Management's Discussion and Analysis (MD&A)

Thai Oil Public Company Limited

For the Fourth Quarter and the Year 2018

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Thai Oil Public Company Limited and Subsidiaries
for the Fourth Quarter and the Year 2018

1. Company and its Subsidiaries' Operating Results

Table 1: Summary of Consolidated Financial Results

(Million Baht)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Integrated Intake (kbd)	322	320	2	311	11	313	312	1
Gross Integrated Margin (GIM)(1) (US$/bbl)								
: excluding stock gain/(loss)	6.5	7.2	(0.7)	8.3	(1.8)	6.9	9.1	(2.2)
: including stock gain/(loss)	(0.9)	8.4	(9.3)	11.8	(12.7)	6.6	9.9	(3.3)

(Million Baht)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Sales Revenue	99,755	101,261	(1,506)	89,443	10,312	389,344	337,388	51,956
Hedging Gain/(Loss)	(852)	(140)	(712)	(63)	(789)	(821)	(133)	(688)
EBITDA	**(3,582)**	**7,124**	**(10,706)**	**10,810**	**(14,392)**	**20,239**	**36,925**	**(16,686)**
Foreign Exchange Gain/(Loss)	(233)	548	(781)	677	(910)	627	3,182	(2,555)
Finance Costs	(1,078)	(844)	(234)	(797)	(281)	(3,511)	(3,285)	(226)
Finance Costs from repurchase of debentures	-	-	-	-	-	(431)	-	(431)
Reversal of Income Tax (Expense)	1,315	(1,008)	2,323	(1,711)	3,026	(1,983)	(5,529)	3,546
Net Profit	**(4,812)**	**4,558**	**(9,370)**	**6,927**	**(11,739)**	**10,149** (3)	**24,856** (3)	**(14,707)**
Basic Earnings per Share (Baht)	**(2.36)**	**2.23**	**(4.59)**	**3.40**	**(5.76)**	**4.97**	**12.18**	**(7.21)**
Net Profit excluding stock gain/(loss) and inventory write-down to NRV(2)	**3,712**	**3,389**	**323**	**3,450**	**262**	**12,777**	**21,441**	**(8,664)**

Exchange Rate (Baht: 1 US$)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Average FX	32.99	33.15	(0.16)	33.11	(0.12)	32.49	34.10	(1.61)
Ending FX	32.61	32.58	0.03	32.85	(0.24)	32.61	32.85	(0.24)

Remark (1) Gross integrated margin is the integrated gross margin among Thaioil refinery, Thai Paraxylene Co., Ltd., LABIX Co., Ltd. and Thai Lube Base Plc.

(2) Excluding pre-tax stock gain/(loss) and pre-tax write-down to NRV on petroleum inventory /(a reversal of write-down to NRV on petroleum inventory) which are included in cost of sale of goods and rendering of services in the financial statements.

(3) Including dividends received of Baht 154 million for the year 2018 and Baht 158 million for the year 2017 from Thai Petroleum Pipeline Co., Ltd.

Compared Q4/18 with Q3/18, Thaioil and Subsidiaries had increases in integrated intake and total product sales volume. However, a decrease in average product selling prices tracking crude oil price led Thaioil and Subsidiaries to have sales revenue of Baht 99,755 million, decreased by Baht 1,506 milion. Thaioil and Subsidiaries recorded GIM excluding stock gain/ (loss) of 6.5 US$/bbl, reduced by 0.7 US$/bbl due to weakened gasoline spread from oversupply. For aromatics market, PX spread over ULG95 significantly improved due to (1) lower gasoline price, (2) PX demand supported by a consecutive growth in polyester demand for clothing, and (3) tightened supply since Q3/18. Lube base oil market, on the other hand, its spread over fuel oil weakened due to an increasing supply in Asia. This was because many plants resumed their operations after maintenance shutdowns along with Chinese supply had increased while high-visocity lube base oil demand decreased during winter. Moreover, a significant drop in crude oil price from previous quarter resulted in Thaioil and Subsidiaries to have stock loss of 7.4 US$/bbl and cause a decrease in GIM including stock gain/ (loss) by 9.3 US$/bbl. Including net hedging loss of Baht 852 million, Thaioil and Subsidiaries posted loss on EBITDA of Baht 3,582 million. In addition, Thaioil and Subsidiaries had net foreign exchange loss of Baht 233 million as a result of a slight depreciation in Thai Baht against US Dollar. However, finance costs increased by Baht 234 million to Baht 1,078 million because Thaioil Treasury Center Company Limited (TTC) had issued Senior Unsecured Notes to foreign institutional investors with the total amount of US$ 1,000 million on 20 November 2018. The objective was to prepare financial readiness to support an investment in Clean Fuel Project. Offsetting with depreciation and a reversal of income tax expense, Thaioil and Subsidiaries recorded net loss of Baht 4,812 million or Baht 2.36 per share, compared with net profit of Baht 4,558 million in Q3/18.

Compared Q4/18 with Q4/17, Thaioil and Subsidiaries had higher sales revenue by Baht 10,312 million due to higher average selling prices following crude oil price and higher total product sales volume. Unfortunately, Thaioil and Subsidiaries recorded GIM excluding stock gain/(loss) reduced by 1.8 US$/bbl as a consequence of the considerable decrease in gasoline spread over Dubai from surplus supply. In addition, Thaioil and Subsidiaries recorded stock loss and the write-down to NRV on petroleum inventory of Baht 8,524 million compared with stock gain and a reversal of write-down to NRV on petroleum inventory of Baht 3,477 million in Q4/17. Therefore, Thaioil and Subsidiaries posted GIM including stock gain/(loss) decreased by 12.7 US$/bbl. With net hedging loss increased by Baht 789 million, Thaioil and Subsidiaries had decreases in EBITDA and net profit by Baht 14,392 million and Baht 11,739 million from Q4/17, respectively.

For the year 2018, comparing with the year 2017, Thaioil and Subsidiaries had sales revenue of Baht 389,344 million, increased by Baht 51,956 million due to the rise in average product selling prices tracking crude oil price. However, Thaioil and Subsidiaries recorded lower GIM excluding stock gain/ (loss) by 2.2 US$/bbl to 6.9 US$/bbl because gross refining margin dropped due to considerably increased crude premium and softened gasoline spread over Dubai, despite stronger gas oil and jet/kero spreads from previous year. In addition, base oil and bitumen spreads over fuel oil weakened owing to increasing base oil supply and softening bitumen demand. Besides, in 2018, Thaioil and Subsidiaries recorded stock loss and the write-down to NRV on petroleum inventory of Baht 2,628 million, compared with stock gain and the reversal of write-down to NRV on petroleum inventory of Baht 3,416 million in 2017. Then, Thaioil and Subsidiaries posted EBITDA of Baht 20,239 million, dropped by Baht 16,686 million. Offsetting with finance costs, which included non-recurring expenses from amortized deferred discount on debentures and related expenses relevant to liabilities management, depreciation, and income tax expense, Thaioil and Subsidiaries earned net profit of Baht 10,149 million or 4.97 Baht per share, plunged by Baht 14,707 million from prior year.

On 20 November 2018, the Extraordinary General Meeting of Shareholders of TOP Maritime Service Company Limited (TMS) (indirect subsidiary of the Company, 100% owned by Thaioil Marine Company Limited (TM) and TM 100% owned by the Company) resolved to approve on capital increase for the amount of Baht 250 million to be Baht 520 million from the existing registered capital of Baht 270 million. The objective of the capital increase is mainly for capital restructuring to be aligned with the current business environment.

2. Summary of Financial Result by Business

Table 2: Financial Result by Business (Million Baht)

Sales Revenue	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Consolidated	**99,755**	**101,261**	**(1,506)**	**89,443**	**10,312**	**389,344**	**337,388**	**51,956**
Refinery	102,885	106,970	(4,085)	93,969	8,916	405,130	349,829	55,301
Aromatics and LAB(1)	17,290	17,997	(707)	14,757	2,533	66,701	57,881	8,820
Lube Base Oil	5,941	5,007	934	4,531	1,410	20,959	18,662	2,297
Power Generation(2)	3,091	3,063	28	2,635	456	11,734	10,929	805
Solvent(3)	2,617	2,583	34	2,513	104	9,992	9,182	810
Marine Transportation(4)	151	157	(6)	207	(56)	621	801	(180)
Ethanol(5)	371	362	9	448	(77)	1,477	1,620	(143)
Others(6)	855	454	401	422	433	1,925	985	940

EBITDA	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Consolidated	**(3,582)**	**7,124**	**(10,706)**	**10,810**	**(14,392)**	**20,239**	**36,295**	**(16,686)**
Refinery	(6,008)	4,444	(10,452)	7,973	(13,981)	10,050	24,508	(14,458)
Aromatics and LAB	1,545	1,622	(77)	1,242	303	5,486	5,528	(42)
Lube Base Oil	209	222	(13)	565	(356)	1,447	2,694	(1,247)
Power Generation	628	683	(55)	674	(46)	2,653	2,832	(179)
Solvent	58	101	(43)	182	(124)	437	690	(253)
Marine Transportation	(6)	32	(38)	30	(36)	78	153	(75)
Ethanol	28	32	(4)	105	(77)	143	468	(325)
Others	2	17	(15)	40	(38)	40	65	(25)

Net Profit / (Loss)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Consolidated (7)	**(4,812)**	**4,558**	**(9,370)**	**6,927**	**(11,739)**	**10,149**	**24,856**	**(14,707)**
Refinery (8)	(6,087)	2,948	(9,035)	5,866	(11,953)	3,983	17,614	(13,631)
Aromatics and LAB	747	837	(90)	490	257	2,530	2,730	(200)
Lube Base Oil	145	158	(13)	365	(220)	1,079	1,812	(733)
Power Generation (9)	417	566	(149)	539	(122)	2,183	2,341	(158)
Solvent	(14)	16	(30)	84	(98)	123	309	(186)
Marine Transportation	(65)	(2)	(63)	(538)	473	(44)	(530)	486
Ethanol	7	(10)	17	52	(45)	4	263	(259)
Others (10)	34	38	(4)	60	(26)	110	119	(9)

Remark (1) Thai Paraxylene Co., Ltd. invested 75% of total investment in LABIX Co., Ltd. which produces an intermediate for the production of surfactants (LAB).

(2) Thaioil Plc. shares 73.99% in Thaioil Power Co., Ltd., and shares 99.99% in TOP SPP Co., Ltd. for small power plants (SPPs) business.

(3) Including Thaioil Solvent Co., Ltd., having respective interests in TOP Solvent Co., Ltd., Sak Chaisidhi Co., Ltd. and TOP Solvent (Vietnam) LLC.

(4) Including Thaioil Marine Co., Ltd., having respective interests in Thaioil Marine International Pte. Ltd., TOP Maritime Service Co., Ltd., TOP-NTL Pte. Ltd., TOP-NTL Shipping Trust, TOP Nautical Star Co., Ltd., TOP-NYK MarineOne Pte. Ltd., and T.I.M. Ship Management Co., Ltd.

(5) Including Thaioil Ethanol Co., Ltd., having respective interests in Sapthip Co., Ltd., Ubon Bio Ethanol Co., Ltd. and Maesod Clean Energy Co., Ltd. in which investment was disposed in February 2017.

(6) Including Thaioil Energy Services Co., Ltd. (TOP holds 99.99% shares) which provides human resources management service and Thaioil Treasury Center Co., Ltd (TOP holds 99.99% shares) which conducts the business in the area of International Head Quarter (IHQ) and Treasury Center (TC) for Thaioil and Subsidiaries.

(7) Including dividends received from Thai Petroleum Pipeline Co., Ltd. of Baht 154 million for the year 2018 and Baht 158 million for the year 2017.

(8) For Q4/18 and the year 2018, pre-tax stock loss on crude intake of correspondent period were recorded at Baht 7,211 million and Baht 1,315 million, respectively; while, for the both mentioned periods, the write-down to NRV on petroleum inventory were recorded at Baht 1,314 million. For Q3/18, Q4/17 and the year 2017, pre-tax stock gain on crude intake of correspondent period were recorded at Baht 1,169 million, Baht 3,341 million, and Baht 3,343 million, respectively; while, for the mentioned periods, the reversal of write-down to NRV on petroleum inventory was recorded at Baht 136 million and Baht 73 million, respectively.

(9) Including Thaioil and Subsidiaries' share of profits from the investments in Global Power Synergy Public Company Limited (GPSC).

(10) Including net profit / (loss) from Thaioil Energy Services Co., Ltd. and Thaioil Treasury Center Co., Ltd. and shares of profits from the investments in PTT Digital Solutions Co., Ltd. and PTT Energy Solutions Co., Ltd.

2.1 Market Condition and Financial Result of Refinery Business

Table 3: Average Crude Oil Price, Petroleum Product Prices and Crack Spreads

Average Prices (US$/bbl)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Dubai Crude Oil	67.4	74.3	(6.9)	59.3	8.1	69.4	53.2	16.2
Unleaded Gasoline (ULG95)	72.1	85.8	(13.7)	73.7	(1.6)	79.9	68.0	11.9
Jet/Kero	83.1	88.8	(5.7)	72.6	10.5	84.8	65.3	19.5
Gas Oil (GO)	82.2	88.7	(6.5)	72.4	9.8	84.1	65.7	18.4
Fuel Oil (HSFO)	68.8	71.7	(2.9)	56.3	12.5	66.8	50.8	16.0
Spread over Dubai (US$/bbl)	**Q4/18**	**Q3/18**	**+/(-)**	**Q4/17**	**+/(-)**	**2018**	**2017**	**+/(-)**
Unleaded Gasoline (ULG95)	4.7	11.6	(6.9)	14.4	(9.7)	10.5	14.9	(4.4)
Jet/Kero	15.6	14.5	1.1	13.3	2.3	15.4	12.1	3.3
Gas Oil (GO)	14.8	14.4	0.4	13.0	1.8	14.6	12.5	2.1
Fuel Oil (HSFO)	1.4	(2.5)	3.9	(3.1)	4.5	(2.6)	(2.3)	(0.3)

Remark Closing Dubai crude oil at the end of Q4/18, Q3/18, and Q4/17 were calculated from average Dubai price of December 2018, September 2018, and December 2017, respectively. The prices were 57.3 US$/bbl, 77.2 US$/bbl, and 61.6 US$/bbl, respectively.

Graph 1: Prices of Crude Oil and Petroleum Product

Crude oil price in Q4/18 declined from Q3/18 as it was pressured by surplus supply after OPEC and non-OPEC producers increased their production by more than 1.0 million barrels per day. This is in order to compensate Venezuelan and Iranian crude oil production that were expected to drop due to the US sanction in November 2018. However, the U.S. granted exception to 8 importing countries to continue importing oil from Iran beyond the sanction deadline by 6 months, which resulted in a drop in Iranian crude oil production less than predicted. Moreover, a rise in U.S. crude oil production to hit the highest record at 11.7 million barrels per day, after oil rig count in the U.S. increased by more than 18% from the same period last year, caused crude oil supply to be excess. Additionally, crude oil market was pressured by a slowdown in global economy which led investors to reduce their investment in risky assets. Nevertheless, in December 2018, crude oil price was supported by an agreement of OPEC and non-OPEC producers to cut their production by more than 1.2 million barrels per day during the first half of 2019 in order to stabilize crude oil price and reduce excess supply. Likewise, Canada will cut its production around 0.1-0.3 million barrels per day in 2019 after its crude oil inventory remained high following a consecutive rise in crude oil production while it had limitation of crude oil export. Besides, the ongoing US-China tension released as both countries decided to delay tariff hike from January 2019 to March 2019.

Crude oil price in 2018 significantly increased from 2017 because OPEC and non-OPEC continuously cut their production since the beginning of 2017 to mid 2018. Moreover, Venezuelan crude oil production in 2018 dropped more than 0.5 million barrels per day from previous year due to its economic crisis. Iranian crude oil production also declined due to the US sanction. Meanwhile, oil demand growth remained healthy as it rose by 1.3 million barrels per day resulting in OECD oil stocks to be lower than 5 years average level.

Gasoline spread over Dubai in Q4/18 declined from Q3/18 and Q4/17 as well as the spread in 2018 that was lower than 2017 as its supply was surplus, which resulted in global gasoline inventory to be above a 5-year average level after global refineries had ramped up their run rates in order to response to heating oil demand during winter. Moreover, gasoline demand during winter was lower than previous quarter due to less driving demand. However, Jet/kero and gas oil spreads over Dubai in Q4/18 increased, compared with prior quarter, as most refineries closed for annual maintenance which led to lowered supply. The spreads also supported by higher heating oil demand during winter and travelling demand during year end. Besides, Jet/kero and gas oil spreads over Dubai in 2018 rose from the year ealier thanks to a below 5-year average level of Jet/kero and gas oil inventory. Fuel oil spread over Dubai in Q4/18 increased from Q3/18 as it was supported by less western and Iranian supply entering into Asian market. This is because of high shipping cost and the sanction on Iran. On the other hand, fuel oil spread over Dubai in 2018 slightly decreased from 2017 owing to high supply and softened demand during the first half of this year which resulted from Pakistani ban on fuel oil import.

Table 4: Financial Result of Refinery Business

	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Throughput[1] (%)	115%	115%	-	112%	3%	113%	112%	1%
Intake (kbd)	317	315	2	309	8	310	309	1
Gross Refining Margin (GRM) (US$/bbl)								
: excluding stock gain/(loss)	3.9	5.0	(1.1)	6.0	(2.1)	4.7	6.7	(2.0)
: including stock gain/(loss)	(3.6)	6.2	(9.8)	9.6	(13.2)	4.3	7.6	(3.3)

Remark (1) Throughput (%) calculated based on 275,000 barrels per day

In Q4/18, Thaioil refinery had a reduction in GRM excluding stock gain/(loss) and had stock loss while it booked stock gain in previous quarter. The refinery then reported loss on EBITDA and net loss.

For the year 2018, Thaioil refinery had a drop in GRM excluding stock gain/(loss) and realized stock loss. Together with lowered net foreign exchange gain, the refinery then recorded a significant drop in net profit from 2017.

In Q4/18, Thaioil refinery had a throughput of 115% and had total product sales volume increased by 4%. It had petroleum product sales proportion of 87% for domestic, 8% for Indochina and the rest 5% for export. Thaioil refinery had sales revenue of Baht 102,885 million, declined by Baht 4,085 million following lower average selling prices. It also recorded GRM excluding stock gain/(loss) of 3.9 US$/bbl, decreased by 1.1 US$/bbl from prior quarter, mainly due to the plunge in gasoline spread from surplus supply. Besides, closing crude oil price at the end of Q4/18 which considerably dropped from the end of Q3/18 caused the refinery to post stock loss of 7.5 US$/bbl or Baht 7,211 million, compared with stock gain of Baht 1,169 million in Q3/18. The refinery also booked a write-down to NRV on petroleum inventory of Baht 1,314 million. Moreover, the refinery realized net hedging loss of Baht 412 million, soared by Baht 400 million, which mostly came from time spread hedge of petroleum products. Accordingly, in this quarter, Thaioil refinery posted loss on EBITDA of Baht 6,008 million. Additionally, it had net foreign exchange loss of Baht 278 million while recorded net foreign exchange gain of Baht 496 million in last quarter. Offsetting with depreciation, finance costs and a reversal of income tax expense, Thaioil refinery reported net loss of Baht 6,087 million, compared with net profit of Baht 2,948 million in Q3/18.

Compared with Q4/17, Thaioil refinery had a 3% rise in throughput and had sales revenue surged by Baht 8,916 million owing to increases in average selling prices and total product sales volume. Unfortunately, the refinery recorded GRM excluding stock gain/(loss) plunged by 2.1 US$/bbl mainly owing to the considerable reduction in gasoline spread. Moreover, it had stock loss and the write-down to NRV on petroleum inventory totaling Baht 8,524 million, compared with stock gain and a reversal of write-down to NRV on petroleum inventory totaling Baht 3,477 million in Q4/17. Hence, in Q4/18, Thaioil refinery had a significant drop in EBITDA by Baht 13,981 million which included higher net hedging loss by Baht 345 million. Additionally, in Q4/18, the refinery had net foreign exchange loss of Baht 278 million, compared with net foreign exchange gain of Baht 641 million in the same period prior year. Combining with increased finance costs and decreased income tax expenses, Thaioil refinery then posted net profit less than Q4/17 by Baht 11,953 million.

Comparing 2018 with 2017, Thaioil refinery had a slight increase in throughput to 113%. It had petroleum product sales proportion of 86% for domestic, 9% for Indochina and the rest 5% for export. The refinery had sales revenue of Baht 405,130 million, hiked by Baht 55,301 million as a result of higher average selling prices tracking crude oil price and higher total product sales volume. However, the refinery posted GRM excluding stock gain/(loss) of 4.7 US$/bbl, dipped by 2.0 US$/bbl because of the significant rises in crude oil price and crude premium together with the decrease in gasoline spread despite rises in jet/kero and gas oil spreads. Unfortunately, the significant dip in crude oil price during year end caused Thaioil refinery to have stock loss of 0.4 US$/bbl or Baht 1,315 million while it posted stock gain of Baht 3,343 million last year. Besides, with a Baht 109 million higher net hedging loss to Baht 237 million, the refinery recorded EBITDA of Baht 10,050 million, reduced by Baht 14,458 million. The refinery also had net foreign exchange gain of Baht 430 million, decreased by Baht 2,452 million. Offsetting with depreciation, finance costs and income tax expense, Thaioil refinery earned net profit of Baht 3,983 million, plunged by Baht 13,631 million from 2017 (including dividend income in this year, Thaioil refinery had net profit of Baht 8,240 million).

2.2 Market condition and Financial result of Aromatics Business

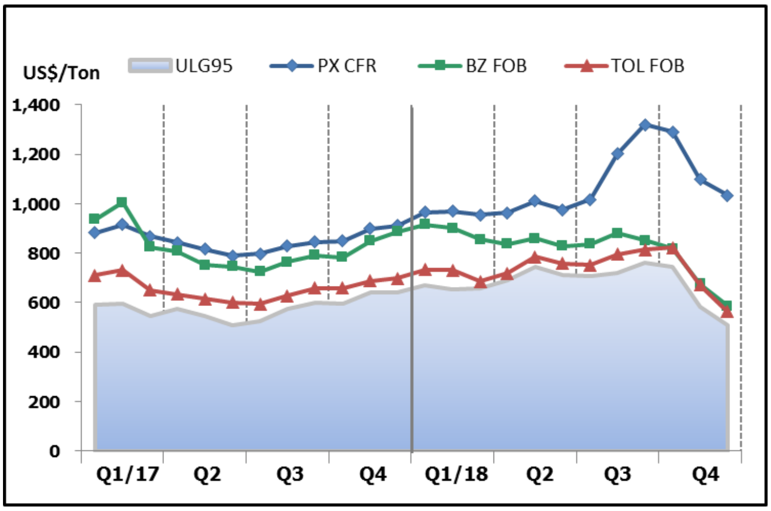
Table 5: Average Prices and Spreads of Key Aromatics Products

Average Price (US$/Ton)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Paraxylene (PX)[1]	1,141	1,180	(39)	887	254	1,067	854	213
Benzene (BZ)[2]	694	856	(162)	839	(145)	821	823	(2)
Toluene (TL)[2]	686	788	(102)	681	5	736	656	80
Spread over ULG95 (US$/Ton)	**Q4/18**	**Q3/18**	**+/(-)**	**Q4/17**	**+/(-)**	**2018**	**2017**	**+/(-)**
Paraxylene (PX)	528	451	77	260	268	388	276	112
Benzene (BZ)	81	126	(45)	213	(132)	141	245	(104)
Toluene (TL)	73	58	15	54	19	57	77	(20)

Remark (1) Based on CFR Taiwan price

(2) Based on FOB Korea price

Graph 2: Price of Aromatics and ULG95



In Q4/18, PX price softened from Q3/18 tracking weakened crude oil price during the end of the year due to oversupply. However, the price was still higher than Q4/17. PX spread over ULG95 in Q4/18 improved from Q3/18 and Q4/17. This was due to (1) lower ULG95 price, (2) healthy PX demand supported by polyester demand for clothing production which continuously grew more than expected, and (3) tightened supply since Q3/18 although the new aromatics plant in Saudi Arabia with PX capacity of 1.3 million tons per annum and in Vietnam with PX capacity 700,000 tons per annum were able to operate more smoothly.

PX price and its spread over ULG95 in 2018 increased from 2017. This was attributable to (1) a considerable rise in crude oil price, (2) an improvement in PX demand after China banned on plastic waste imports for recycling starting from 2018, therefore, plastic producers needed more PX to substitute the recycled plastic, and (3) a shortage of PX supply since Q3/18 after the new aromatics plants in Saudi Arabia and in Vietnam could not fully operate due to technical issues. Therefore, PX global demand was estimated to grow by 4.0 million tons per annum whereas PX global supply was expected to increase only by 2.2 million tons per annum. From the aforementioned factors supported PX market to improve in the second half of 2018.

BZ price and its spread over ULG95 in Q4/18 significantly decreased from Q3/18 and Q4/17 owing to a drop in crude oil price and oversupply in Asia after aromatics producers ramped up their PX production in order to make profit from healthy PX spread since Q3/18 which resulted in an increase in BZ volume as well. This caused regional supply to be more than seasonal downstream demand and plastic demand for Christmas and New Year gifts production. However, BZ supply from the new aromatics plants in Saudi Arabia and in Vietnam was lower than anticipated and Chinese inventory level decreased from Q3/18 but it was still higher than previous-3-year average by 1.5 times.

BZ price and its spread over ULG95 in 2018 decreased from 2017 due to softened downstream demand for plastic production and styrene monomer, especially in the second half of 2018, as a consequence of the US-China trade war. In addition, aromatics plants increased their PX production to compensate the lack of supply from the aromatics plants in Saudi Arabia and Vietnam which resulted in an excess of BZ volume in the market. Besides, Chinese import demand was softened because of high inventory level leading to substantially weakened BZ market since Q3/18.

TL price in Q4/18 was lower than Q3/18 following weakened crude oil price, but the price was higher than Q4/17. TL spread over ULG95 slightly climbed from Q3/18 and Q4/17 because ULG95 price decreased more than TL price. In addition, TL demand was supported by the demand for PX production in order to make profit from healthy PX margin. However, weakened gasoline market and the end of driving season resulted in softened TL demand for octane booster in gasoline blending.

TL price in 2018 increased from 2017 tracking higher crude oil price. However, a concern over an uncertainty of mixed aromatics consumption tax in China at the beginning of 2018 caused TL spread over ULG95 weakened from 2017. Besides, TL demand for an octane booster for gasoline blending became lower following softened gasoline market. However, TL spread over ULG95 did not considerable decreased thanks to the demand for PX production in the second half of 2018.

Table 6: Financial Result of TPX

	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Aromatics Production Rate (1) (%)	94%	89%	5%	82%	12%	89%	83%	6%
Aromatics Production (kTon)	198	187	11	174	24	745	694	51
Product-to-feed Margin(2) (US$/Ton)	151	129	22	93	58	121	99	22

Remark (1) Based on a nameplate capacity of 838,000 Tons/year (527,000 tons of paraxylene per year, 259,000 tons of benzene per year and 52,000 tons of mixed xylene per year)

(2) Calculated from gross margin divided by feedstock volume (Ton)

In Q4/18, TPX had higher aromatics production rate. Besides, PX spread over ULG95 considerably increased thanks to continuously tight supply since previous quarter and healthy polyester demand. Then, product-to-feed margin significantly improved and led TPX to have higher net profit than Q3/18.

In 2018, TPX had higher sales revenue tracking crude oil price and an increase in aromatics sales volume, compared with previous year. Besides, product-to-feed margin increased following higher PX spread over ULG95 although BZ spread over ULG95 was pressured by oversupply. Then, TPX had net profit higher than 2017.

Compared Q4/18 with Q3/18, TPX had aromatics production rate of 94% and sales revenue of Baht 12,452 million, dropped by Baht 1,159 million due to declines in product selling prices tracking crude oil price. Besides, PX spread over ULG95 increased continuously from previous quarter thanks to a decrease in ULG95 price and healthy polyester demand. Therefore, product-to-feed margin increased to 151 US$/Ton. Including net hedging loss from PX spread over ULG95 of Baht 418 million, TPX then posted EBITDA of Baht 1,412 million. However, TPX had net foreign exchange gain of Baht 33 million in Q4/18, compared with net foreign exchange loss of Baht 14 million in Q3/18. Offsetting with depreciation, finance costs, and income tax expense, TPX reported net profit of Baht 853 million, improved by Baht 34 million from Q3/18.

Compared with Q4/17, TPX had sales revenue higher by 1,325 million, supported by rises in total sales volume and PX price. Besides, product-to-feed margin jumped by 58 US$/Ton due to a considerable increase in PX spread over ULG95. Therefore, TPX posted EBITDA improved by Baht 344 million. Additionally, TPX had lower finance cost by Baht 23 million and posted net foreign exchange gain of Baht 33 million, compared with net foreign exchange loss of Baht 7 million in Q4/17. Offsetting with depreciation and income tax expense, TPX reported net profit surged by Baht 354 million from Q4/17.

Compared 2018 with 2017, TPX had sales revenue of Baht 48,743 million, climbed by Baht 5,135 million mainly supported by rises in product selling prices following crude oil price and aromatics sales volume. TPX had product-to-feed margin of 121 US$/Ton increased by 22 US$/Ton from stronger PX spread over ULG95 due to tightened supply and healthy demand from plastic and polyester production. Including net hedging loss from PX spread over ULG95 of Baht 546 million, TPX posted EBITDA of Baht 4,777 million, increased by Baht 27 million. In addition, TPX had higher amortization of absorbent by Baht 241 million due to a change in estimated useful life. However, TPX had net foreign exchange gain of Baht 93 million, compared with net foreign exchange loss of Baht 29 million in 2017. Offsetting with depreciation, finance costs and income tax expense, TPX reported net profit of Baht 2,664 million, increased by Baht 54 million from prior year.

In Q4/18, aromatics group (TPX holds 75% shares of LABIX) had consolidated sales revenue of Baht 17,290 million, consolidated EBITDA of Baht 1,545 million and consolidated net profit of Baht 747 million. For 2018, aromatics group had consolidated sales revenue of Baht 66,701 million, consolidated EBITDA of Baht 5,486 million and consolidated net profit of Baht 2,530 million.

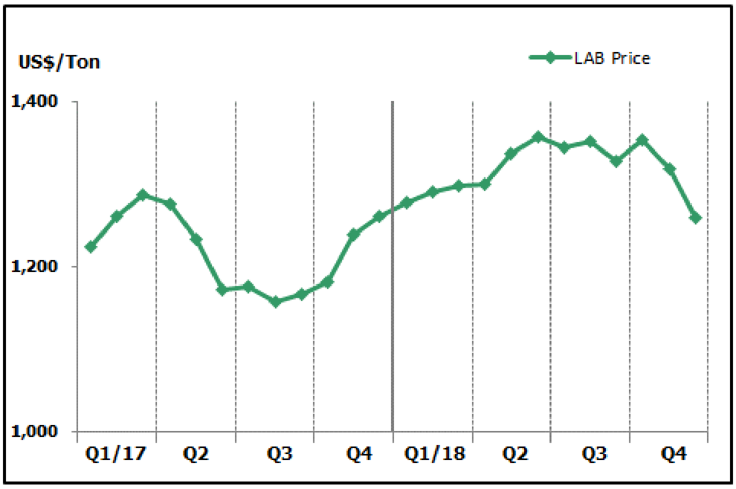
2.3 Market Condition and Financial Result of an Intermediate for the Production of Surfactants Business

Table 7: Average Price of LAB

Average Price (US$/Ton)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Linear Alkylbenzene (LAB)[1]	1,310	1,340	(30)	1,226	84	1,317	1,219	98

Remark (1) Based on ICIS price

Graph 3: Price of LAB



LAB price in Q4/18 decreased from Q3/18 following lower feedstock prices tracking crude oil price. Moreover, during year end, LAB buyers planned to maintain low inventory level resulting in thin LAB trading activities. Furthermore, significant depreciation in Asian currencies, especially Indian rupee which depreciated by 2.9 percent from prior quarter, after the Federal Reserve had raised its funds rate pressured regional LAB import demand. However, LAB price was supported by a decline in regional supply thanks to LAB plant maintenance shutdowns in China, Japan, and Taiwan in October, November, and December, respectively. Compared with Q4/17, LAB price in Q4/18 went up following higher feedstock prices. In 2018, LAB price was also better than 2017 tracking higher crude oil price.

Table 8: LAB Production

	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
LAB Production Rate [1] (%)	106%	103%	3%	105%	1%	104%	100%	4%
LAB Production (kTon)	32	31	1	32	-	124	120	4

Remark (1) Based on nameplate capacity of 120,000 Tons/year

In Q4/18, LABIX had a rise in sales revenue from Q3/18 following higher LAB sales volume. Nevertheless, dips in gross profit margin and net foreign exchange gain led LABIX to have net loss of Baht 141 million, compared with net profit of Baht 24 million in previous quarter.

In Q4/18, LABIX Co., Ltd. (LABIX) had sales revenue of Baht 5,129 million, increased from Q3/18 by Baht 450 million due to a rise in LAB sales volume by approximately 25%. However, weakened LAB import demand in the region pressured LAB gross profit margin leading to a reduction in EBITDA of Baht 50 million to Baht 132 million. In addition, LABIX had net foreign exchange gain of Baht 2 million declined by Baht 74 million from previous quarter. Offsetting with depreciation and finance costs, LABIX reported net loss of Baht 141 million, compared with net profit of Baht 24 million in prior quarter.

Compared with Q4/17, LABIX reported a rise in sales revenue of Baht 1,219 million following a hike in LAB price tracking feedstock prices and an increase in LAB sales volume by approximately 17%. Nevertheless, softened regional LAB import demand pressured LAB gross profit margin resulting in a decline in EBITDA of Baht 41 million. Furthermore, in Q4/18, LABIX had a dip in net foreign exchange gain of Baht 55 million from Q4/17. Offsetting with depreciation and finance costs, LABIX recorded higher net loss by Baht 129 million from the same period of prior year.

For the year 2018, LABIX had net loss of Baht 178 million, compared with net profit of Baht 161 million in 2017. This is mainly because of a delay in LAB price compared with rises in feedstock prices and a drop in net foreign exchange gain.

Comparing 2018 with 2017, LABIX had sales revenue of Baht 19,117 million, surged by Baht 3,708 million following a rise in LAB price tracking crude oil price and a 13% increase in LAB sales volume. However, surges in feedstock prices were faster than an increase in LAB price pressuring on LAB gross profit margin. LABIX, therefore, had a reduction in EBITDA of Baht 68 million to Baht 709 million. Besides, LABIX had net foreign exchange gain of Baht 67 million, which dropped by Baht 295 million from previous year. Offsetting with depreciation and finance costs, LABIX posted net loss of Baht 178 million, compared with net profit of Baht 161 million in 2017.

2.4 Market Condition and Financial Result of Lube Base Oil Business

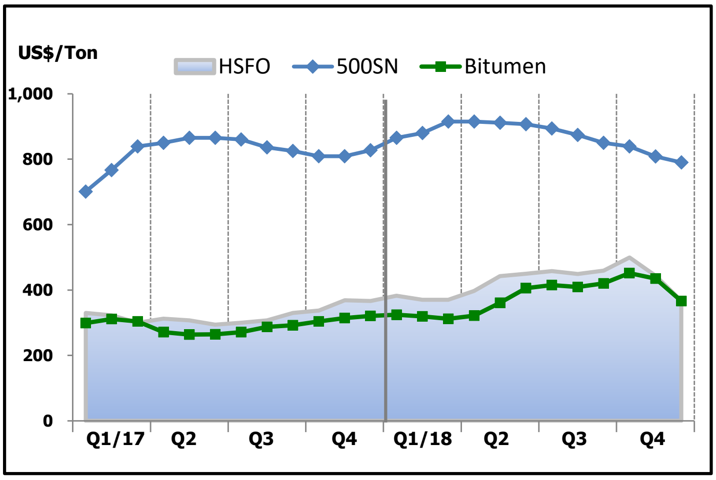
Table 9: Average Prices and Spreads of Key Lube Base Oil Products

Average Prices (US$/Ton)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
500SN[(1)]	812	873	(61)	815	(3)	871	821	50
Bitumen[(2)]	417	415	2	313	104	378	292	86
Spread over HSFO (US$/Ton)	**Q4/18**	**Q3/18**	**+/(-)**	**Q4/17**	**+/(-)**	**2018**	**2017**	**+/(-)**
500SN	376	417	(41)	458	(82)	447	498	(51)
Bitumen	(19)	(41)	22	(45)	26	(46)	(31)	(15)

Remark (1) Based on Ex-tank Singapore price

(2) Based on FOB Singapore price

Graph 4: Prices of Lube Base Oil (500SN), Bitumen and Fuel Oil



Lube base oil price (500SN) and its spread over fuel oil in Q4/18 weakened from Q3/18 and Q4/17 due to increased supply in Asia owing to (1) a resumption of operation of base oil plants in Asia after shutdowns for maintenance (2) increased lube base oil Group II and III supply in China, with total capacity of 650,000 tons per annum, and (3) decreased high-viscosity lube base oil demand (500SN) as lube base oil for winter required higher low-viscosity lube base oil.

Lube base oil price (500SN) in 2018 improved from 2017 tracking higher crude oil and fuel oil prices. However, its spread over fuel oil dropped from 2017. This was pressured by risen supply particularly in Asia due to (1) a startup of new base oil plant in Saudi Arabia with capacity of 890,000 tons per annum (2) a resumption of base oil plant is Japan, with capacity of 360,000 tons per annum after a shutdown for maintenance due to a fire accident since January 2017, and (3) increases in lube base oil Group II and III supply in China. Moreover, total maintenance shutdowns of lube base oil plants in 2018, which had capacity losses of 1.48 million tons per annum, were less than those in 2017, which had total capacity losses of 2.17 million tons per annum. This resulted in excess supply which pressured on lube base oil market. Furthermore, global demand growth of 0.3% in 2018 decreased from that of 0.5% in 2017 due to rising crude oil price which resulted in a decline in lube base oil demand tracking lower driving activities.

Bitumen price and its spread over fuel oil in Q4/18 improved from Q3/18 and Q4/17 due to healthy demand in the region after rainy season along with an expedition to construct and repair roads before the end of 2018. In addition, there were bitumen demand for road repairing after an earthquake in Indonesia in October. However, demand from North China declined during the end of quarter since snow obstructed the road construction.

Bitumen price in 2018 rose from 2017 tracking higher crude oil price. Besides, bitumen supply in Malaysia was dipped after a refinery's crude oil tanks were gutted by fire resulting in a reduction in bitumen production. Nonetheless, bitumen spread over fuel oil in 2018 decreased from 2017 because the regional demand grew slightly tracking an economic slowdown in the region, especially in China. Moreover, variable weather during the year particularly long-lasting and heavy storm in Indonesia lowered bitumen demand for road construction, and bitumen inventory in each country was still at high level.

Table 10: Financial Result of TLB

	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Base Oil Production Rate (1) (%)	86%	72%	14%	88%	(2%)	84%	88%	(4%)
Base Oil Production (kTon)	58	49	9	59	(1)	225	236	(11)
Product-to-feed Margin(2) (US$/Ton)	73	65	8	102	(29)	84	112	(28)

Remark (1) Based on nameplate capacity of 267,015 Tons/year

(2) Calculated from gross margin divided by feedstock volume (Ton)

In Q4/18, TLB had increased sales revenue and slightly increased product-to-feed margin due to rising bitumen spread over fuel oil. However, net profit marginally declined owing to higher electricity and fuel costs and higher operating cost.

For 2018, TLB had lowered performance owing to softened base oil and bitumen spreads over fuel oil which was pressured by greater lube base oil supply and weaker bitumen demand. Moreover, feedstock price, electricity cost, and fuel cost uplifted following natural gas price.

In Q4/18, Thai Lube Base Plc. (TLB) had base oil production rate of 86% increased by 14% as quantity and quality of feedstock imported was on specification in this quarter. Besides, it had sales revenue of Baht 5,941 million, rose by Baht 934 million thanks to a 22% increase in total sales volume particularly lube base oil and by-products. Moreover, an improvement in bitumen spread was supported by healthy regional demand despite pressure on lube base oil spread from additional supply. This led to product-to-feed margin of 73 US$/Ton, increased by 8 US$/Ton from previous quarter. However, higher electricity and fuel costs tracking natural gas price and rising operating cost in the last quarter of the year as a normal of business operation resulting in TLB to have EBITDA of Baht 209 million. Offsetting with depreciation and income tax expense, TLB posted net profit of Baht 145 million, decreased by Baht 13 million from Q3/18.

Compared with Q4/17, TLB had a slight drop in base oil production and had total sales revenue increased by Baht 1,410 million owing to rises in total sales volume and product selling prices tracking crude oil price. Nevertheless, base oil spread over fuel oil considerably declined due to rising supply despite an improvement in bitumen spread over fuel oil. Therefore, TLB posted reduced product-to-feed margin of 29 US$/Ton and decreased EBITDA of Baht 356 million. However, TLB had lower depreciation by Baht 82 million since most of the assets are fully depreciated in Q4/17. Offsetting with depreciation and income tax expense, TLB posted net profit declined by Baht 220 million from the same period of previous year.

Compared 2018 with 2017, TLB had a 4% decrease in base oil production and had sales revenue of Baht 20,959 million, boosted by Baht 2,297 million because of higher total sale volume and higher product selling prices tracking crude oil price. However, product-to-feed margin decreased by 28 US$/Ton to 84 US$/Ton due to (1) weakened base oil and bitumen spreads following greater lube base oil supply and weaker bitumen demand and (2) higher fuel oil price which is feedstock. Together with higher electricity and fuel costs tracking natural gas price, TLB then had EBITDA of Baht 1,447 million, dropped by Baht

1,247 million. However, TLB had a reduction in depreciation of Baht 323 million since most of the assets are fully depreciated in Q4/17. Offsetting with depreciation and income tax expense, TLB posted net profit of Baht 1,079 million, dipped by Baht 733 million from 2017.

2.5 Financial Result of Power Generation Business

Table 11: Sales Volume from Power Generation Business

TP + TOP SPP [1]	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Electricity Dispatched (GWh)	632	647	(15)	619	13	2,544	2,504	40
Steam Exported (kton)	1,079	1,129[2]	(50)	1,030	49	4,333	4,233	100

Remark (1) 100% of electricity dispatched and steam exported

(2) Retrospective adjustment of steam exported

In Q4/18, TP had a rise in sales revenue thanks to higher average selling prices of electricity and steam tracking natural gas price. This resulted in a slight increase in net profit. TOP SPP booked lower sales revenue following decreases in electricity and steam sales volume due to a planned maintenance shutdown resulting in a dip in net profit.

Compared 2018 with 2017, TP and TOP SPP booked increases in sales revenues following rises in electricity and steam selling prices and sales volume. Nevertheless, a considerable increase in fuel oil price led TP and TOP SPP to report lower net profit than last year.

Comparing Q4/18 with Q3/18, Thaioil Power Co., Ltd. (TP) had sales revenue of Baht 1,188 million, or a Baht 30 million increased thanks to higher average selling prices of electricity and steam tracking higher natural gas price. However, the electricity and steam sales volume declined slightly following customer demand. Therefore, TP had EBITDA of Baht 195 million, decreased by Baht 8 million. Offsetting with depreciation, finance costs and income tax expense, in Q4/18, TP recorded net profit, excluding share of profit from the investment in Global Power Synergy Public Co., Ltd. (GPSC), of Baht 111 million increased by Baht 3 million. TOP SPP Co., Ltd. (TOP SPP), earned Baht 1,903 million in sales revenue decreased by Baht 1 million following lower electricity and steam sales volume. Moreover, a planned maintenance shutdown in this quarter and higher operating expenses as a normal of business operation in last quarter of the year led TOP SPP to report EBITDA of Baht 433 million or a decrease of Baht 47 million from prior quarter. Offsetting with depreciation, finance costs and income tax expense, TOP SPP recorded net profit of Baht 217 million, decreased by Baht 51 million from prior quarter.

Compared with Q4/17, TP had a rise in sales revenue of Baht 182 million thanks to higher average selling prices of electricity and steam following higher natural gas price together with higher electricity and steam sales volume from full operation. However, an increase in production cost from higher fuel oil price (main feedstock) resulted in TP to have a slight decrease in EBITDA. Offsetting with depreciation, finance costs and income tax expense, TP posted a reduction in net profit, excluding share of profit from the investment in GPSC, of Baht 6 million. For TOP SPP, sales revenue increased by Baht 274 million following higher average selling prices of electricity and steam from the hike in natural gas price, and higher electricity and steam sales volume tracking customer demand. Nevertheless, a rise in fuel oil price (main feedstock). TOP SPP had lower EBITDA by Baht 44 million. Offsetting with depreciation, finance costs and income tax expense, TOP SPP recorded a decrease in net profit of Baht 61 million from the same period of previous year.

Compared 2018 with 2017, TP reported sales revenue of Baht 4,409 million, uplifted by Baht 259 million thanks to growths in average selling prices of electricity and steam following natural gas price and higher electricity sales volume tracking customer demand. However, the increased production cost from higher fuel oil price resulted in TP to report EBITDA of Baht 766 million or a dip of Baht 72 million. Offsetting with depreciation, finance costs and income tax expense, TP recorded net profit, excluding share of profit from the investment in GPSC, of Baht 403 million which was decreased by Baht 98 million. TOP SPP had an increase in sales revenue of Baht 546 million to Baht 7,325 million from higher average selling prices of electricity and steam following the rise in natural gas price together with higher electricity and steam sales volume tracking customer demand. However, the significantly increase in fuel oil price led TOP SPP to report EBITDA of Baht 1,886 million or lower by Baht 108 million. Offsetting with depreciation, finance costs and income tax expense, TOP SPP earned net profit of Baht 1,069 million, dropped by Baht 131 million. Besides, Thaioil and Subsidiaries recognized, without non-controlling interest, share of profit from the investment in GPSC of Baht 816 million, increased by Baht 45 million from 2017. Thaioil and Subsidiaries, therefore, recognized net profit from power generation business of Baht 2,183 million reduced by Baht 158 million from last year.

2.6 Financial Result of Solvent Manufacturing and Distribution Business

Table 12: Financial Result of Thaioil Solvent

	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Solvent Utilization Rate[1] (%)	104%	114%	(10%)	126%	(22%)	112%	123%	(11%)
Solvent Production[1] (kTon)	37	40	(3)	44	(7)	158	173	(15)
Solvent Sales Volume (kTon)	86	86	-	94	(8)	340	351	(11)

Remark (1) Produced solvent by Sak Chaisidhi Co., Ltd. (TOP Solvent Co., Ltd. holds 80.52% shares)

In Q4/18, compared with Q3/18, although Thaioil Solvent's sales revenue increased from higher average unit selling price, EBITDA was dropped from previous quarter due to softened gross profit margin leading to report net loss.

Comparing 2018 with 2017, despite an improvement in sales revenue following an increase in average unit selling price, softened gross profit margin from higher competition resulted in falls in EBITDA and net profit from last year.

In Q4/18, compared with Q3/18, Thaioil Solvent (Solvent Manufacturing and Distribution Business) had a 104% solvent utilization rate, reduced by 10% mainly because Sak Chaisidhi Co., Ltd had lower production and sales volume in some solvent product groups. However, Thaioil Solvent reported stable sales volume from Q3/18 while solvent average selling price per unit was slightly better. This helped Thaioil Solvent to record sales revenue of Baht 2,617 million, increased by Baht 34 million. Nevertheless, gross profit margin was narrower than last quarter from higher competition as a result of volatility and a downtrend of global crude oil price. Moreover, in Q4/18, Thaioil Solvent recorded a write-down to NRV on inventory of Baht 21 million. Therefore, Thaioil Solvent reported EBITDA of Baht 58 million, dropped by Baht 43 million. However, Thaioil Solvent had net foreign exchange gain of Baht 4 million in Q4/18, compared with net foreign exchange loss of Baht 7 million in Q3/18. Offsetting with depreciation of Baht 50 million, finance costs of Baht 20 million, and income tax expense of Baht 7 million, Thaioil Solvent posted net loss of Baht 14 million in Q4/18, compared with net profit of Baht 16 million in last quarter.

In Q4/18, compared with Q4/17, Thaioil Solvent had solvent utilization rate decreased by 22% and solvent sales volume dropped by approximately 8,000 tons since Sak Chaisidhi Co., Ltd. minimized by-product production volume. Furthermore, solvent export volume was lower mainly because of shortages of some solvent product groups. However, higher solvent average selling price per unit tracking higher average global crude oil price supported Thaioil Solvent to have better sales revenue by Baht 104 million. Nevertheless, higher competition in Q4/18 from oversupply and the decrease in global crude oil price resulted in the dip in gross profit margin. Moreover, Thaioil Solvent reported the write-down to NRV on inventory as mentioned leading to record lower EBITDA by Baht 124 million. Nevertheless, Thaioil Solvent had net foreign exchange gain of Baht 4 million in Q4/18, compared with net foreign exchange loss of Baht 11 million in Q4/17. Offsetting with depreciation, finance costs, and income tax expense, Thaioil

Solvent then earned net loss of Baht 14 million in Q4/18, compared with net profit of Baht 84 million in the same period of a year earlier.

Comparing 2018 with 2017, Thaioil Solvent had a 112% solvent utilization rate, dropped by 11% and had lower solvent sales volume by approximately 11,000 tons mainly because of lower by-product production and sales volume as well as lower export volume of some solvent product groups as mentioned. However, solvent average selling price per unit was better tracking higher average global crude oil price during 2018. This resulted in a rise in sales revenue of Baht 810 million to Baht 9,992 million. By contrast, softened gross profit margin from higher competition as a result of oversupply and the fluctuation of global crude oil price particularly in late 2018 caused Thaioil Solvent to post the write-down to NRV on inventory of Baht 21 million. As a result, Thaioil Solvent earned EBITDA of Baht 437 million, reduced by Baht 253 million from 2017. Offsetting with depreciation, finance costs and income tax expense, Thaioil Solvent reported net profit of Baht 123 million, fallen by Baht 186 million from last year.

2.7 Financial Result of Crude, Petroleum and Petrochemical Marine Transportation and Storage, Ship Management Service and Crew & Utility Boat Service Business

Table 13: Utilization Rate of TM

Utilization Rate (%)	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018[1]	2017	+/(-)
Petroleum & Petrochemical Product Vessel : TM	95%	95%	-	99%	(4%)	96%	96%	-
Crude Vessel: TOP-NYK	100%	100%	-	100%	-	100%	88%	12%
Crew and Utility Boat: TMS	48%	57%[2]	(9%)	64%	(16%)	56%	50%	6%

Remark (1) Thaioil Marine Co., Ltd. acquired shares in TOP Maritime Service Co., Ltd (TMS). The transaction consisted of purchasing 45% registered shares at Baht 1 and loan repayment of Baht 81 million which TMS borrowed from the seller. The transaction was completed on 21 June 2018.

(2) Retrospective adjustment of utilization rate.

In Q4/18, TM had lower consolidated revenue than Q3/18 because of a decrease in utilization rate of TMS crew boats and drydocks of some TM fleets. Furthermore, TMS had additional finance costs from prepayment fee. Therefore, TM recorded consolidated net loss of.

In Q4/18, compared with Q3/18, Thaioil Marine Co., Ltd. (TM) reported services revenue, including revenues from TMS (TM holds 100% shares)[1], of Baht 151 million, decreased by Baht 6 million because of lowered utilization rate of TMS following a slowdown in Exploration and Production (E&P) industry causing some TMS crew boats to be unutilized together with drydocks of some TM fleets. Including higher vessel operating and administrative expenses, TM reported loss on EBITDA of Baht 6 million. Besides, TM had share of loss from the investment in TOP-NYK MarineOne Pte. Ltd. (TOP-NYK) of Baht 5 million from lower chartering rates following the slowdown in the current market conditions. However, TM had shares of profits totaling Baht 24 million, an increase of Baht 1 million, from the investments in TOP-NTL Pte. Ltd. (TOP-NTL), TOP-NTL Shipping Trust, TOP Nautical Star Co., Ltd. (TOP Nautical Star), and T.I.M. Ship Management (TIM), which were mainly attributable to unrealized net foreign exchange gain from US$-denominated borrowings. Offsetting with depreciation, finance costs which were risen by TMS's prepayment fee, and income tax expense, TM reported consolidated net loss of Baht 65 million, lifted by Baht 63 million from previous quarter.

Compared Q4/18 with Q4/17, TM had services revenue decreased by Baht 56 million mainly because there was asset disposal in February 2018 and TMS crew boats had lowered chartering rates due to the slowdown in E&P industry. Consequently, TM reported loss on EBITDA of Baht 6 million compared with

For the year 2018, TM had a drop in consolidated services revenue resulting from declines in fleets and a continuous slowdown in E&P industry. As a result, TM recognized consolidated net loss.

EBITDA of Baht 30 million in Q4/17. Furthermore, TM had share of loss from the investment in TOP-NYK of Baht 5 million in Q4/18 compared with share of profit of Baht 20 million in Q4/17. Besides, TM reported higher shares of profits by Baht 6 million from the investments in TOP-NTL, TOP-NTL Shipping Trust, TOP Nautical Star, and TIM. Offsetting with depreciation, finance costs, and income tax expense in Q4/18, TM recorded consolidated net loss of Baht 65 million compared with consolidated net loss of Baht 538 million in Q4/17 due to recording the impairment of assets of Baht 547 million.

For the year 2018, TM booked services revenue of Baht 621 million, a dip of Baht 180 million from 2017, owing to the asset disposal in February 2018 and pressure on TMS fleets from the slowdown in E&P industry. Thus, TM reported EBITDA of Baht 78 million, dropped by Baht 75 million. Furthermore, TM booked lower share of profit from the investment in TOP-NYK by Baht 6 million while TM recorded higher shares of profits by Baht 11 million from the investments in TOP-NTL, TOP-NTL Shipping Trust, TOP Nautical Star, and TIM. Offsetting with depreciation, financial costs, and income tax expense, TM recognized consolidated net loss of Baht 44 million compared with consolidated net loss of Baht 530 million last year.

2.8 Financial Result of Ethanol Business

Table 14: Utilization Rate of TET

	Q4/18	Q3/18	+/(-)	Q4/17	+/(-)	2018	2017	+/(-)
Ethanol Utilization Rate (%)								
- Sapthip	96%	91%	5%	111%	(15%)	87%	101%	(14%)
- Ubon Bio Ethanol	98%	95%	3%	103%	(5%)	92%	98%	(6%)

In Q4/18, compared with Q3/17, TET reported a reduction in gross profit margin due to decreases in an ethanol selling price and sales volume, including high feedstock cost since the beginning of 2018. Therefore, TET posted lower EBITDA by Baht 4 million. However, TET had share of profit from the investment in Ubon Bio Ethanol Plc., increased by Baht 19 million. As a result, in Q4/18, TET posted higher net profit by Baht 17 million from previous quarter.

In comparison between Q4/18 and Q3/18, TET had consolidated sales revenue from Sapthip Co., Ltd. (TET holds 50% shares) of Baht 371 million, increased by Baht 9 million after the 7-day planned maintenance in Q3/18. However, TET posted lower gross profit margin particularly from a high average price per unit of cassava chips, main feedstock of ethanol production. The main reason stemmed from a reduction in chips supply in Thailand due to low plantation area from a slump in last year price together with pest problem in Vietnam while high cassava chips demand from China still remained. As a result, TET had EBITDA of Baht 28 million, decreased by Baht 4 million. However, TET had share of profit from the investment in Ubon Bio Ethanol Plc., rose by Baht 19 million from Q3/18 because of the reversal in selling and administrative expenses from last quarter. As a result, TET reported net profit of Baht 7 million, compared with net loss of Baht 10 million in previous quarter.

In comparison with Q4/17, TET had consolidated sales revenue from Sapthip Co., Ltd., decreased by Baht 77 million due mainly to a lower ethanol selling price according to a reduction in molasses' price. Also, the increase in price of cassava chips, as a main feedstock, resulted in higher ethanol production cost than molasses-based ethanol production, causing decreases in both Sapthip's competitiveness and ethanol sales volume. As a consequence, TET had a lower gross profit margin and reported lower EBITDA by Baht 77 million from Q4/17. Furthermore, TET had share of profit of Baht 20 million from the investment in Ubon Bio Ethanol Plc., decreased by Baht 7 million due to reductions in the ethanol selling price and

For 2018, TET posted lower gross profit margin and EBITDA because of the lower ethanol selling price and higher feedstock cost. As a result, TET had lower net profit by Baht 259 million from 2017.

sales volume. Taken as a whole, TET reported lower net profit by Baht 45 million from the same period of prior year.

For 2018, TET had consolidated sales revenue of Baht 1,477 million and EBITDA of Baht 143 million, dropped from 2017 by Baht 143 million and Baht 325 million, respectively, because of the lower average ethanol selling price per unit and sales volume than last year together with the high average feedstock cost per unit. Furthermore, TET had share of profit of Baht 14 million from the investment in Ubon Bio Ethanol Plc., reduced by Baht 52 million due to the dips in the ethanol selling price and sales volume. Therefore, TET posted net profit of Baht 4 million, plummeted by Baht 259 million from prior year.

3. Analysis of Consolidated Financial Statement

3.1 Statement of Financial Position

The financial position of Thaioil and Subsidiaries as of 31 December 2018 compared with 31 December 2017 was summarized as follows:

Table 15: Condensed Consolidated Statements of Financial Position

(Million Baht)	31 December 2018	31 December 2017	+/(-)	+/(-) %
Assets				
Cash, cash equivalents and Current investment	107,262	67,941	39,321	57.9%
Other current assets	57,481	58,270	(789)	(1.4%)
Non-current assets	103,869	101,897	1,972	1.9%
Total assets	**268,613**	**228,108**	**40,505**	**17.8%**
Liabilities				
Current liabilities	33,471	31,756	1,715	5.4%
Long-term borrowings and debentures (including current portion)	104,668	65,499	39,169	59.8%
Other non-current liabilities	4,001	3,705	296	8.0%
Total liabilities	**142,141**	**100,960**	**41,181**	**40.8%**
Equity				
Equity attributable to owners of the company	121,712	122,223	(511)	(0.4%)
Non-controlling interests	4,760	4,925	(165)	(3.4%)
Total equity	**126,472**	**127,148**	**(676)**	**(0.5%)**
Total liabilities and equity	**268,613**	**228,108**	**40,505**	**17.8%**

Total Assets

As of 31 December 2018, Thaioil and Subsidiaries had total assets of Baht 268,613 million, grew by Baht 40,505 million or 17.8% from 31 December 2017 due to the following main reasons:

- Cash, cash equivalents and current investment rose by Baht 39,321 million mainly due to cash flows from operations for the year 2018, increases in current investments, and cash receipts from debenture issuance. However, there were investments in several projects and dividends paid in April and September 2018.
- Other current assets reduced by Baht 789 million primarily due to decreases in inventories by Baht 4,102 million following a drop in average crude oil price in December 2018 from December 2017. However, trade accounts receivable rose by Baht 2,031 million tracking higher average product sales volume in December 2018 than December 2017.
- Non-current assets climbed by Baht 1,972 million because property, plant, and equipment had a net increase of Baht 1,317 million mainly from several project investments according to a business plan. Moreover, other non-current assets increased by Baht 2,850 million due mainly to up-front fee payment of Baht 2,962 million according to joint venture agreement on leasing state properties signed on 21 August 2018. However, investments in available-for-sale securities reduced by Baht 2,743 million mainly from reclassification of private funds, which have maturity date in 2019, to current investments.

Total Liabilities

As of 31 December 2018, Thaioil and Subsidiaries had total liabilities of Baht 142,141 million, increased by Baht 41,181 million or 40.8% from 31 December 2017 due to major reasons as follows:

- Current liabilities hiked by Baht 1,715 million primarily due to an increase in trade accounts payable of Baht 2,881 million since trade accounts payable which will be due in January next year became higher. Moreover, other payables rose by Baht 396 million due mainly to an increase in Oil Fuel Fund payables tracking higher excise duty rates and product sales volume in December 2018 than December 2017. Nevertheless, income tax payable dropped by Baht 3,014 million following a decrease in net profit.
- Long-term borrowings and debentures (including current portions) went up by Baht 39,169 million mainly because:

  : On 20 November 2018, TTC issued US$-denominated debentures to foreign institutional investors for the total amount of US$ 1,000 million, which fully guaranteed by Thaioil refinery. These debentures comprised of US$ 400 million with the tenor of 10 years and US$ 600 million with the tenor of 30 years.

  : TOP SPP had Baht-denominated borrowings of Baht 8,500 million in Q1/18 for inter-company loan refinancing from Thaioil refinery and the repayment schedule began in Q2/18.

  : TOP Solvent (Vietnam) LLC. (shares indirectly held by TOP Solvent Co., Ltd.) had VND-denominated borrowings which were equivalent to Baht 319 million in 2018 for Solvent Distribution Center in Vietnam project.

  : LABIX (shares indirectly held by TPX) repaid its due Baht-denominated borrowings of Baht 400 million and due Baht-denominated with cross currency swap contract borrowings of Baht 454 million.

  : TM and TMS (shares indirectly held by TM) repaid their Baht-denominated borrowings of Baht 487 million.

Table 16: Consolidated Long-term Loans

(Million Baht)	Thaioil	LABIX	TP	TOP SPP	TS	TM	TET	TTC	Total
Debentures : US$-denominated[(1)(2)]	12,509	-	-	-	-	-	-	52,057	64,565
: Baht-denominated	23,500	-	-	-	-	-	-	-	23,500
Borrowings : Baht-denominated	-	5,590	-	8,209	804	1,609	72	-	16,284
: Other currencies-denominated[(1)]	-	-	-	-	319	-	-	-	319
As of 31 December 2018	**36,009**	**5,590**	**-**	**8,209**	**1,123**	**1,609**	**72**	**52,057**	**104,668**
As of 31 December 2017	55,839	6,308	164	-	1,020	2,096	72	-	65,499
+ / (-)	**(19,830)**	**(718)**	**(164)**	**8,209**	**103**	**(487)**	**-**	**52,057**	**39,169**

Remark (1) Including foreign exchange gain/loss from foreign-currency-denominated liabilities revaluation

(2) On 10 April 2018, Thaioil refinery repurchased its two US$-denominated debentures from overseas investors in aggregate principal amount of US$ 611.2 million. On the same day, Thaioil Treasury Center Co., Ltd. (TTC) completed its issuance and offering of two US$-denominated debentures which had the same total principal, interest rates, and maturity as those repurchased debentures. Moreover, its repayment under the debentures is guaranteed by Thaioil refinery and the net proceeds of the debenture issuance will be used to on-lend to Thaioil refinery for the purpose of liability management.

Total Equity

As of 31 December 2018, Thaioil and Subsidiaries had total equity of Baht 126,472 million, decreased by Baht 676 million or 0.5% from 31 December 2017. This resulted from total comprehensive income for the year 2018 of Baht 10,330 million, deducted by dividends paid from Thaioil and Subsidiaries of Baht 11,006 million.

3.2 Statement of Cash Flows

As of 31 December 2018, Thaioil and Subsidiaries had cash and cash equivalents of Baht 34,041 million while Thaioil refinery had cash and cash equivalents of Baht 29,868 million. In addition, Thaioil and Subsidiaries and Thaioil refinery had current investments of Baht 73,221 million and Baht 73,027 million, respectively. Cash flows are detailed as presented below:

Table 17: Condensed Statement of Cash Flows

(Million Baht)	Consolidated	Separated
Net cash provided by operating activities	18,313	10,043
Net cash used in investing activities	(25,846)	(10,870)
Net cash provided by financing activities	25,566	18,393
Net increase in cash and cash equivalents	**18,032**	**17,566**
Effect of exchange rate changes on cash and cash equivalents	386	388
Cash and cash equivalents at the beginning of period	15,623	11,915
Cash and cash equivalents at the end of period	**34,041**	**29,868**

Thaioil and Subsidiaries had cash flows provided by operating activities of Baht 18,313 million from net profit for the year 2018 while there were payments of corporate income tax, and up-front fee according to joint venture agreement on leasing state properties signed on 21 August 2018. In addition, Thaioil and Subsidiaries had cash flows used in investing activities of Baht 25,846 million as a consequence of current investment acquisitions of Baht 21,597 million and purchases of property, plant and equipment of Baht 7,864 million which Thaioil refinery spent Baht 6,976 million in main projects such as Thaioil Sriracha Building project, TOP Crude Oil Tank project, Jetty Expansion project, and Clean Fuel Project. The rest of Baht 888 million was used by Subsidiaries in several projects such as Solvent Distribution Center in Vietnam project of TOP Solvent (Vietnam) LLC.

However, cash flows provided by financing activities was Baht 25,566 million. This was attributable to net proceeds from short-term borrowings of Baht 1,504 million, long-term borrowings of Baht 6,937 million, and debenture issuance of Baht 31,558 million. However, there were finance costs paid and dividends paid of Baht 3,428 million and Baht 11,006 million, respectively.

According to the mentioned cash flows activities, Thaioil and Subsidiaries reported cash and cash equivalents increased by Baht 18,032 million from 31 December 2017. Furthermore, Thaioil and Subsidiaries recorded gain from effect of exchange rate changes on cash and cash equivalents of Baht 386 million. Hence, Thaioil and Subsidiaries had cash and cash equivalents of Baht 34,041 million as of 31 December 2018. Including current investments of Baht 73,221 million, Thaioil and Subsidiaries had cash, cash equivalents and current investments of Baht 107,262 million.

3.3 Financial Ratios

Table 18: Financial Ratios (Consolidated) for the year 2018

Profitability Ratios	Q4/18	Q3/18	+/(-)	2018	2017	+/(-)
Quality of earnings ratio (%)	(4%)	7%	(11%)	5%	11%	(6%)
Gross profit margin ratio (%)	(2%)	8%	(10%)	6%	12%	(6%)
Net profit margin ratio (%)	(5%)	5%	(10%)	3%	7%	(4%)

Liquidity Ratios	Q4/18	Q3/18	+/(-)	2018	2017	+/(-)
Current ratio (times)	4.3	3.7	0.6	4.3	3.8	0.5
Quick ratio (times)	3.5	2.5	1.0	3.5	2.7	0.8

Financial Policy Ratios	Q4/18	Q3/18	+/(-)	2018	2017	+/(-)
Total liabilities/ Total equity (times)	1.1	0.8	0.3	1.1	0.8	0.3
Net debt/ Equity (times)	-	-	-	-	-	-
Long-term loan/ Total equity (times)	0.8	0.6	0.2	0.8	0.5	0.3
Interest coverage ratio (times)	(3.3)	8.4	(11.7)	5.1	11.2	(6.1)
Long-term loan/ Total capitalization (%)	45%	36%	9%	45%	34%	11%

Financial Ratios Calculation

Quality of Earnings ratio (%)	=	EBITDA / Sales Revenue
Gross Profit Margin ratio (%)	=	Gross Profit / Sales Revenue
Net Profit Margin ratio (%)	=	Net Profit for the period / Total Revenue
Current ratio (times)	=	Current Assets / Current Liabilities
Quick ratio (times)	=	(Cash and Cash equivalent + Current investments + Accounts Receivable) / Current Liabilities
Total Liabilities / Total Equity (times)	=	Total Liabilities / Total Equity
Net Debt/ Equity (times)	=	Net Debt / Total Equity
Long term loan/ Total Equity (times)	=	Long Term Loan / Total Equity
Long term loan	=	Long-term borrowings from financial institutions + Debentures (includes current portion)
Interest Coverage ratio (times)	=	EBITDA/ Interest Expenses (Finance costs)(1)
Long term loan/ Total Capitalization (%)	=	Long Term Loan / Total Capitalization
Total Capitalization	=	Long Term Loan + Total Equity
Net Debt	=	Interest bearing debt - Cash and cash equivalent - Current investments

Remark (1) Including finance costs that Thaioil Treasury Center Co., Ltd. paid to bondholders.

4. Industry Outlook for the first quarter and the first half of 2019

Crude oil and refinery market outlook

In Q1/19, crude oil prices are likely to be improved from Q4/18 supported by tight crude supply situation after OPEC and Non-OPEC producers lower their crude oil production more than 1.2 million barrel a day following its production cut agreement for 6 months since January 2019. In addition, crude production in Canada will be decreased approximately 0.3 million barrel a day as government would like to reduce their crude inventory level. In addition, crude oil price will be supported by global oil demand growth from improved world economic outlook driven by better U.S. – China trade war negotiations.

In the first half of 2019, crude oil prices are likely to be softening from the second half of 2018 due to lower oil demand after the winter ends and higher OECD crude oil inventory which is expected to be at the 5-year averaged level. Moreover, crude oil prices are expected to be pressured by rising U.S. crude oil production which is expected to increase 0.5 million barrel a day compared with the second half of 2018. However, corporation of OPEC and non-OPEC producers to cut crude oil production in the first half of the year could support the crude oil price. (Source: EIA Short-term Energy Outlook, January 2019)

In Q1/19, finished oil products spread over crude oil price is likely to be weaker than Q4/18 due to higher supply from increasing utilization rate of global refineries to support middle distillate products demand in the winter resulting in oversupply of gasoline products. In addition, middle distillate products demand does not improve as market expected due to mild winter in Asia from El Nino's condition.

In the first half of 2019, finished oil products spread over crude oil price is likely to be softer than the second half of 2018 and high global gasoline inventory at above a 5-year average level may result in gasoline oversupply situation despite improving demand when entering into the driving season. However, finished oil products spread over crude oil price may be supported by tight supply during refinery maintenance shutdown period.

Aromatics market outlook

In Q1/19, aromatics market is expected to be stable to slightly softer from Q4/18 due to rising supply mainly from a 800,000 tons per annum aromatic plant in China which resumed their operation in early of the year after it had been closed since 2015. However, continually growing aromatics demand since late of 2018 capped downside of aromatics market.

In the first half of 2019, paraxylene market is expected to be softer than the first half of 2018 due to rising supply as previously mentioned and a resumption of the another 800,000 tons per annum aromatics plant in China which is likely to be in Q2/19. However, a seasonal maintenance period of aromatics plants during March to May could help balance paraxylene supply in the market. While paraxylene demand in the summer for producing polyester and PET bottle will limit downside risk of paraxylene market. (Source: WM Chemicals, December 2018)

For benzene market in Q1/19, it is likely to be softer than Q4/18 due to accumulated oversupply situation since late 2018 pressured by rising supplies from regional aromatics plants which maximize their paraxylene productions to capture decent paraxylene margin. Moreover, benzene inventory in the beginning of 2019 started to increase more than the level in Q4/18 resulting in slowdown of benzene import demand in China.

In the first half of 2019, benzene market is likely to be weaker than in the second half of 2018 due to the accumulated oversupply situation as mentioned above despite a seasonal maintenance period of benzene plants during March to May. Moreover, benzene demand in the first half of 2019 is expected to softer than the second half of 2018 as normal peak seasonal demand of benzene is in Q3. (Source: WM Chemicals, December 2018 and IHS Fall 2018)

For toluene market in Q1/19, it is expected to be weakening from Q4/18 pressured by slowing down benzene market.

In the first half of 2019, toluene market is likely to be weaker than in the second half of 2018 as lower toluene demand for gasoline blending and for benzene production from slowing down gasoline market and benzene market.

LAB market outlook

In Q1/19, LAB market is forecasted to improve compared to Q4/18 from recovered demand in Asia after the long holidays in New Year Eve and before the Chinese New Year. Moreover, LAB market is likely to recover in March before approaching to the summer seasons in Asia.

In the first half of 2019, LAB market is expected to be better than in the second half of 2018 supported by improved LAB demand in Asia during the summer, in which there is high demand of detergent compared to the rainy season and the winter which are in the second half of the year. Moreover, there will be no supply additions in 2019 from new LAB plants in Asia. (Source: CAHA LAB Report, January 2019 and ICIS Weekly LAB Report, January 2019)

Lube Base Oil market outlook

In Q1/19, lube base oil market is expected to be better than Q4/18 driven by lower supply from higher maintenance shutdown of lube base oil plants in Asia. However, lube base oil demand in China is likely to be weak as China; a major lube base oil importer, reduced their import volume during Chinese New Year and will begin to import more volume again in March as entering to the summer which is the driving season and agricultural season.

In the first half of 2019, lube base oil market is expected to be improved from the second half of 2018 supported by improving demand in the summer which is the period of lubricant changing for transportation sector and agriculture sector. Moreover, lube base oil supply will be reduced due to maintenance shutdown of the lube base plant in Asia. However, lube base oil market might be pressured by new lube base oil plants in China which is expected to start operation in Q2. (source: ICIS Base Oil Weekly Report, January 2019 and Argus Base Oil Weekly Report, January 2019)

Bitumen market outlook

In Q1/19, bitumen market is expected to be slightly soft compared to Q4/18 pressured by thin demand in Northern China from cold weather and snow affecting the repair and construction of roads. Furthermore, bitumen demand in Vietnam and Indonesia remains weak due to unfavorable weather conditions for road repairs. Nevertheless, the demand is expected to be recovered in February to March after the Chinese New Year and better weather.

In the first half of 2019, bitumen market is expected to remain stable compared to the second half of 2018 due to improving regional demand in the summer which is suitable for road construction and road repair. However, bitumen supply is forecasted to increase from many producers switching back their production to bitumen yield instead of fuel oil yield when the fuel oil market is likely to be weak especially June onwards when it is expected to have an IMO impact. (Source: Argus Bitumen Weekly Report, January 2019)

5. Appendix

5.1 Summary of Approved Investment Plan

Thaioil and Subsidiaries has investment plan which has been approved by Board of Directors as of 31 December 2018 as summarized

CAPEX Plan (Unit: US$ million)

Project	Planned capital investment				
	2018	2019	2020	2021	2022
Reliability, Efficiency and Flexibility Improvement	97	60	17	2	
Infrastructure Improvement					
- Lorry Expansion	1				
- Jetty 7&8 / Improvement	29	83	5		
- Office Relocation & New Crude Tank	61	35	16		
- Site office preparation for fire water & fire water improvement	8	21	12		
Other Investments (i.e. solvent distribution in North Vietnam, benzene derivatives-LAB license fee)	21	38	43	9	
Total Ongoing CAPEX	**217**	**237**	**93**		
CFP project	18	1,295	1,849	905	669
Total CAPEX (including CFP)	**235**	**1,532**	**1,942**	**916**	**669**

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

5.2 Summary of Key Project Investment: Clean Fuel Project (CFP)

The purpose of CFP project is to enhance the competitiveness of the Company by improving its production efficiency to increase the product value by making it more environmentally-friendly, and to increase its oil refining capacity to allow the refineries to handle more types and greater quantities of crude oils, which create an economies of scale and a reduction of raw material costs. Moreover, the project also enhance the country's long-term energy stability and economic development, with the investment project value of approximately US$ 4,825 million. The CFP has been approved by the Company's Extraordinary General Meeting of Shareholders on 27 August 2018. The CFP construction is expected to begin in May 2019, and expected to be completed in Q1/23 according to the CFP timeline as summarized below:

Main objectives of CFP

- Enhance **competitive advantage** of the refinery and **maintain 1st quartile performer**
- Enhance capability to **upgrade lower value product** into higher value product and ability to **process heavier (cheaper) crude oil**