31.91	(0.13)
THB/US\$ - ending	30.92	31.98	(1.06)	33.33	(2.41)	30.92	33.33	(2.41)
Effective Tax Rate (%)	16%	18%	-2%	18%	-2%	18%	18%	-

QoQ analysis

(A) Due to increased product price

(B) Mainly from gain from PX-ULG95 hedge

(C) Mainly from stock gain 2.7 \$/bbl in Q1/19 compared with stock loss (0.2) \$/bbl in Q2/19



1H/19 TOP Group Consolidated Cash Flow

(Unit: Million THB)

(Unit: Million THB)					
	1H/19	1H/18		1H/19	1H/18
Operating Cash Flow	8,647	11,184		Investments	26,266
Net income & non-cash adj.	10,013	17,666	+	Dividend income	541
Change in working capital	(1,366)	(6,482)		ST investments	36,259
				Available for sale	-
				CAPEX (PP&E) & other	(10,534) ¹⁾

1) TOP 9,129 MB, TPX 1,029 MB

	1H/19	1H/18		1H/19	1H/18
Free Cash Flow	34,913	20,790	+	Financing	(9,097)
				Loans proceeding	3,979 ²⁾
				Loans repayment	(8,080) ³⁾
				Interest	(2,482)
				Dividend	(2,513)

2) ST-loan TMS 30, TM 200, LABIX 1,530, TSTH 1,130, TSV 430, SAPTHIP 609 MB
LT-loan TSV 42, SAPTHIP 8 MB

3) ST-loan LABIX 1,730, SAPTHIP 405, TSTH 1,360, TSV 429, and TLB 540 MB
LT-loan TOP 3,000, TM 75, LABIX 270, TOP SPP 143, SAKC 108, SAPTHIP 20 MB

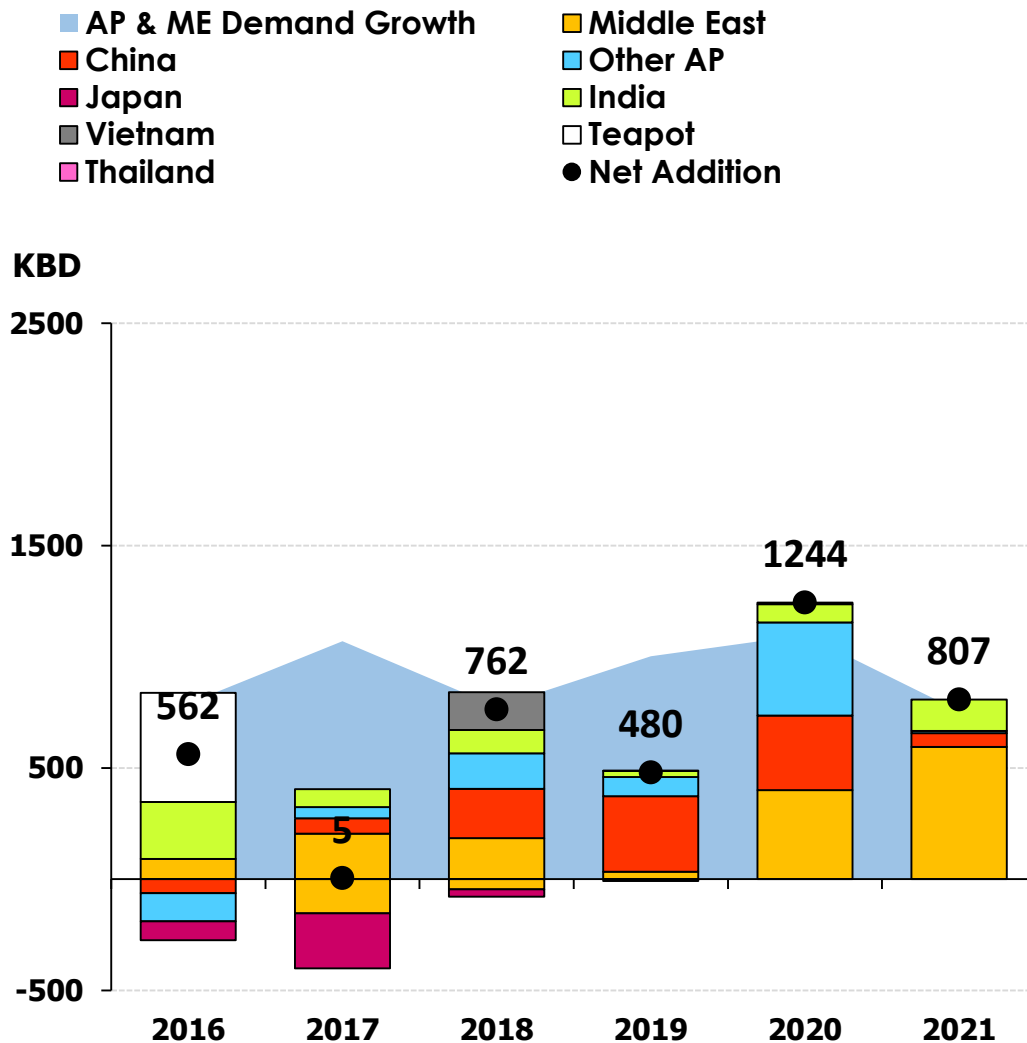
	Beginning	Changes	Effect of FX changes	Ending
Cash	34,041	↑ 25,836	(2,219)	57,658
S/T investment	73,221	↓ (36,701) ⁴⁾		36,520
Investment held as Available for sale	361	↑ 36 ⁵⁾		397
	107,623			94,575⁶⁾

non-cash transaction :
4) Unrealized loss from FCD 419 MB and others 23 MB
5) MTM EPIF 36MB in 1H/19

Ending Cash incl. S/T Investment & AFS

6) USD Deposit = 51,906 MB (1,698 MUSD)
EUR Deposit = 651MB (19 MEUR)

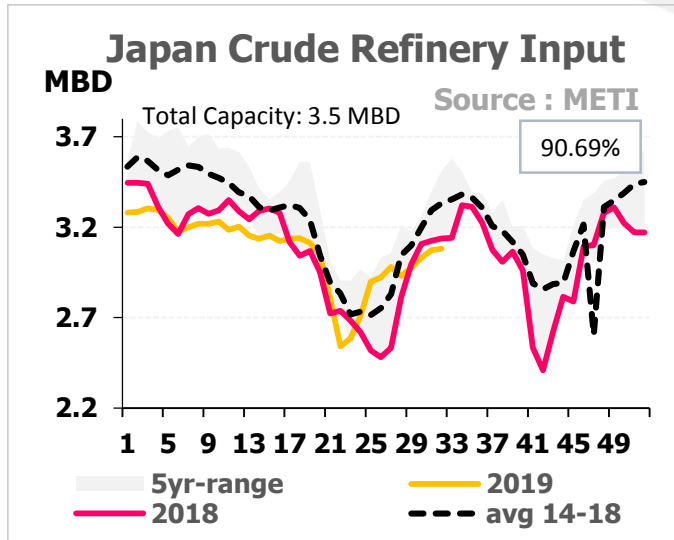
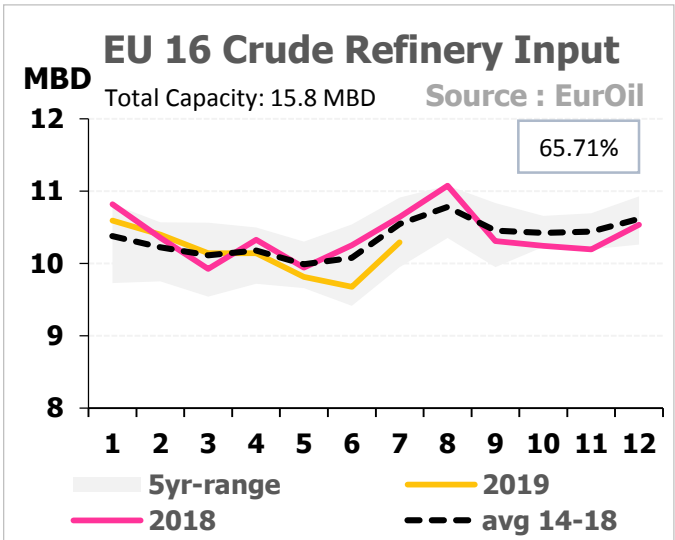
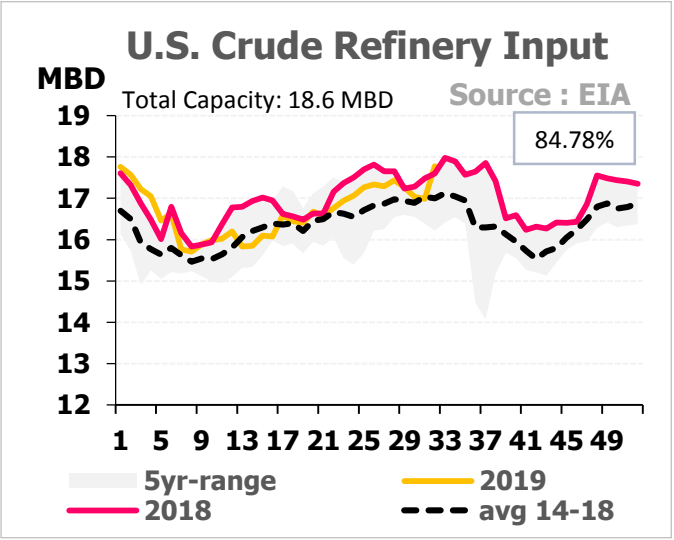
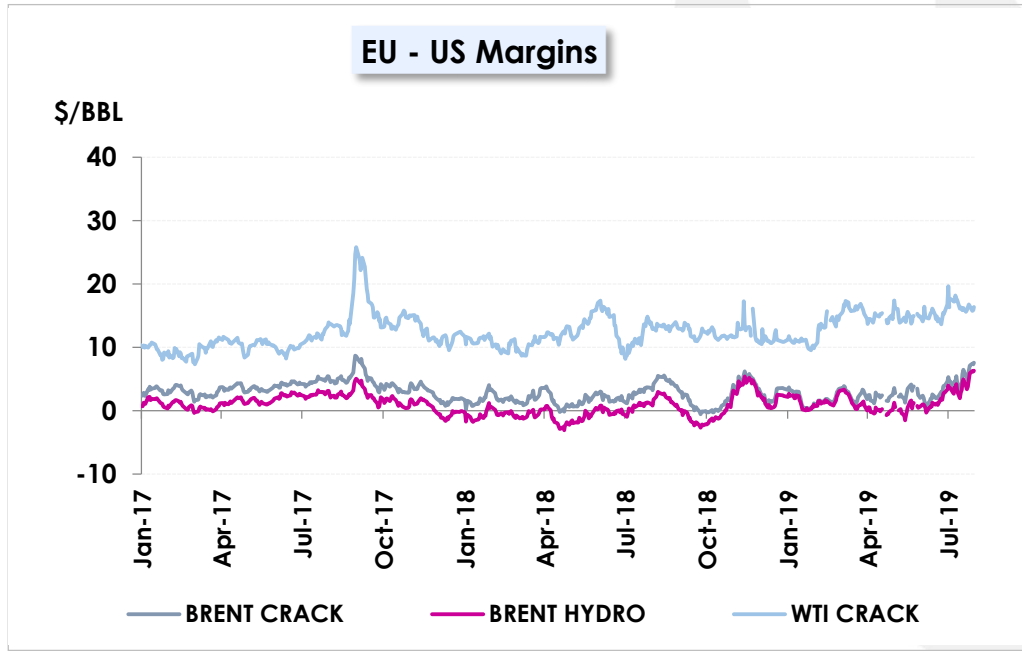
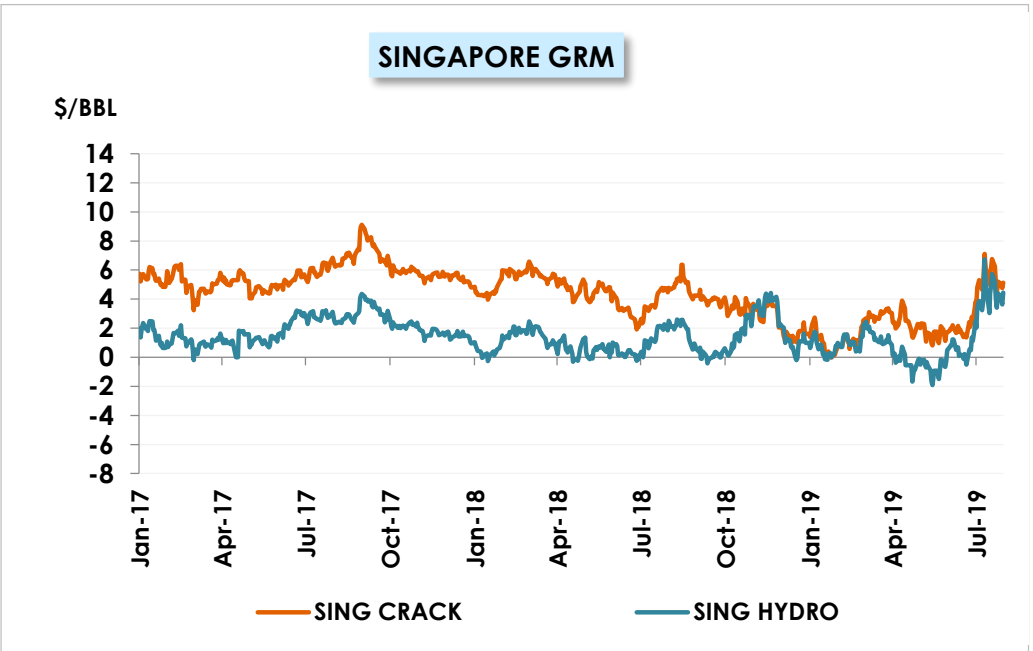
Asia Pacific and Middle East Refinery Addition



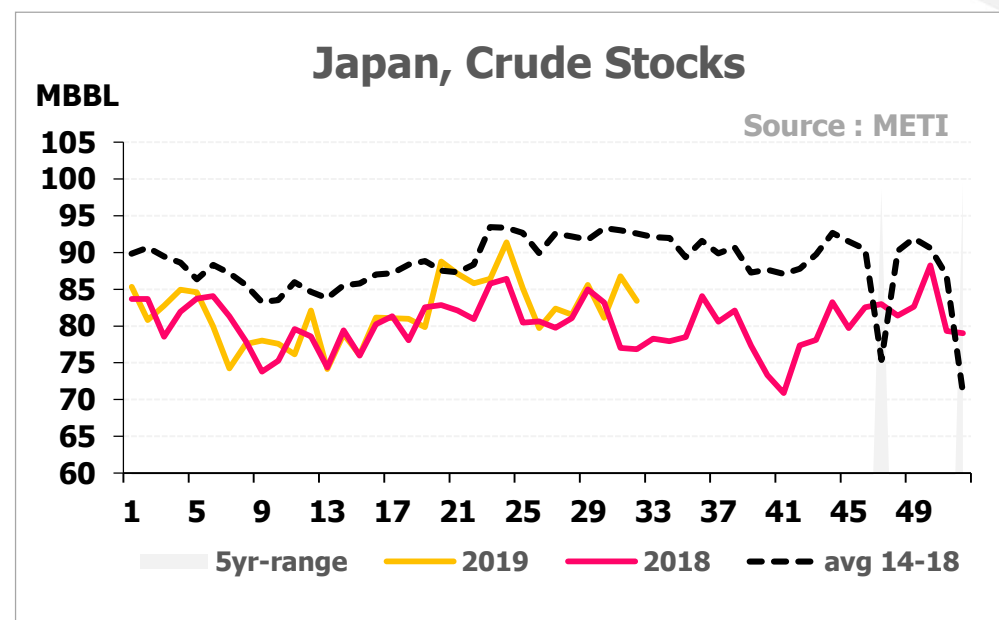
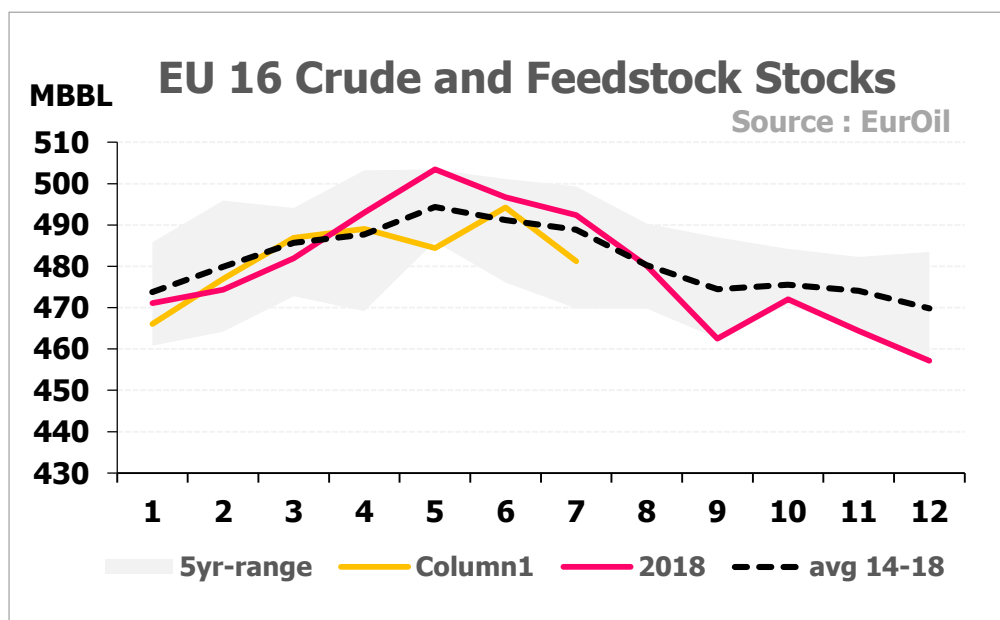
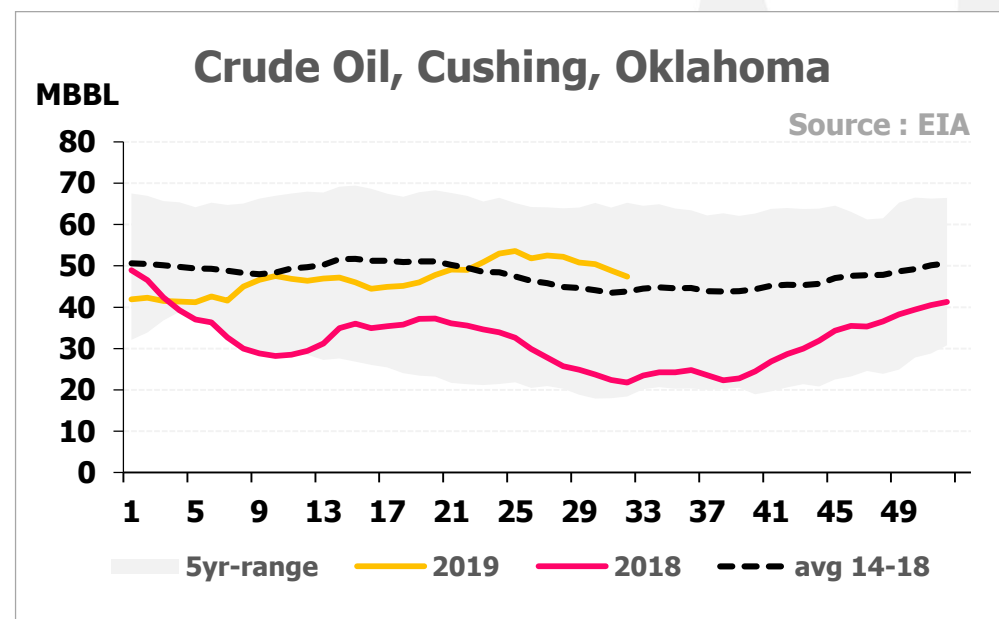
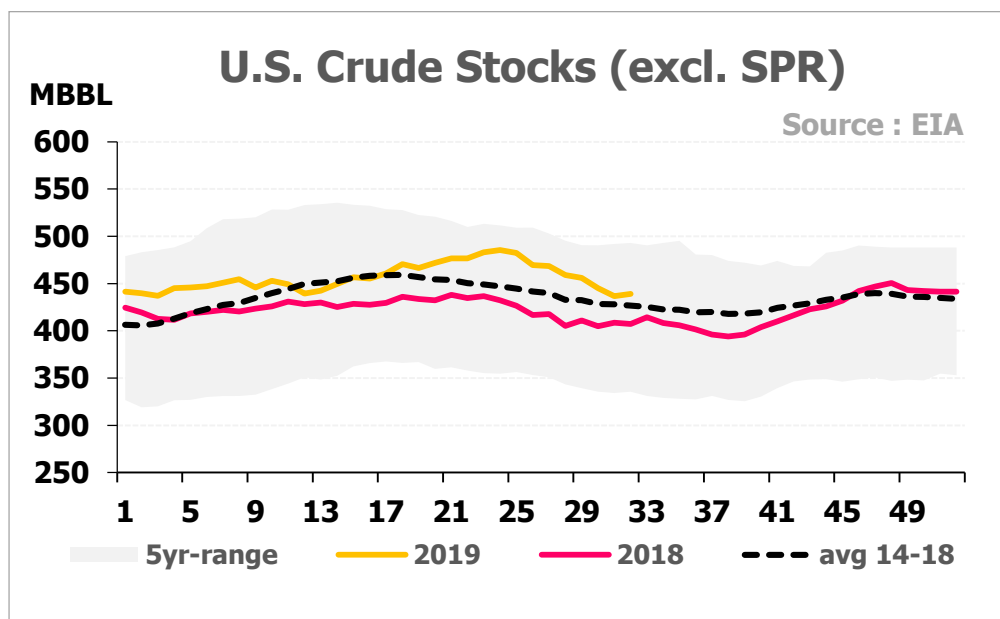
Note: Adjusted capacity based on start-up period (effective additional capacity)

Start-up period)	Country	Nameplate (KBD)	Company
Q2-19	China	400	Hengli Petrochemical Dalian
	South Korea	37	Hyundai Lotte - Seosan
Q3-19	Brunei	175	Hengyi Petrochemicals - Pulau Muara Besar
	Iraq	66	North Refining Company – Baiji
Q4-19	China	400	Zhejiang Rongsheng Group, ZPC
Q1-20	Malaysia	300	Petronas Pengerang (RAPID)
	India	56	BPCL Mumbai
Q2-20	Saudi Arabia	400	Jizan
	Iraq	66	North Refining Company – Basra
	Kuwait	171	KPC - Mina Al-Ahmadi
	UAE	65	ENOC – Jebel Ali
Q3-20	India	56	HPCL Mumbai
Closures			
Q4-19	China	-100	Local refineries
Q2-20	Kuwait	-112	KPC - Mina Al-Ahmadi
Q4-20	China	-75	Local refineries

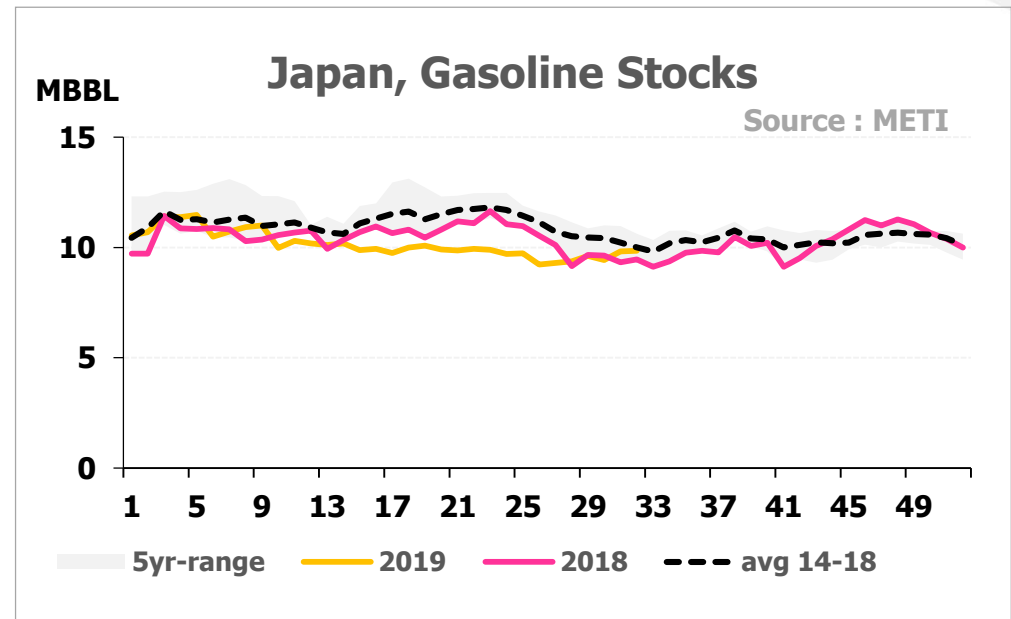
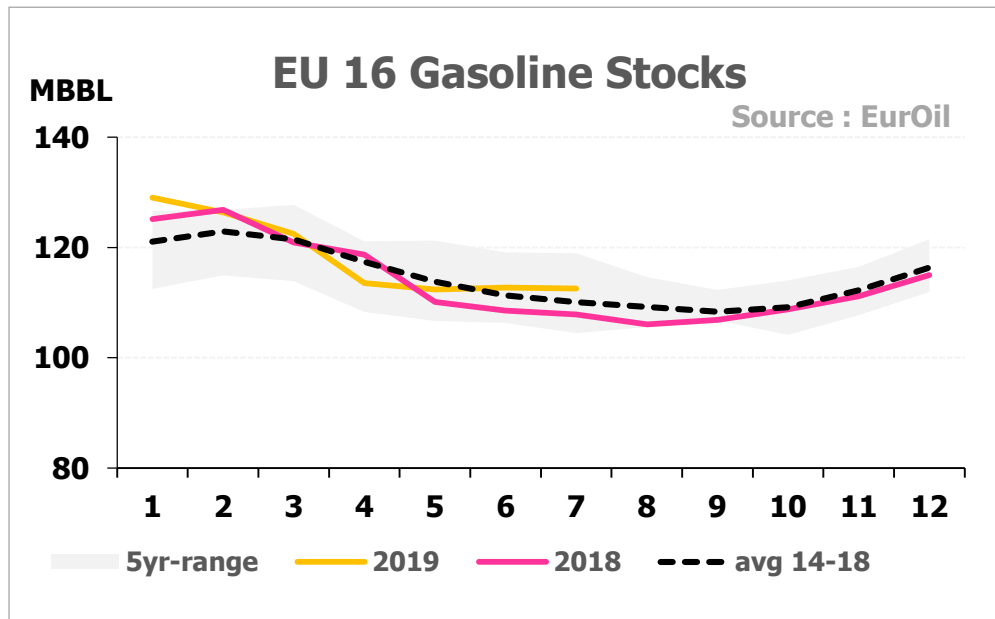
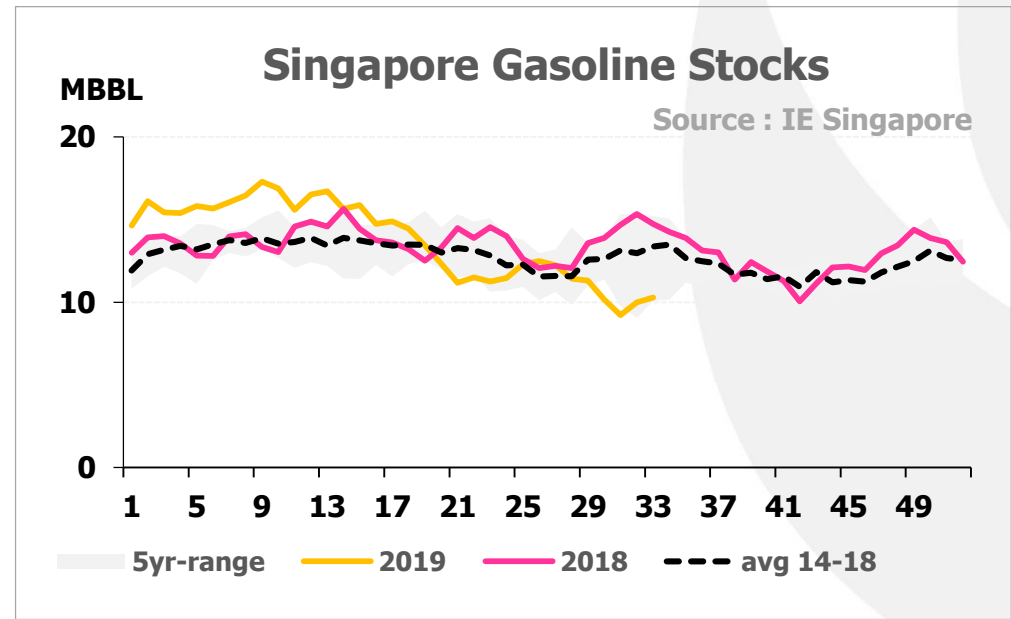
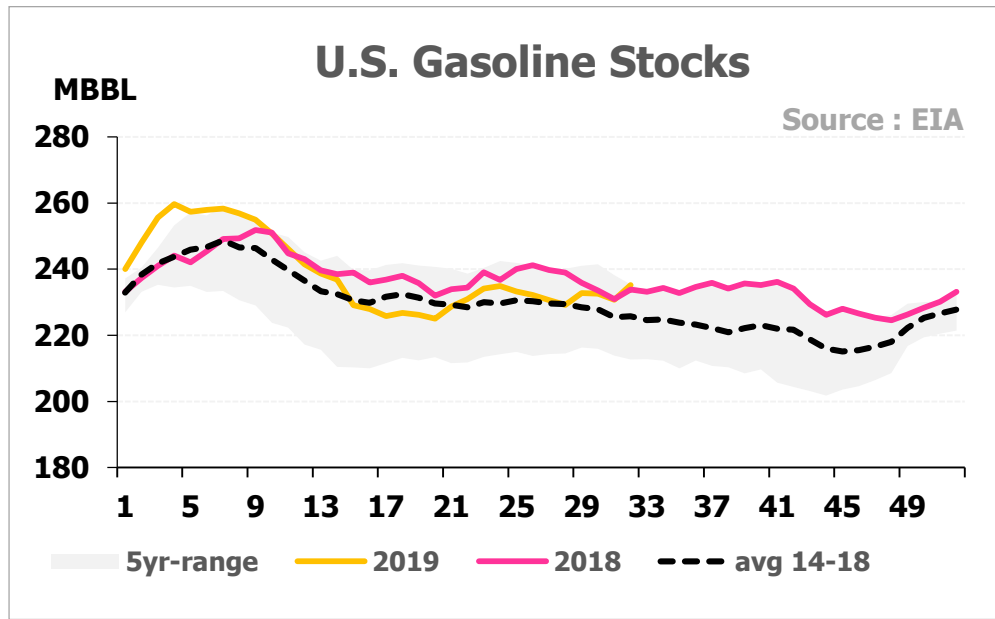
Asian Margin Vs. US-EU margin



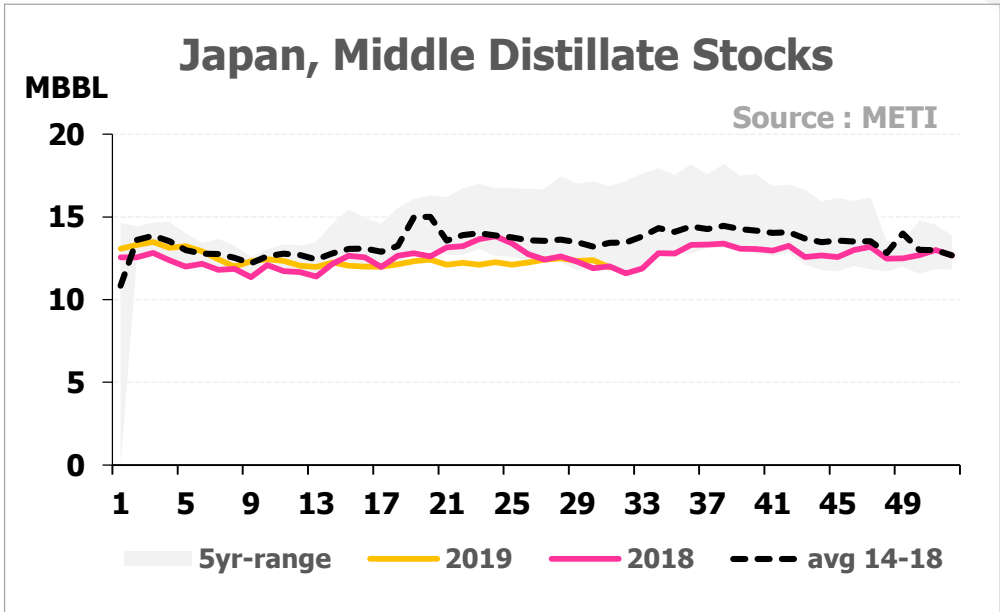
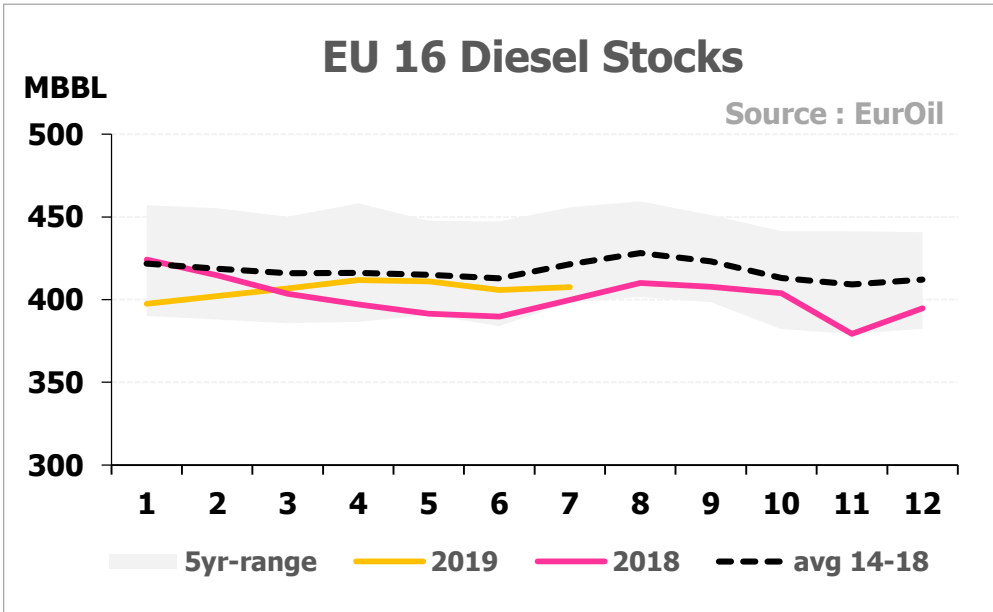
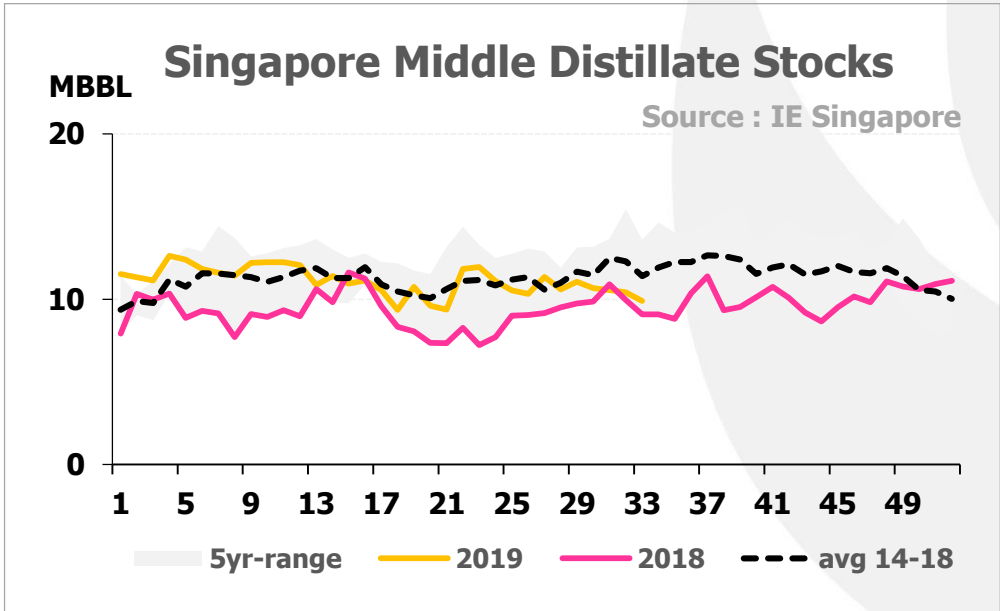
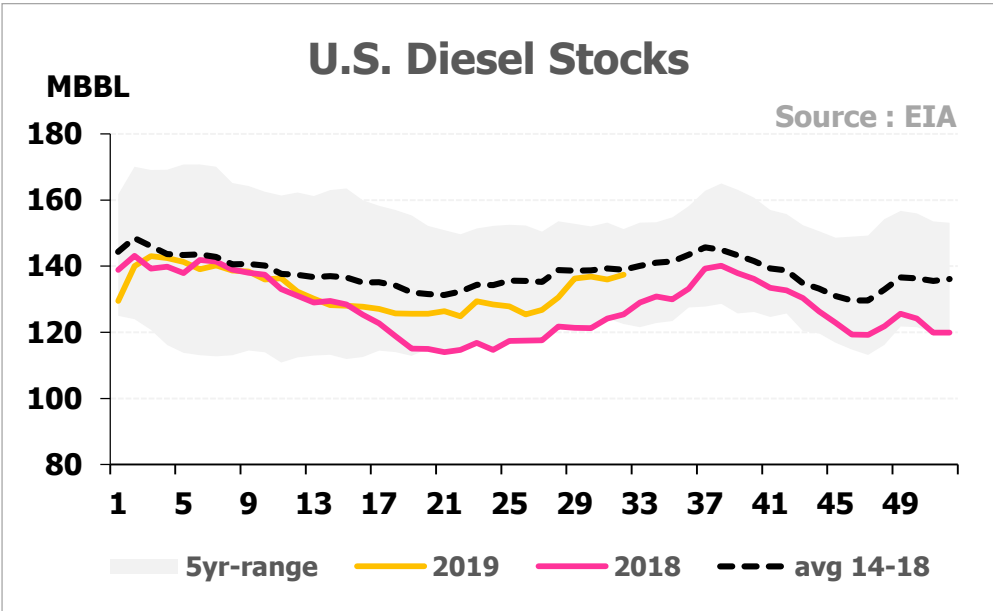
Global Crude Oil Inventories



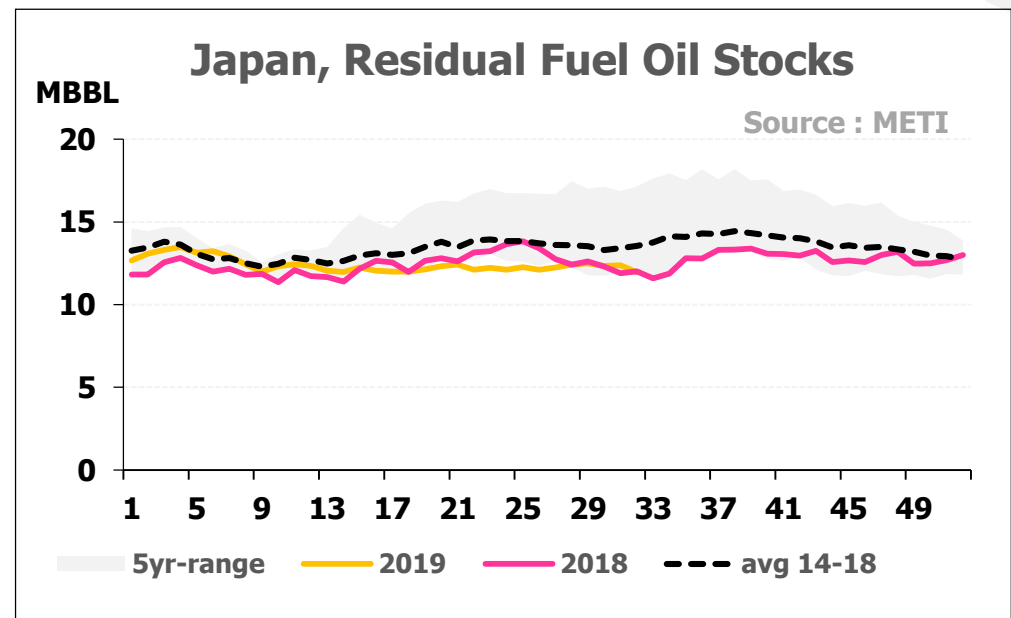
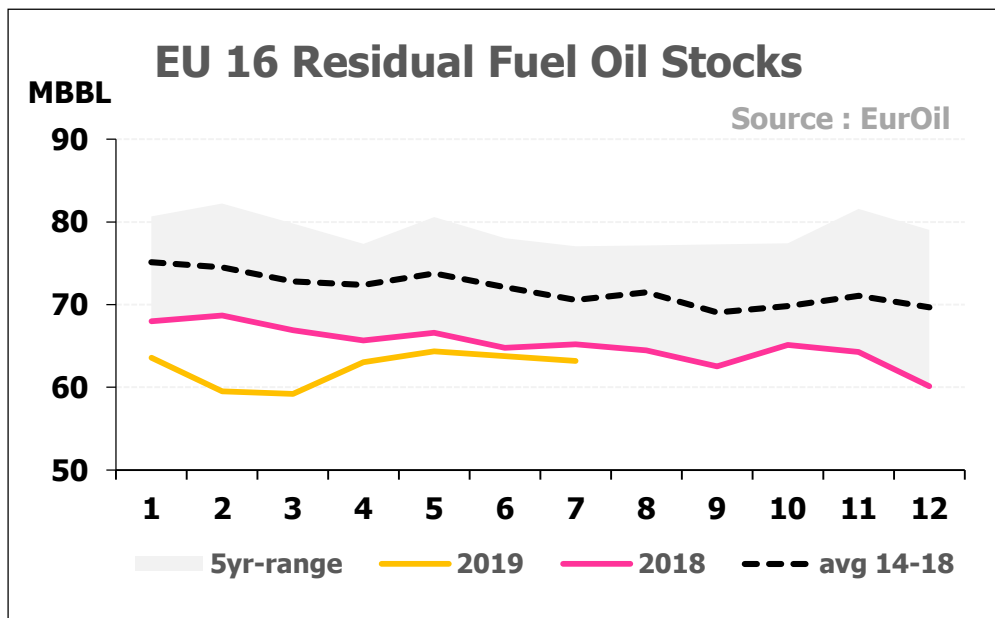
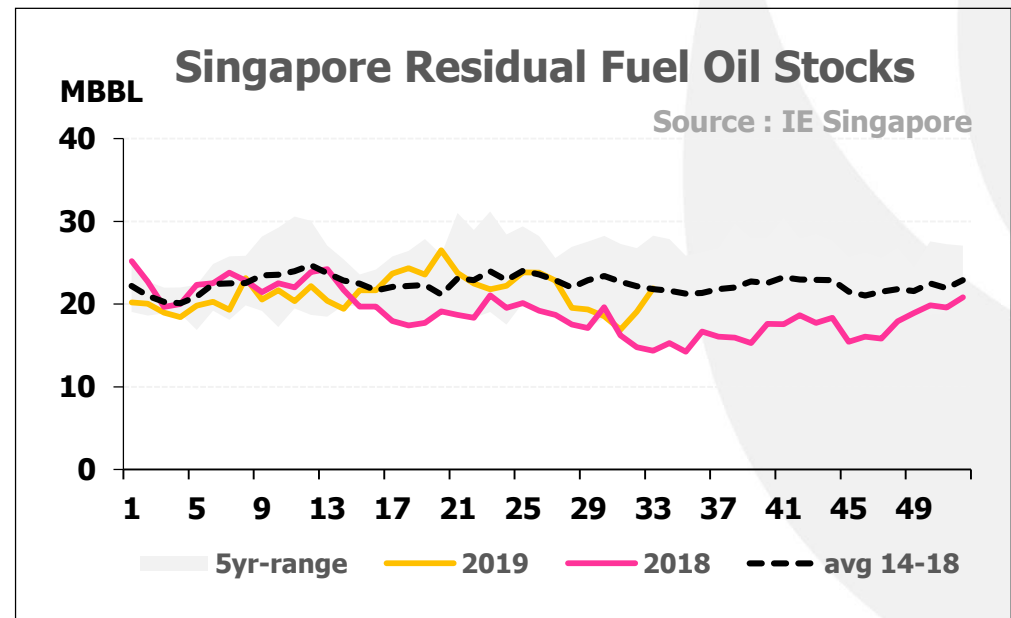
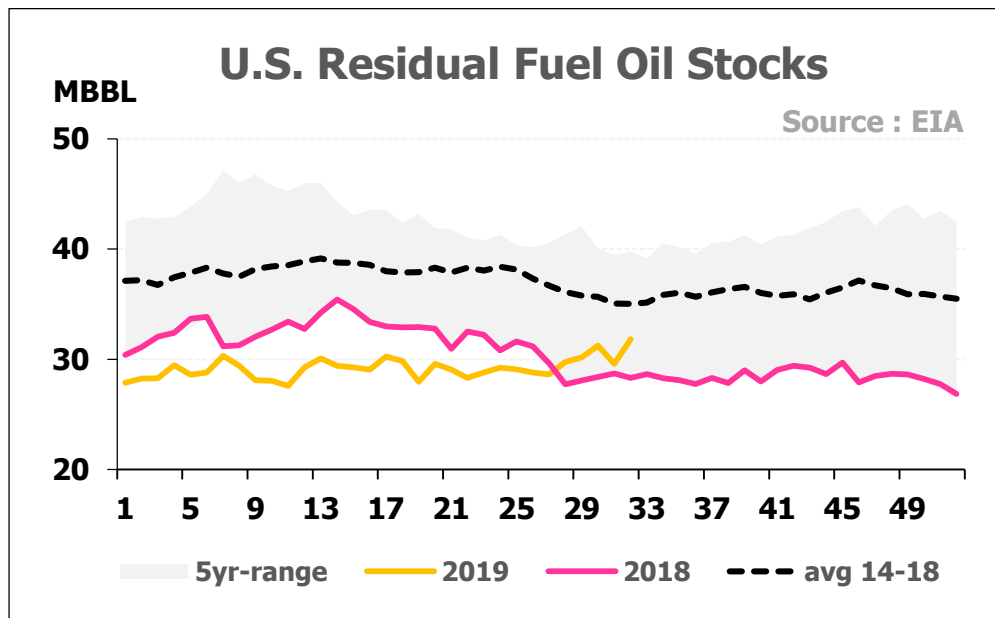
Global Gasoline Inventories



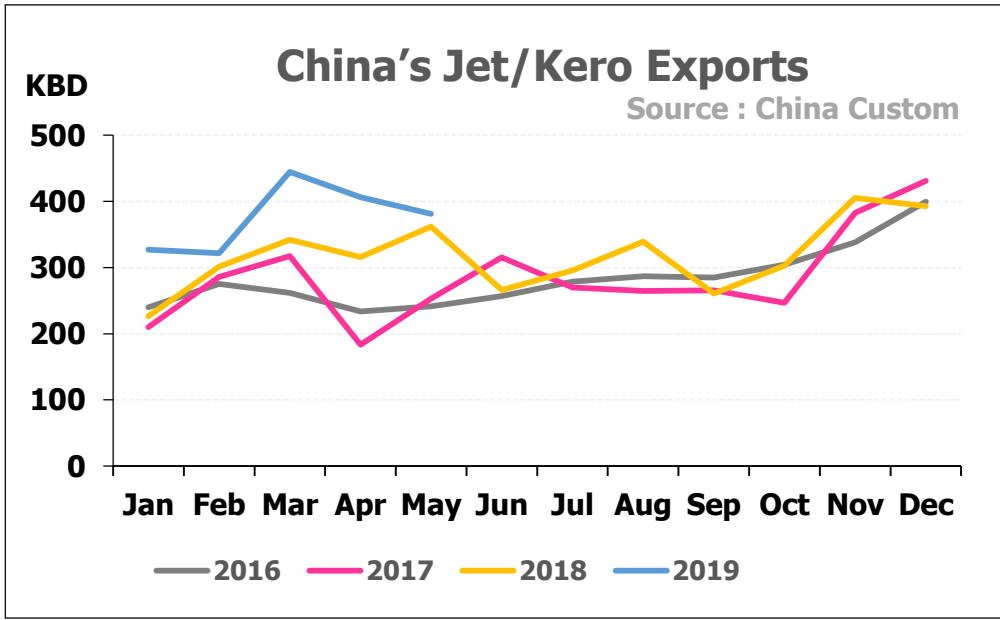
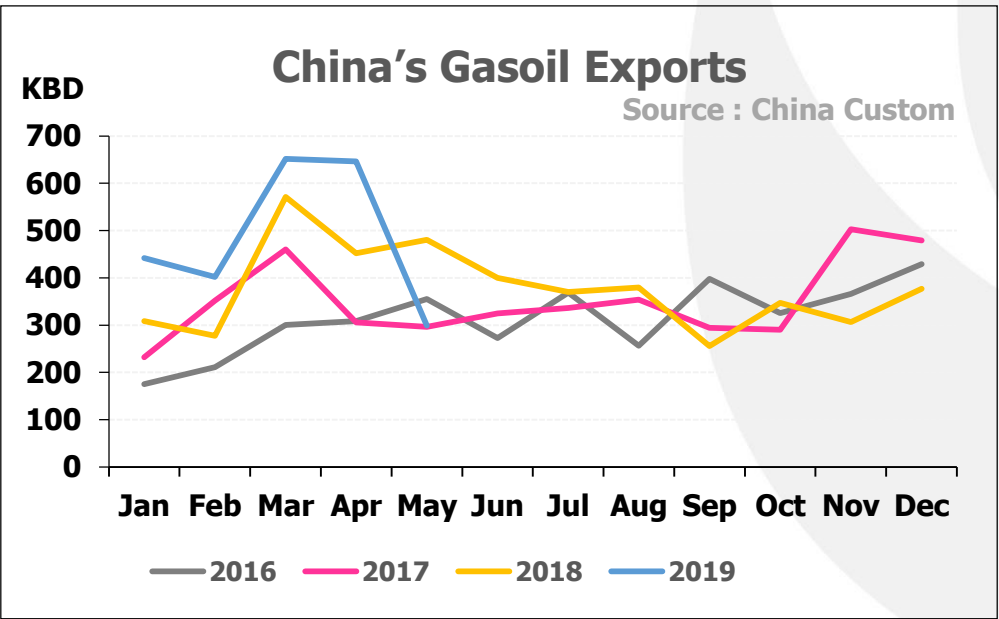
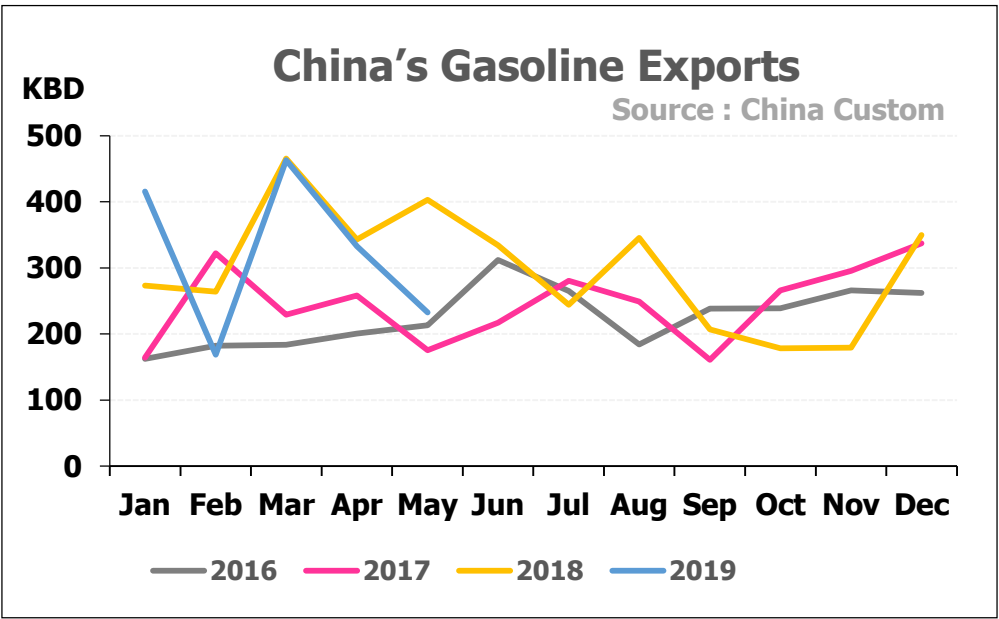
Global Middle Distillate Inventories



Global Fuel Oil Inventories

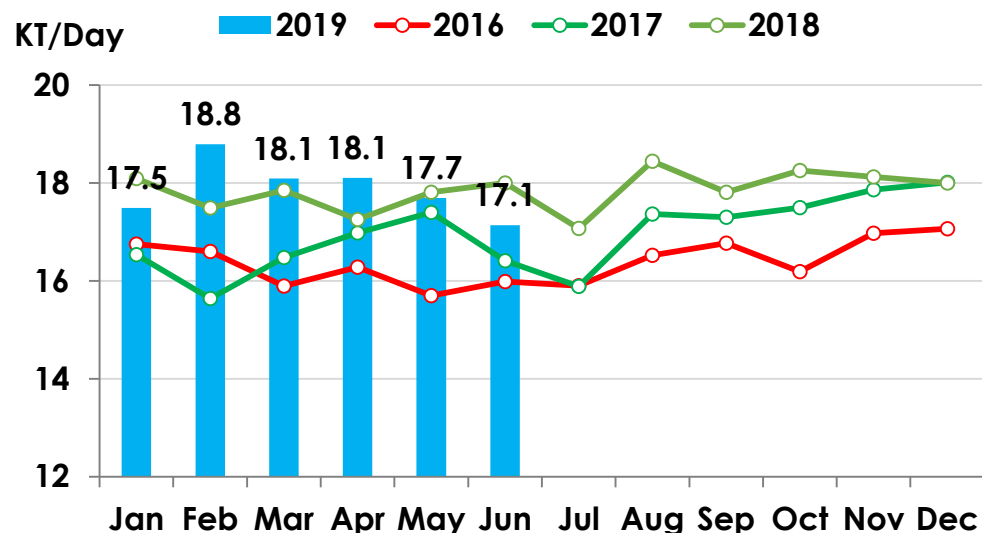


China's Refined Product Exports



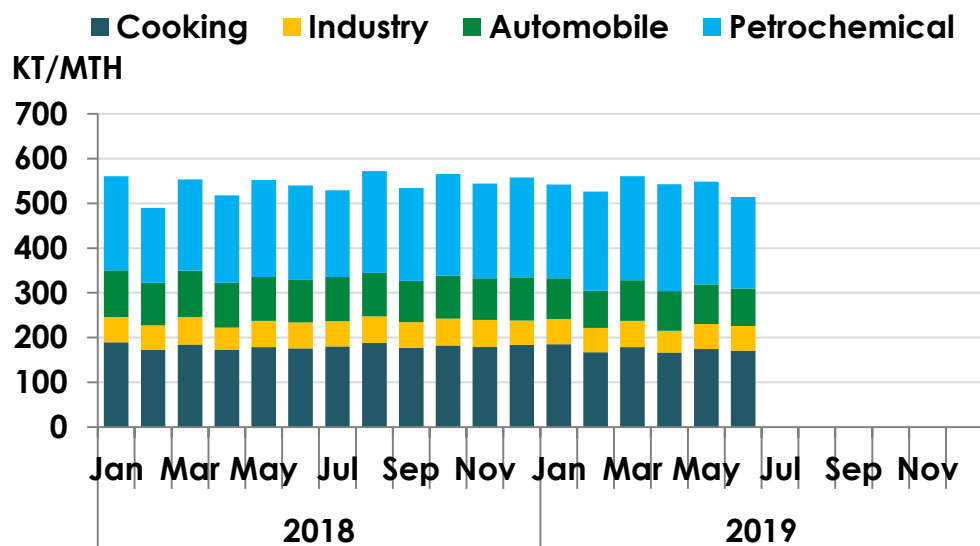
Domestic LPG Demand

Thailand LPG Demand



Remark : LPG demand includes Petrochemical consumption

LPG Demand by Sector



LPG Demand Highlight

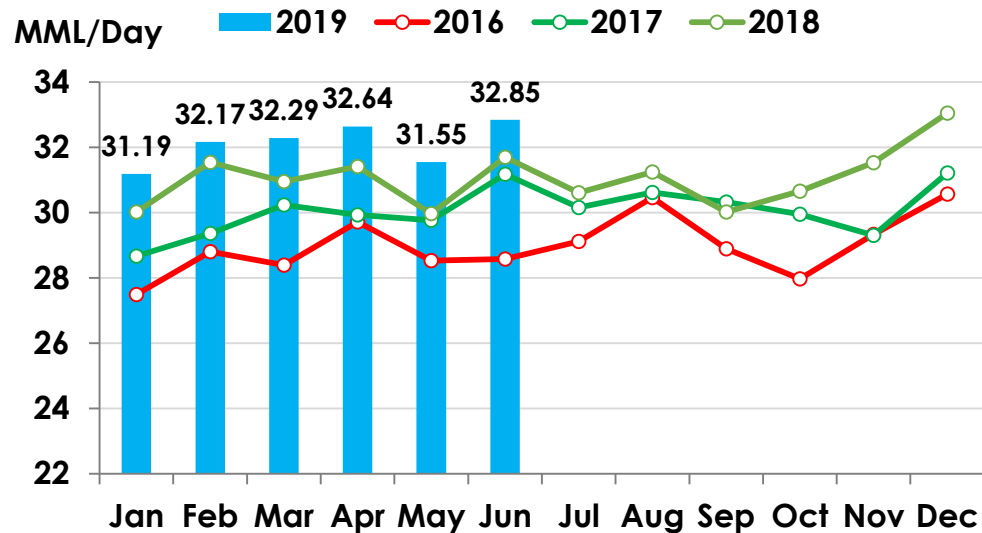
- In 1H2019, LPG demand expanded 0.76% YoY on the support of 11.4% YoY higher demand from petrochemical sector, due to higher substitute feedstock price. However, LPG demand in cooking sector, industrial sector and automobile sector decreased by 2.9% YoY, 3.0% YoY and 12.1% YoY, respectively.

Outlook for 2019

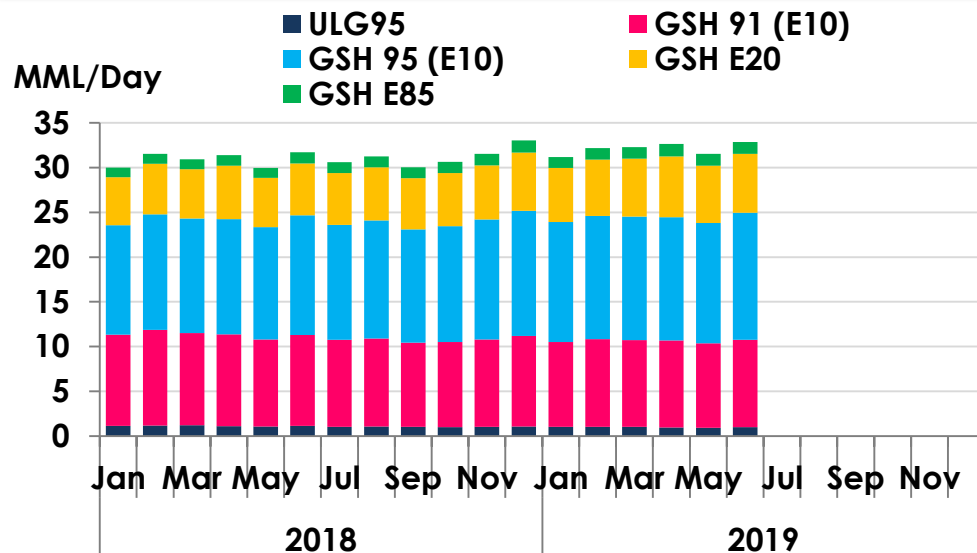
- LPG demand is expected to decrease 1.1% YoY as consumption in transport sector is expected to decline at 12.5% YoY due to fuel switching. Despite LPG price being relatively high, LPG station in Thailand is decreasing hence limiting access to fuelling station for LPG vehicle users. Moreover, the registered number of pure LPG vehicle in Thailand during 2010-2017 fell at a rate of 11.2% per year, which means LPG vehicle has become significantly less incentive for automobile users over time.

Domestic Gasoline/Gasohol Demand

Thailand Gasoline/Gasohol Demand



Gasoline/Gasohol Demand by Grade



GASOLINE/Gasohol Demand Highlight

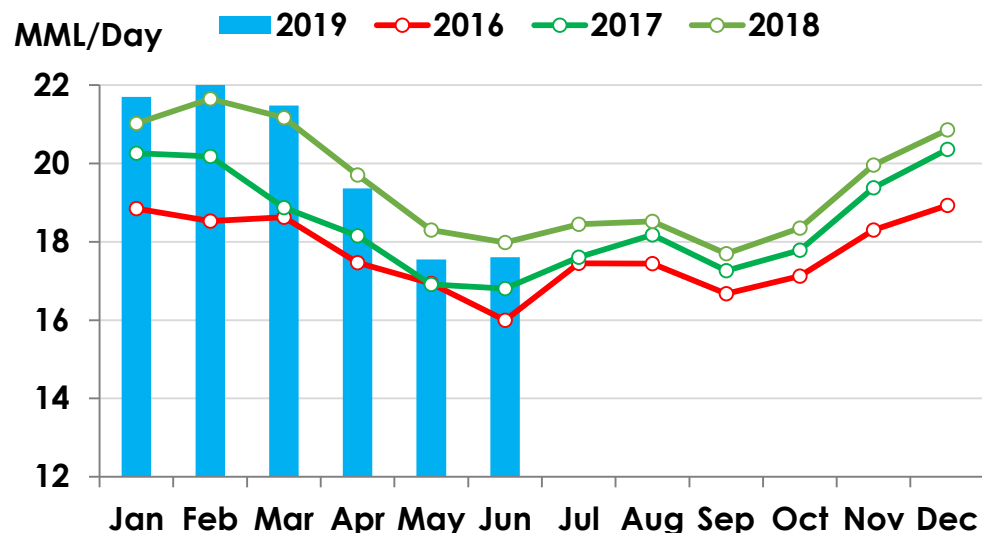
- In 1H2019, Gasoline demand rose by 3.8% YoY to an average 32.1 MML/day. Besides the retail price of Gasoline is lower, Gasoline demand was mainly supported by increasing amount of personal cars which are still more popular than public transit. Moreover, Gasoline demand is also advocated by fuel switching from LPG.
- The level of domestic ethanol demand, in 1H2019, rose significantly by 5.9% YoY from 4.13 mml/day to 4.37 mml/day following the growth of Gasoline demand. Additionally, this was also because of higher demand in GSH95, E20, and E85 which increased by 7.4% YoY, 12.9% YoY, and 6.4% YoY, respectively, backed up by increasing in the number of new E20 vehicle, higher E20 gas station, and attractive GSH95-E20 and E20-E85 price gap.

Outlook for 2019

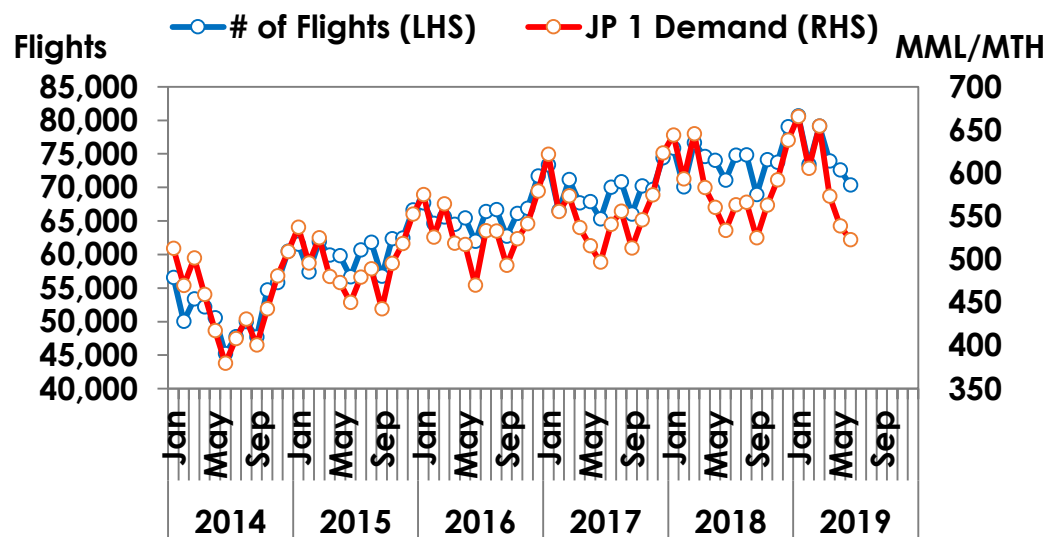
- Gasoline consumption is predicted to grow by 4.3% YoY supported by expectation of growing of new passengers cars and lower Gasoline retail price.

Domestic Jet Demand

Thailand JET Demand



JET-A1 demand and # of flights



JET Demand Highlight

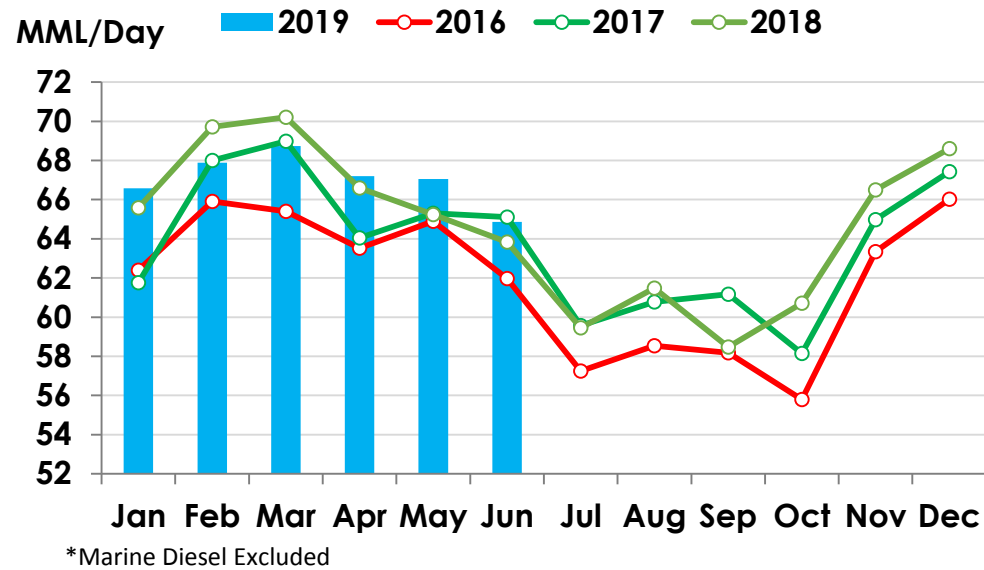
- In 1H2019, Jet consumption dropped slightly by 0.02% YoY as tourism sector faced a slowdown in growth following decreased number of Chinese tourist at 4.3% YoY and strengthening of Thai Baht. However, overall tourist numbers still slightly grew at 1.6% YoY.

Outlook for 2019

- Jet demand growth is expected to grow by 1.8% YoY as a result of tourist number growth, especially from ASEAN and India. The growth is seen easing nonetheless amid weaker domestic demand, and a challenging external environment and stronger currency dragging on tourism. High household debt further clouds the outlook. Such strengthening of Thai Baht results in less traveling activity which is damaging to Thailand as one of the main destinations for Chinese to spend their vacation.

Domestic Gasoil and NGV Demand

Thailand Gasoil Demand



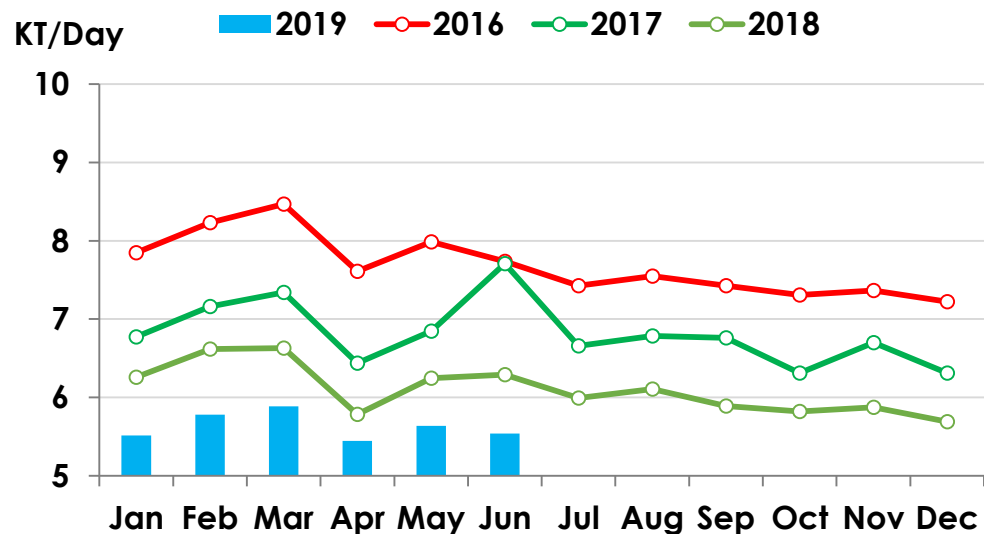
Diesel Demand Highlight

- In 1H2019, Diesel demand slightly increased by 0.3% YoY as a result of decreased agricultural and manufacturing production activities leading to weak growth of Thailand's economy, by 2.8% in Q1/19. However, increased amount of diesel passenger cars still support the demand.

Outlook for 2019

- Diesel demand is expected to grow by 0.8% YoY supported by seasonal logistic activities in Q4/19.

NGV Demand

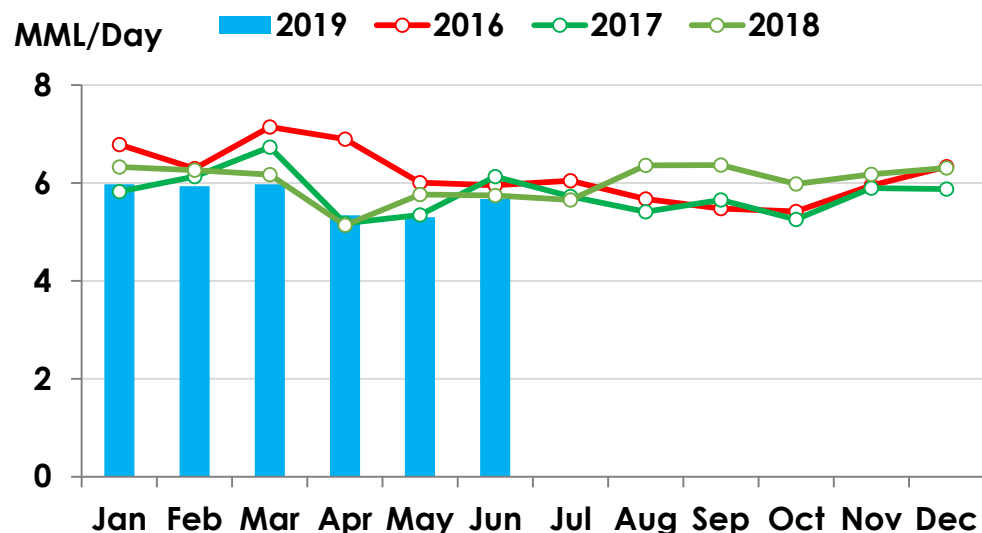


NGV Demand Highlight

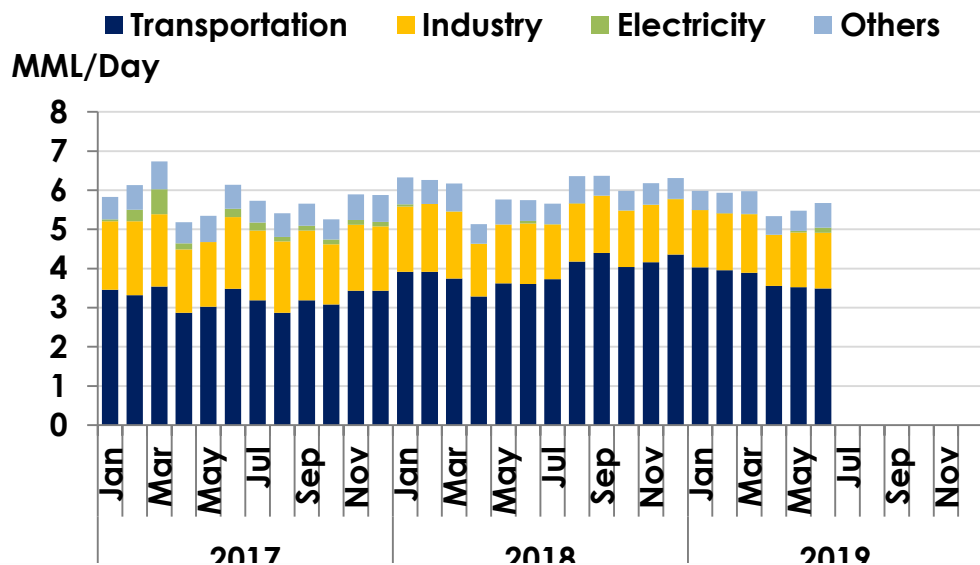
- In 1H2019, NGV demand fell significantly by 9.6% YoY. The major pressuring factor was about higher retail price. Furthermore, gasoline price dropped significantly in the latter year, making lower incentive for NGV use.

Domestic Fuel Oil Demand

Thailand Fuel Oil Demand



Thailand Fuel Oil Demand by Sector



Fuel Oil Demand Highlight

- In 1H2019, Fuel Oil consumption fell by 3.4% YoY, as a result of 10.2% YoY decrease in demand for industrial sector. While, the demand for bunker still increased by 1.6% YoY. Although, electricity demand remained was at low level but stable which is less than 1% of overall fuel oil demand. The growth has receded from last year's outstanding performance due to the lack of special demand from abroad.

Outlook for 2019

- Fuel oil demand is expected to dropped by 5.8% YoY, pressured by transportation demand from 0.5% of sulfur implementation in 2020. Moreover, demand growth will continue to be limited by weak consumption for industrial and electricity purposes.

Thank You

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