



bangchak



Management Discussion & Analysis of Business Operation

Bangchak Corporation Public Company Limited

For the year ended December 31st, 2018



Management Discussion & Analysis of Business Operation

Table of

03	Executive Summary
05	Important Events
08	Statement of Income
10	Business Performance
10	Refinery & Trading Business Group
15	Marketing Business Group
17	Power Plant Business Group
19	Bio-Based Products Business Group
21	Natural Resources Business Group
23	Statement of Financial Position
26	Cash Flows Statement
28	Financial Ratios
30	Environmental Management Accounting
31	Management's Perspective towards 2019 Performance



Executive Summary



Summary of the Company and its subsidiaries' operating results for the quarter ended December 31st, 2018

Unit: THB Million	Q4/2017 (Restate)	Q3/2018	Q4/2018	YoY	QoQ	2017 (Restate)	2018	YoY
Total Revenue	46,306	53,461	48,781	5%	-9%	172,138	192,025	12%
Accounting EBITDA	3,616	4,161	(317)	-109%	-108%	13,421	10,201	-24%
<i>Refinery and Trading Business Group</i> ^{1/}	2,256	2,140	(1,419)	-163%	-166%	7,596	3,928	-48%
<i>Marketing Business Group</i> ^{2/}	302	468	465	54%	-1%	2,301	2,177	-5%
<i>Power Plant Business Group</i> ^{3/}	934	1,542	570	-38%	-63%	2,846	3,569	25%
<i>Bio-Based Product Business Group</i> ^{4/}	132	151	66	-50%	-56%	529	692	31%
<i>Natural Resource Business Group</i> ^{5/}	16	(81)	94	470%	216%	286	117	-59%
<i>Others</i> ^{6/}	(24)	(61)	(92)			(137)	(282)	
Profit attributable to owners of the Company	1,471	1,856	(1,546)	-205%	-183%	5,608	2,463	-56%
Basic earnings per share (Baht)	1.07	1.35	(1.12)			4.07	1.79	

Note: 1/ EBITDA from Refinery Business of the Company, BCP Trading Pte. Ltd. and share of profit associated companies

2/ EBITDA from Marketing Business of the Company, Bangchak Green Net Co.,Ltd., Bangchak Retail Co., Ltd., and share of profit associated companies

3/ EBITDA from Power Plant Business of BCPG Plc., its subsidiaries, and share of profit from associated companies

4/ EBITDA from BBGI Plc., its subsidiaries, and share of profit from associated companies

5/ EBITDA from Natural Resources business of Nido Petroleum Limited, BCP Energy International Pte. Ltd. and BCP Innovation Pte. Ltd., and share of profit from associated companies

6/ Others items and elimination

For 2018 performance, Bangchak Corporation Plc. (the company) and its subsidiaries recorded revenue from sales and rendering of services at THB 192,025 million (+12%), and a net profit of THB 3,235 million (-48% YoY), **net profit attributable to the owners of the company of THB 2,463 million, or earning per shares of THB 1.79.**

For Q4/2018 performance, the company and its subsidiaries recorded revenue from sales and rendering of services at THB 48,781 million (+5% YoY, -9% QoQ), and a net loss of THB 1,475 million, (-187% YoY, -167% QoQ) **net loss attributable to the owners of the company of THB 1,546 million, or loss per shares of THB 1.12.** The performance for each business unit are as follow:

The company groups' 2018 performance declined significantly compared to the previous year, as the **Refinery and oil trading business group** was affected by the year round global oil price fluctuation, especially in the last quarter which oil price plunged drastically. Moreover, the refinery recorded lower crude run due to its 45 days turnaround maintenance (TAM) (from 30 April – 13 June 2018). However, average crude run for the year was in accordance with the target at 102.39 KBD (85% utilization rate), and achieved its all-time high monthly average production of 123 KBD in March. Also, after the completion of the TAM, Bangchak refinery was able to consistently maintain high levels of production throughout the year. Total GRM decreased 32%, from the reduced Market GRM, following the decline in refinery production volume due to the TAM, as well as a decrease in average Gasoline/Dubai crack spread and Fuel oil/Dubai crack spread, and the rise in crude cost following the widened average DTD/DB spread. Further, crude oil price significantly drop during the year end, led to the refinery business to record Inventory Loss of THB 1,489 million



(included lower of cost or market (LCM) of THB 689 million) in 2018. However, the oil trading business by BCP Trading recorded a better performance from the higher transaction volume.

Marketing business recorded a slightly lower total marketing sales volume compared to 2017, mainly reduced from the industrial market due to intensified competition, and the refinery's TAM which resulted in the lower volume of finished oil produced. On the other hand, retail market which is the company's main distribution channel recorded sales volume growth. There were an expansion of service station locations, the number of service station as of the end of 2018 was 1,175 locations, with 74 new service stations. The company has also rebranded BCP's loyalty card, "Bangchak Green Miles" that allows members to collect points from purchase of any product. Developments were also made to the member card system in the form of a Digitized Loyalty Program coinciding with the new Bangchak Mobile Application, and has expanded the varieties of non-oil products and services to better suit consumers' need. The company's retail sales market share was at the second rank, and continues to consistently thrive with the cumulative market share of 2018 at 15.8%. Net marketing margin was within proximity of 2017 levels, although was affected by the government's Diesel fuel price ceiling to alleviate burden of the consumers and business operators within the transportation sector during periods of crude oil upsides. However, as the end of the year approached, oil price started tumbling, increasing marketing margin.

Power plant business recorded a higher total electricity sales both from the solar power plants in Thailand and Japan. For projects in Thailand, there were commencement of commercial operation of the government solar projects in collaboration with the War Veteran Organization (WVO) and Solar rooftop project (Total installed capacity 9.69 MW). For projects in Japan, there were commencement of commercial operation of Gotemba project (installed capacity 4.4 MW), but there was also a sales of Nikaho and Nagi project (total installed capacity 27.6 MW) to the Infrastructure Fund of Japan in September 2018. This resulted in the steady amount of overall electricity generated. There were also a profit from the sales of the aforementioned assets before tax of THB 793 million. This year, power plant business group recorded share of profit from associated companies of THB 204 million, comprised of THB 39 million from Wind power plant business, and THB 164 million from geothermal power plant business in Indonesia.

Bio based product business, Biodiesel production and sales business recorded a performance improvements compared to last year. B100 product sales volume increased as the mandated B100 proportion in diesel was at 7% all year. However, performance was affected by the low crude palm oil price situation in the country, leading B100 price to decline in parallel with crude palm oil price. Gross profit from biodiesel business was higher from the growth in sales volume, as well as the capability to procure raw material and manage inventory better than last year. For **Ethanol production and sales business**, performance was also better than last year, as in 2018, KSL Green Innovation Co., Ltd.'s performance was realized for the full year, resulting in the ethanol sales volume to increase by 171% YoY. Gross profit margin of molasses based ethanol business increased from lower raw material cost, while the gross profit margin for cassava based ethanol declined due to the higher cost of fresh cassava and cassava chips.

Natural resources business, exploration and production business recorded a decreased revenue, as there were no performance contribution from Galoc oil field in the latter half of 2018, after the company group sold its shares in Nido Production (Galoc) Pty. Ltd., which holds the rights to 55.8% of the Galoc field. The transaction was completed in Q3/2018. Furthermore, Bangchak has established new subsidiaries to joint invest with the Seacrest Capital Group in the petroleum fields Draugen Field and Gjøa Field from A/S Norske Shell, by means of subscribing new shares of OKEA AS in the amount of NOK 939 million (approximately THB 3,618 million). OKEA AS is considered as an associated company to Bangchak. This investment is in the form of a joint partnership in a World Class Asset with long continuous production life, the oil produced is highly priced light crude oil. The investment is a considerable progress made on the foundations laid by the natural resource business and coincides with the diversification strategy of the company.



Important Events in 2018



● January

- Bangchak Retail Co., Ltd. signed an agreement to give the master franchise license for Inthanin Coffee shops in Cambodia and Laos PDR. to RCG Retail Co., Ltd. (Cambodia); the pilot Inthanin shop was introduced in Siem Reap, afterwards the franchise was expanded to Phnom Penh flagship store in April, and Peng Hout branch in October.

● February

- The company's board of directors approved the proposed initial public offering of newly issued ordinary share (the IPO) and the listing on the Stock Exchange of Thailand of BBGI Co., Ltd. The number of new ordinary shares to be issued under the IPO is limited to not exceeding 30 percent of BBGI's total issued shares post-IPO. The Securities and Exchange Commission of Thailand has approved BBGI's IPO application on the 25 August 2018, and BBGI Plc. had been permitted to offer the newly issued shares to the public on the 2 October 2018.

● March

- The company announced its scheduled Annual Turnaround Maintenance duration of 45 days from the 30 April 2018 to the 13 June 2018, which was executed according to plan.
- The Refinery Business achieved its historic high monthly production rate average of 123 KBD, due to the increase in finished products volume sold through Marketing business, and to build up finished products inventory to prepare for the 2018 Annual Turnaround.

● April

- BCPG Plc. commenced commercial operation of its Gotemba Solar Power Plant at the Shizuoka Prefecture, Japan, on 16 April 2018; the plant contractual capacity is 4 MW PPA (4.4 MW installed capacity), with power purchase agreement of 20 years, and Feed-in-Tariff at 32 Yen/kWh.
- The Annual General Shareholders' meeting approved the allocation of profit from unappropriated retained earnings as dividend for the second-half-year operations of 2017 at the rate of 1.10 THB per share, a total amount of THB 1,515 million, which was already paid on 7 May 2018.

● June

- BCPG Plc. announced its acquisition of the common stock of Lomligor Co., Ltd. for their Wind Power Plant Project with a capacity of 10 MW at the Pak Panang District, Nakorn Si Thammarat Province, with the total investment including share acquisition and construction of not exceeding THB 825 million, and is expected to complete construction by April 2019.
- The Company has established a subsidiary called BCPR Co., Ltd. in Thailand and its subsidiary in Singapore called BCPR Pte. Ltd. to joint invest with Seacrest Capital Group in the petroleum fields Draugen Field and Gjøa Field from A/S Norske Shell, by means of subscribing new shares of OKEA AS, a company established under Norwegian law, which has developed and produced petroleum in Norway, in the proportion up to 90% of the increased capital of OKEA, with the total value of which is not more than NOK 939 million, the transaction was completed in Q4/2018.



● July

- The company came to a resolution for its subsidiary to dispose all shares holds in Nido Production (Galoc) Pty. Ltd., who owns 55.8% of the Galoc Oil Field. In addition, on 12 July 2018, the subsidiary has executed the share selling agreement with Tamarind Galoc Pte Ltd., with the total consideration of USD 19.4 million (or approximately THB 619 million). The disposal was only for the Galoc oil Field, and does not include other petroleum oil fields that are under exploration and development in the Philippines which are still held by the company's subsidiary.
- BCPG Plc. commenced commercial operation of 2 solar power plant projects developed through cooperation with the War Veterans Organization (WVO), the power plant at Phra Phutthabat district, Saraburi province has installed capacity of 5 MW PPA, and the project at Tha Muang district, Karnchanaburi province has installed capacity of 3.94 MW PPA. The total installed capacity for both project is 8.94 MW PPA, with power purchase agreement of 25 years and Feed-in-tariff of 4.12 Baht per kWh.

● August

- The company Board of Directors approved a resolution for the payment of interim dividend for the first 6 months period of 2018 to the company's shareholders at 0.85 THB per share, totaling at THB 1,170 million, which was already paid on 19 September 2018.
- The company issued Unsubordinated and Unsecured Debentures in the Name-Registered Certificate, private placement offered to Institutional / High Net Worth Investors, in the amount of THB 4,000 million, with coupon rate of 2.13 – 3.42%, and a tenor of 2-7 years.

● September

- BCPG Plc. sold assets of its two Japanese power plant projects which are the Nikaho and Nagi project (Total capacity installed 27.6 MW) to the Infrastructure Fund in Japan, receiving total proceeds in the amount of Yen 10,388 million (approximately THB 3,046 million). Aside from this, BCPG group has signed a contract with the Infrastructure Fund, to perform operation & maintenance service for the assets.
- The company debuted its new club card, "Bangchak Green Miles" which allows members to collect points from every petroleum product purchased, along with goods and services under Bangchak brand, and developed Bangchak Mobile Application to benefit members in terms of convenience and speed.
- The company debuted its new modern take on service stations with the first overhead digital fuel dispenser in Thailand on Sukhumvit 62 road, in order to deliver convenience to customers whom do not have to concern themselves over which side of their car the gas cap is placed.

● November

- The company unveiled its prototype Green Community Energy Management System or GEMS in the Bangchak Srinakarin service station to pilot a project that bid purchase electricity with blockchain technology in a Smart Isolated Microgrid to serve buildings and retail outlets within the area to purchase low cost electricity en masse.
- The company via its subsidiary registered under Singaporean law, BCPR Pte. Ltd., completely subscribed for newly issued shares of OKEA AS at the total investment amount of NOK 939 million or approximately THB 3,618 million. The shares allotted to the company is equal to 49% of total registered shares in OKEA. And, on 30 November 2018, OKEA paid the purchase price in respect of the petroleum fields in Norway; Draugen Field and Gjøa Field, to Shell with the agreements regarding the assignment of a participating interest



between Shell and OKEA, and has completely acquired all interest in such petroleum fields from Shell, OKEA will be an operator of Draugen Field from 1 December 2018 onwards.

- **December**

- The company came to a resolution to establish new subsidiaries in Thailand to invest in new Start-ups, a total of 4 new companies as follow:

- BCV Bio-based Co., Ltd.
- BCV Energy Co., Ltd.
- BCV Innovation Co., Ltd.
- BCV Partnership Co., Ltd.

The purpose of these companies are to invest in New Start-ups related to innovations. Each company has a registered capital of THB 20 million (together totaling THB 80 million) with the company owning 100% of the shares.

- The company issued Unsubordinated and Unsecured Debentures in the Name-Registered Certificate, private placement offered to Institutional / High Net Worth Investors, in the amount of THB 7,000 million, with coupon rate of 4.04%, and a tenor of 10 years.



Statement of Income



Consolidated Statement of Income	Q4/2017	Q3/2018	Q4/2018	YoY	QoQ	2017	2018	YoY
	(Restate)					(Restate)		
Revenue from sale of goods and rendering of services	46,306	53,461	48,781	5%	-9%	172,138	192,025	12%
Cost of sale of goods and rendering of services	(42,711)	(49,640)	(48,357)	13%	-3%	(158,596)	(180,594)	14%
Gross Profit	3,594	3,821	424	-88%	-89%	13,543	11,431	-16%
Interest income and dividend income	12	11	16	36%	51%	156	55	-65%
Other income	441	891	129	-71%	-86%	1,085	1,260	16%
Selling and administrative expenses	(2,327)	(1,782)	(2,148)	-8%	21%	(7,164)	(7,376)	3%
Exploration and evaluation expense	(11)	(8)	(15)	32%	75%	(48)	(45)	-5%
Gain (loss) from crude and product oil price hedging contract	46	(95)	(138)	N/A	N/A	366	(442)	N/A
Gain (loss) from foreign currency forward contracts	17	(28)	95	N/A	N/A	(225)	162	N/A
Gain (loss) on foreign exchange	227	230	52	N/A	N/A	889	415	N/A
(loss) from impairment of assets	(78)	(14)	(15)	N/A	N/A	(1,518)	(441)	N/A
Share of profit of associate and JV	446	118	21	-95%	-82%	573	254	-56%
Profit before finance costs and income tax expense	2,366	3,143	(1,579)	-167%	-150%	7,656	5,273	-31%
Finance costs	(380)	(401)	(405)	7%	1%	(1,452)	(1,545)	6%
Profit/(loss) before income tax expense	1,987	2,742	(1,984)	-200%	-172%	6,204	3,728	-40%
Income tax (expense) credit	(298)	(526)	509	-271%	-197%	(41)	(493)	N/A
Profit for the period	1,689	2,216	(1,475)	-187%	-167%	6,163	3,235	-48%
Owners of the Company	1,471	1,856	(1,546)			5,608	2,463	
Non-controlling interests	217	359	71			555	772	
Earnings per share (Baht per Share)	1.07	1.35	(1.12)			4.07	1.79	

Note: Restatement of financial statement 2017 due to the changes in the fair value of the interest acquired in Geothermal Power Plant project in Indonesia.

The company and its subsidiaries 2018 performance recorded net profit of THB 3,235 million, (-48% YoY), net profit attributable to the owners of the company in the amount of THB 2,463 million, or earning per shares of THB 1.79, mainly due to the following reasons:

1. Total revenue from sales of goods and rendering of services was THB 192,025 million, increased by 12% YoY, mainly from petroleum related businesses with incremental increase in average selling price of oil products. Although, company total sales volume decreased 3% YoY, primarily due to decline in industrial market sales volume due to intensified competition, and the refinery's TAM which resulted in the lower finished oil produced. Furthermore, there was an increase in transaction volume of BCP Trading, and a higher revenue realized from ethanol production and sales business (following the company amalgamation in Q4/2017).



2. Gross Profit was recorded at THB 11,431 million, decreased by 16% YoY, mainly attributable to the refinery business having gone through turnaround maintenance, combined with the higher crude oil cost stemming from widening Dated Brent / Dubai spread (DTD/DB) which increased by 58% from last year. Also, Gasoline / Dubai spread (UNL95/DB) dropped drastically during the end of the year. Total GRM was 5.61 \$/BBL. And the significant decline in crude oil price during November – December 2018, let the refinery business to record an Inventory Loss of THB 1,489 million (included lower of cost or market (LCM) of THB 689 million, meanwhile in 2017 it recorded an Inventory Gain of THB 834 million.
3. Other Income of THB 1,260 million, the majority attributed to BCPG Plc. receiving profit before tax from the sales of power plant assets to the Infrastructure Fund, Japan of THB 793 million. Insurance compensation for the damages from typhoons in Japan of THB 104 million, and recorded profit from the provision of working capital settlement following the share disposal in Nido Production (Galoc) Pty. Ltd. of THB 78 million.
4. Selling and administrative expenses was recorded at THB 7,376 million, an increase of 3% YoY, the increment were a combination of (1) depreciation and amortization from increasing investments made by the company group, (2) lease payment for oil depot and land for service station expansion, (3) marketing and promotional expenses.
5. Loss from crude and product oil price hedging contract increased by THB 442 million, due to the year round fluctuation in oil price.
6. Gains from foreign exchange forward contract recorded at THB 162 million, mainly due to the foreign currency forward contract bought in preparation for the 3E project, of which the contract price was lower than the spot price.
7. Gains on foreign exchange was recorded at THB 415 million, a decrease of THB 474 million, as THB fluctuated all year round, resulting in a gain mostly from trade account payable, loan to related parties, and loans in foreign currencies.
8. Losses from impairment of asset THB 441 million, chiefly from impairment of petroleum exploration and production assets of the Galoc oil field in the amount of THB 412 million, and the company's spare parts cost of THB 23 million.
9. Share of profit from associated companies THB 254 million, comprised of (1) Star Energy Group Holdings Pte. Ltd. THB 164 million. (2) PetroWind Energy Inc. THB 39 million. (3) Ubon Bio Ethanol Plc. THB 14 million. (4) Bongkot Marine Services Co., Ltd. THB 39 million. (5) OKEA AS THB -3 million, which was due to the unrealized loss from foreign exchange.



Summary of the Company and its subsidiaries' performance by Business unit



1.) Refinery and Trading Business Group

Crude Oil Price Situation

(Unit : USD/BBL)

Crude Oil Price	Q4/2017	Q3/2018	Q4/2018			YoY	QoQ	2017	2018	YoY
	AVG	AVG	MAX	MIN	AVG	%	%			%
Dubai (DB)	59.31	74.22	84.41	49.50	68.30	15%	-8%	53.14	69.65	31%
Dated Brent (DTD)	61.26	75.16	86.16	50.21	68.81	12%	-8%	54.19	71.31	32%
DTD/DB	1.95	0.94	3.89	-3.41	0.52	-74%	-45%	1.05	1.66	58%

Crude Oil Price Situation

Average Dubai crude price in 2018 increased by 16.51 \$/BBL when compared to 2017, with pressure from the OPEC and Non-OPEC countries led by Russia which jointly agreed to lower production, and additionally by the effects of the new US sanctions on Iran, which obligated Iran to lower its production.

Average Dubai crude price on in Q4/2018 decreased 5.92 \$/BBL compared Q3/2018. With most of the pressure coming from the US's revoking its sanction on 8 countries i.e. Turkey, China, India, South Korea, Japan, Greece, Taiwan, and Italy, enabling them to continue to import Iranian crude; which forms 75% of total Iranian exports. This turn of events counteracts President Donald Trump's prior announcement that he wants Iranian total oil exports to be zero. Further, OPEC and its alliance have come to an agreement to lower crude production, as a way to compensate for missing supplies from Iran after the country was previously sanctioned before the US revoked the sanction of the 8 countries, thus leading to excess crude supplies in the market. In addition, the bearish US stock market stemming from trade conflicts between China and the US has also pressured the oil market down.

However, crude oil price came under pressure during December after OPEC and their alliance came to an agreement to lower production once again by 1 million barrels per day for the first half of 2019, beginning in January 2019. While Saudi Arabia has lowered their production levels prior in December 2018 by as much as 400,000 to 500,000 barrels per day.

Compared to 2017, Dated Brent and Dubai spread in 2018 increased by 0.61 \$/BBL, due to the OPEC group increasing production levels in the latter half of 2018, leading to a decrease in Dubai crude price, effectively widen the DTD Brent and Dubai spread.

Average Dated Brent and Dubai spread in Q4/2018 lowered by 0.42 \$/BBL compared to Q3/2018 with pressure from the reduced Heavy Sour Crude supplies, after Iran was sanctioned by the US.



Crack Spreads Situation

(Unit: USD/BBL)

Crack Spreads	Q4/2017	Q3/2018	Q4/2018			YoY	QoQ	2017	2018	YoY
	AVG	AVG	MAX	MIN	AVG	%	%			%
UNL95/DB	14.42	11.52	12.10	1.37	4.92	-66%	-57%	14.85	10.57	-29%
IK/DB	13.27	14.48	19.21	12.89	15.74	19%	9%	12.13	15.38	27%
GO/DB	13.01	14.34	18.16	9.76	14.98	15%	4%	12.51	14.68	17%
FO/DB	-3.03	-2.48	5.61	-3.69	1.33	144%	154%	-2.33	-2.64	-13%

Crack Spreads Analysis

- Gasoline / Dubai crack spread (UNL95/DB) in 2018 averaged at 10.57 \$/BBL, a decrease of 4.28 \$/BBL when compared to 2017, due to pressure from decreased oil demand in China. A result of their economic slowdown, and a shrink in car sales for the first time in 20 years.

Gasoline / Dubai crack spread (UNL95/DB) in Q4/2018 was 4.92 \$/BBL. When compared to Q3/2018 decreased by 6.60 \$/BBL as a result of consecutively dwindling demand during the winter and the high oil price level. Whereas the Chinese government announced its third and fourth export quota for 2018, an addition of 1,740,000 Tons (14.45 million barrels), leading to an increase in Gasoline exports. Additionally, various other refineries were running at high utilization rate due to high GO/DB and FO/DB crack spread level, which consequently lead to high supplies of Gasoline.

- Jet (Kerosene) / Dubai crack spread (IK/DB) in 2018 averaged at 15.38 \$/BBL, an increase of 3.25 \$/BBL compared to 2017's average. A result of pressure from increase in demand for air travel. However, there is still pressure from Jet fuel (Kerosene) inventory that is higher than the previous year's level, and decreased demand for kerosene which has been substituted by the cheaper LPG.

Average Jet (Kerosene) / Dubai crack spread (IK/DB) in Q4/2018 was 15.74 \$/BBL when compared to Q3/2018 with supports from demand for heaters during the winter, which increased throughout November and December. As well as, demand from air travel that increased after the typhoons subsided. However, Jet fuel stock in Japan was at a high level, coupled with warmer than usual weather, leaving demands for Kerosene lower than expected, thus Japan Kerosene imports decreased.

- Gasoil / Dubai crack spread (GO/DB) in 2018 averaged at 14.68 \$/BBL, increased by 2.17 \$/BBL compared to 2017 supported by the mounting demand from the mining sector in Australia and the infrastructure construction sector in India.

Gasoil / Dubai crack spread (GO/DB) in Q4/2018 averaged at 14.98 \$/BBL, compared to Q3/2018 increased by 0.64 \$/BBL, supported by arbitrages made from the Asian region to the European side is still feasible even with freight cost at a high level, but pressured from increased export quotas from China in the third and fourth round of 2018, in the amount of 590,000 tons (4.4 million barrels) and 1.1 million ton (8.2 million barrels), respectively. Furthermore, the temperature during the winter in Europe and the US was warmer than usual, leading Diesel demand to remain unchanged.



- Fuel Oil / Dubai crack spread (FO/DB) in 2018 was averaged at -2.64 \$/BBL, a decrease of 0.31 \$/BBL compared to 2017, with pressures from the sales of High Sulphur Fuel Oil that has been successively declining, due to the new measures imposed by the International Maritime Organization (IMO) which will be in full effect on the 1st of January, 2020, which dictates that international vessels and bunkers are to use fuel with Sulphur percentage no more than 0.5%. However, Fuel Oil received support from Fuel Oil supplies that decreased due to the reduction in OPEC production, especially Heavy Crude, and Russian exports of Fuel Oil steadily declines due to modernizations of cracking units in their refineries.

Fuel Oil / Dubai crack spread (FO/DB) in Q4/2018 averaged at 1.33 \$/BBL compared to Q3/2018, increased by 3.81 \$/BBL, aided by Iran's steady reduction of Fuel Oil exports as a result of the US sanction. Even with the US lifting its sanction on Iran's 8 trade partners, and the volume of Heavy Crude disappearing from OPEC's production reduction in December. Therefore, Fuel Oil imports lowered by 10% from the normal imports to Singapore.

Refinery and Trading Business Group Performance

As for the 2018 performance of the refinery and trading business, it recorded EBITDA THB 3,928 million, attributed to the BCP refinery THB 3,767 million, BCP Trading CO., Ltd. THB 77 million, received share of profit from Bongkot Marine Service CO., Ltd. THB 39 million.

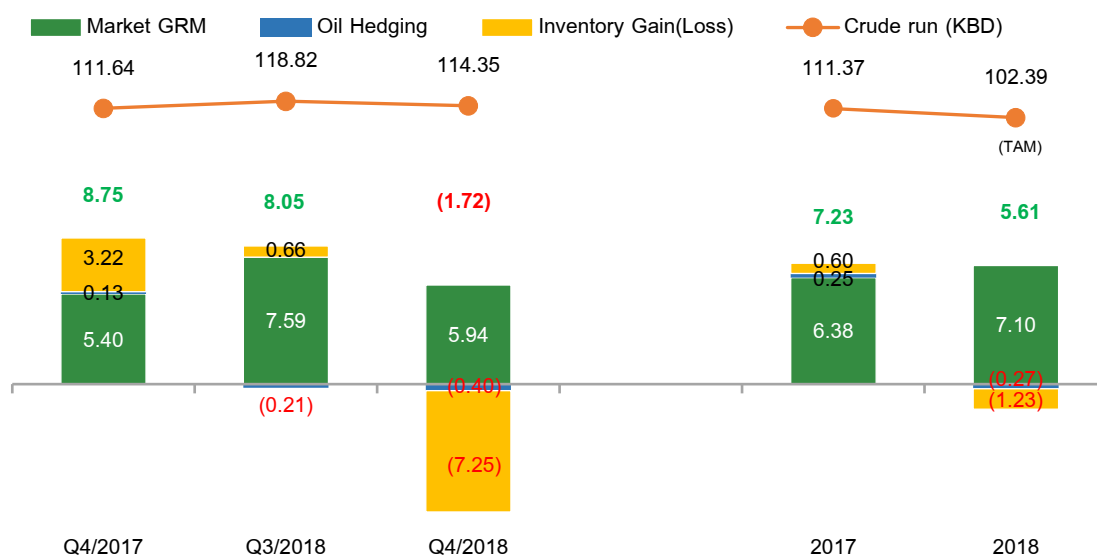
Refinery and Trading Business Performance	Q4/2017	Q3/2018	Q4/2018	YoY	QoQ	2017	2018	YoY
Average Crude Run (KBD)	111.64	118.82	114.35	2%	-4%	111.37	102.39	-8%
Utilization Rate (%)	93%	99%	95%			93%	85%	
Average FX (THB/USD)	33.11	33.15	32.98			34.11	32.49	
(Unit: Million Baht)								
Market GRM	1,837	2,752	2,060	12%	-25%	8,844	8,626	-2%
GRM Hedging	46	(78)	(138)	-402%	-78%	348	(328)	-194%
Inventory Gain/ (Loss) ^{1/}	1,094	241	(2,517)	-330%	N/A	834	(1,489)	279%
Total GRM	2,977	2,916	(595)	-120%	-120%	10,026	6,809	-32%
EBITDA	2,256	2,140	(1,419)	-163%	-166%	7,596	3,928	-48%

Note: 1/ Inventory Gain/(Loss) in the table included LCM



GRM and Crude Run

Unit: \$/BBL



Total Sales Volume in each market category of the Company								
Marketing Business (Million Litre)	Q4/2017	Q3/2018	Q4/2018	YoY	QoQ	2017	2018	YoY
Retail	1,002	990	1,025	2%	3%	3,820	4,020	5%
Industrial	553	460	501	-9%	9%	2,196	1,925	-12%
Total	1,555	1,451	1,526	-2%	5%	6,016	5,945	-1%
Wholesale Business (Million Litre)								
Petroleum traders in accordance with section 7	173	178	149	-14%	-16%	706	622	-12%
Export	336	352	334	-1%	-5%	1,121	1,026	-8%
Total	509	530	483	-5%	-9%	1,827	1,648	-10%
Total Sales Volume	2,064	1,981	2,009	-3%	1%	7,843	7,593	-3%

Note: Sales volume does not include oil swaps between major oil companies and sales of crude oil products

Performance comparison between 2018 and 2017 of the refinery and trading business recorded a decrease in EBITDA of THB 3,667 million, with factors affecting operation as follow:

1. The Bangchak refinery averaged production at 102.39 KBD, or 85% utilization rate (-8% YoY), with the refinery undergoing Turnaround Maintenance (TAM) from 30 April – 13 June 2018, a total of 45 days. However, during March 2018, the refinery achieved its all-time high monthly average production of 123 KBD, and after the TAM was completed, Bangchak refinery was able to consistently maintain high levels of production throughout the year.
2. In 2018, the refinery's Total Gross Refinery Margin (Total GRM) was THB 6,809 million, a decrease of 32% in comparison to 2017 which had Total GRM of THB 10,026 million, mainly from the following reasons:
 - Market GRM decreased by THB 217 million compared to 2017 from the decline in refinery finished oil production due to the TAM. Also, there were a decline in average Gasoline/Dubai (UNL95/DB) crack spread which dropped sharply during the end of the year, and Fuel oil/Dubai (FO/DB) crack spread, decreased by



29% and 13%, respectively. While crude oil cost rose from the average Dated Brent/Dubai (DTD/DB) spread which increased by 58% from the previous year, and Thai Baht depreciated by 4.7%, compared to 2017.

- In 2018, the refinery business recorded loss from crude and product oil price hedging contract in the amount of THB 328 million, while in 2017 there was a gain of THB 348 million, a result of the highly volatile global oil market price for the whole entire year.
 - The refinery business had an inventory loss of THB 1,489 million (including lower of cost or market (LCM) THB 689 million) from the sharp decline of crude oil price in the global market during November to December 2018, as there was an excess supplies in the market, and demand was lagged in various countries around the world. On the contrary, in 2018 there was an inventory gain of THB 834 million.
3. Within 2018, BCP Trading Co., Ltd. earned a revenue of 37,699 million, a significant increase compared to 2018, from a rise in oil product trading transactions. This year, trading transactions volume was 15.32 million barrels. The principal products that were traded included gasoline, crude oil, fuel oil, and naphtha products. The rise in revenue can also be credited to the market expansion to new countries i.e. Brunei, Qatar. As well as, the expansion into new products i.e. Condensates, MTBE. Moreover, BCP Trading also earned extra revenue from proficient logistics management, and fostering an amicable relationship with trade partners, and market conditions that facilitated an increase in trade transactions.

Performance comparison between Q4/2018 and Q3/2018, the refinery and trading business recorded a decline in EBITDA by THB 3,559 million, with the following factors affecting performance as follow:

1. In Q4/2018, Bangchak refinery's average production rate declined by 4% from Q3/2018, due to the massive decline of Gasoline/Dubai (UNL95/DB) crack spread in this quarter. Hence, running the refinery at high utilization rate would not be economically sound, thus crude run was optimized down to a level which gave the best profitability.
2. The refinery business's Total GRM was THB -595 million, a major decline compared to Q3/2018 where Total GRM was THB 2,916 million, mainly due to the following reasons:
 - In Q4/2018, Market GRM declined by THB 692 million, compared to Q3/2018 due to UNL95/DB crack spread that sharply declined, as well as the lower average production rate.
 - Amidst this quarter, the refinery business incurred a loss from crude and product oil price hedging contract at THB 138 million, compared to a loss of THB 78 million in Q3/2018.
 - The refinery business was exposed to inventory loss in the amount of THB 2,517 million (including lower of cost or market (LCM) THB 689 million), the quarter was marred under a state of abrupt decline of oil price in the global market during November to December 2018. As of 28 December 2018, the price of Brent crude oil and Dubai crude oil was 50.21 \$/BBL and 52.85 \$/BBL, respectively. While in Q3/2018, there was an inventory gain of THB 241 million from consecutive rise in oil price throughout the quarter. As of the end of the 28 September 2018, the price of Brent crude oil and Dubai crude oil was 83.65 \$/BBL and 80.00 \$/BBL, respectively.
3. In Q4/2018, BCP Trading Co., Ltd. recorded decline in revenue by 11% from Q3/2018, stemming from the downward spiral that the price of crude oil and finished product underwent during November to December, 2018.



2.) Marketing Business Group

Marketing Business Group's 2018 performance recorded an EBITDA of THB 2,177 million, mainly attributed to Bangchak marketing business in the amount of THB 2,399 million.

Marketing Business								
Sales Volume (Million Litre)	Q4/2017	Q3/2018	Q4/2018	YoY	QoQ	2017	2018	YoY
Retail (Service Stations)	1,002	990	1,025	2%	3%	3,820	4,020	5%
Industrial	553	460	501	-9%	9%	2,196	1,925	-12%
Total	1,555	1,451	1,526	-2%	5%	6,016	5,945	-1%
Sales volume in each product category (Million Litre)								
LPG	25	45	41	63%	-9%	77	163	112%
Gasoline	8	4	10	23%	131%	43	32	-26%
Gasohol	442	424	432	-2%	2%	1,688	1,672	-1%
Jet Fuel	209	209	204	-3%	-2%	841	836	-1%
Diesel	825	723	795	-4%	10%	3,171	3,056	-4%
Fuel Oil and Others	46	45	43	-6%	-4%	196	185	-5%
Total	1,555	1,451	1,526	-2%	5%	6,016	5,945	-1%
Net Marketing Margin (THB/Lt.)	0.70	0.70	0.85	23%	23%	0.77	0.78	2%
EBITDA (Million Baht)	302	468	465	54%	-1%	2,301	2,177	-5%

Note: marketing margin of Bangchak only

Performance comparison between 2018 and 2017, marketing business recorded an EBITDA reduced by THB 124 million, with the following factors affecting performance:

1. Marketing Business total sales volume experienced a minor decrease (-1%, YoY), whereas the retail market sales rose by 5% YoY from the focus on retail market sales through the increase of service station locations, allowing consumers to conveniently access the company's services. Furthermore, developments were made to existing service station to improve thruput per station; producing subsequent growth in the retail market sales volume. On the other hand, the industrial market experience sales volume decline of 12% YoY from intense market competition. As well as in 2018 the Bangchak refinery had undergone a 45-day turnaround maintenance during Q2/2018, resulting in the lower finished oil volume produced during the period. Thus, the company had to manage its stock and sales through the industrial channel, as to not impede the retail market, which is the company's main sales channel.
2. Net marketing margin in 2018 was within proximity of 2017 levels. During the mid-year, various factors had pressured the retail marketing margin; i.e. continuously increased crude oil price, and the government's Diesel price ceiling to alleviate burden of the consumers and business operators within the transportation sector during periods of crude oil upsides. However, as the end of the year approached, oil price started tumbling, increasing marketing margin; since there is a lag between service station retail price adjustment and the consistent fall of finished product cost.
3. The company's retail sales market share was at the second rank, and continues to consistently thrive with the cumulative market share of 2018 at 15.8%, an increase of 15.4% from 2017, the number of service station as



of the end of 2018 was 1,175 locations. The company opened 74 new service stations, most of which are standard service stations situated in areas with potential to generate higher throughput per station. Furthermore, 2018 marked the rebrand launch of BCP's member card, "Bangchak Green Miles" that allows members to collect points from the purchase of any product, including products and services under the Bangchak group. Developments were also made to the loyalty card system in the form of a Digitized Loyalty Program coinciding with the new Bangchak Mobile Application, allowing holders of the loyalty card to exchange their collected points in the forms of E-coupons through the application, rendering access to services more convenient and swift.

4. As for Non-oil business under the care of BCR Co., Ltd.; comprising of the supermarket and convenience store SPAR, as well as the Inthanin Coffee chain. The businesses have expanded both outside and inside service stations, and have implemented market promotion continuously. As of the end of 2018, total number of Inthanin Coffee and SPAR branches were 523 and 45 locations, respectively. In 2018, BCR Co., Ltd. recorded an increase in revenue from Non-oil outlets expansion by 62% YoY. However, selling, general and administrative expenses remains high, as the combined number of SPAR stores are not sufficient to generate economy of scales. As such BCR Co., Ltd. still recorded an EBITDA in negative.

Q4/2018 performance compared to Q3/2018, the Marketing Business Group recorded a decline in EBITDA of THB 3 million with factors affecting operations as follow:

1. Marketing Business's total sales volume increased 5%, compared to the previous quarter. The increment is credited to the retail market, ascribed to the tourism season; led to a higher domestic demand for fuel. Also, the industrial market entered the harvesting season of the agricultural customer and agricultural-related business. Altogether, the aforementioned factors induced demand for Diesel and Gasohol line of product to increase by 10% and 2%, respectively. Whereas, Q3/2018 was under a low season period with middling usage of automobiles and minuscule tourism outings, due to the persistent rainfall which lasted throughout the quarter.
2. Net marketing margin in Q4/2018 significantly rose by 23% compared to the previous quarter, as a result of the global crude price adjusting downward in this quarter. This turn of events allowed the company to govern retail service station prices that best accommodate the finished product cost. While, in Q3/2018 crude oil price was on the rise, retail price adjustment was outpaced by the rapidly rising finished product cost, and rounded out by the government's diesel price ceiling policy.
3. The company maintains its market share in terms of retail sales at the second place during the final quarter of 2018. Market share between October and December 2018 was 15.5%, and during Q4/2018 there were 26 additional new service stations commenced operation from the previous quarter.
4. As for the Non-Oil business in Q4/2018, another 44 branches of Inthanin coffee shop commenced operation and 7 more SPAR branches commenced operation from Q3/2018.
5. Selling, General and Administrative expenses are normally higher in the last quarter of the year, due to the marketing promotion expense, and the annual service station maintenance and refurbishing expenses.



3.) Power Plant Business

Power Plant Business Performance	Q4/2017	Q3/2018	Q4/2018	YoY	QoQ	2017	2018	YoY
Solar Power Business – Thailand	65.72	64.24	73.03	11%	14%	265.17	270.00	2%
Phase 1-3 (118 MW – Adder 8 THB)	61.02	57.08	64.53	6%	13%	247.72	244.90	-1%
Cooperative Solar (12 MW – FIT 5.66 THB)	4.70	4.52	4.89	4%	8%	17.45	18.84	8%
Government Solar (8.94 MW – FIT 4.12 THB) and solar rooftop (0.7 MW)	N/A	2.65	3.62	N/A	37%	N/A	6.26	N/A
Solar Power Business – Japan (14.7 MW)	7.23	13.87	3.92	-46%	-72%	41.24	41.83	1%
Total Electricity Sales (Million kWh)	72.95	78.12	76.94	5%	-1%	306.40	311.83	2%
Revenue (Million Baht)	781	830	815	4%	-2%	3,322	3,320	-0.1%
Share of profit (loss) from associated companies								
Wind Power Plant	303	21	11	-97%	-49%	341	39	-88%
Geothermal Power Plant	120	93	(8)	-107%	-109%	166	164	-1%
EBITDA	934	1,542	570	-39%	-63%	2,846	3,569	25%

Performance in 2018 compared to 2017, Power Plant Business recorded a revenue of THB 3,320 million, remained similar to the previous year, and recorded an EBITDA of THB 3,569 million which increased by THB 724 million with the following factors affecting operations as follow:

- The solar power plant projects in Thailand recorded total electricity sales with a marginal increase from the previous year (+2%). In 2018, there were commencement of commercial operation of the government solar projects in collaboration with the War Veteran Organization (WVO) (total installed capacity 8.94 MW) in late July. However, due to the slight dips in average irradiation hours from the heavier rainfall than the previous year, leading the 2018's electricity sales to underachieve in terms of volume expansion.
- The solar power plant projects in Japan recorded minor increase in electricity sales from the previous year (+1%), mainly from the commencement of commercial operation of the Gotemba project (installed capacity 4.4 MW) in January 2018. On the other hand, the company sold the Nikaho and the Nagi project (total installed capacity 27.6 MW) to the Infrastructure Fund of Japan in September 2018. This resulted in the steady amount of overall electricity generated.
- Realized share of profit from investment in associated companies in the amount of THB 204 million; a decrease from the same period of the previous year, with respect to the following factors:
 - Share of profit from the wind power plant in the Philippines in the amount of THB 39 million, comprised of profit from operation THB 73 million, and amortization in rights to electricity sales contract THB 33 million. Operating profit significantly improved upon 2017's, which realized THB 1.1 million, as the performance of the entire year was realized in 2018, whereas last year's performance realized only 7 months since acquisition. However, in 2017 the company recorded a gain on purchase in the amount of THB 362 million, on the other hand 2018 did not record such extraordinary items, thus lowering 2018's share of profit.
 - Share of profit from the geothermal power plant in Indonesia in 2018 recorded at THB 164 million, attributed to profit from operation THB 644 million, and amortization of rights to electricity sales THB



390 million, including refinance cost THB 122 million, tax provision of THB 84 million, and impact from different timing of accounting standard implementation of THB 5 million. As such, share of profit from operations significantly increased from 2017's THB 333 million, as full year share of profit was realized in its entirety, as oppose to 2017's, 5-months realized share of profit.

4. Recorded profit from the sales of the Nikaho and Nagi project assets to the Infrastructure Fund in Japan of THB 793 million. After deducting related tax from the profit in the amount of THB 134 million, the net profit from the sales of asset to the Infrastructure Fund in Japan after corporate income tax was recorded at THB 658 million.
5. The power plant business recorded a lower selling, general and administrative expenses compared to 2017 (-17%) chiefly due to a decrease in financial advisory expense which was a result of the acquisition of the wind power plant in the Philippines during Q2/2017 and the geothermal power plant in Indonesia during Q3/2017.
6. Furthermore, in 2018 the power plant business recorded an insurance compensation for the damages from typhoons in Japan of THB 104 million, and a loss from foreign exchange of THB 27 million, due to the depreciated Thai Baht, resulting in the conversion of foreign currency debt (with the majority in JPY) to THB having more value.

Performance comparison between Q4/2018 and Q3/2018, the power plant business recorded a decline in revenue in the amount of THB 14 million and recorded a decreased EBITDA of THB 972 million, with the following factor affecting operation as follow:

1. The solar power plant projects in Thailand recorded an increase in total electricity sales compared to the previous quarter, mainly due to the enter of high season following the end of an intense rainy season in Q3/2018. Moreover, there was a full quarter profit realization from the solar power plant project in collaboration with the War Veteran Organization (WVO) for the first quarter.
2. The solar power plant project in Japan recorded a decrease in electricity sales from the previous quarter (-72%) mostly attributed to the sales of asset in the Nikaho and Nagi project (total installed capacity of 27.6 MW) to the Infrastructure Fund, Japan. Additionally, the climate in Japan entered winter with fogs and mist in many areas, resulting in lowered average irradiation hours.
3. Realized share of profit from investments in associated companies THB 2.1 million, lesser than the previous quarter due to:
 - Share of profit from the wind power plant in the Philippines was THB 10.5 million, attributed to profit from operations THB 19 million and amortization of rights to electricity sales THB 8 million. Share of profit from operation lowered from THB 29 million of the previous quarter, as there was an off-season typhoon landed on the Philippines in Q3/2018, allowing the project to generate larger than usual amount of electricity.
 - Meanwhile, the investment in geothermal power plant in Indonesia recorded a share of loss at THB 8.4 million, attributed to share of profit from operation THB 180 million and amortization of rights to electricity sales THB 99 million, tax provision THB 84 million, and impact from different timing of accounting standard implementation of THB 5 million. Overall, the operating profit reduced from THB



193 million of the previous quarter, mostly stemming from the Thai Baht appreciating against the US Dollar, resulting in less Thai Baht from currency conversion.

- EBITDA substantially reduced from the previous quarter, as in Q3/2018, there was a profit from the sales of solar power plant assets to infrastructure fund in Japan in the amount of THB 793 million.
- The power plant business incurred slight increases of selling, general and administrative expenses by 2% compared to the previous quarter, due to marginal increase in personnel expenses.

4.) Bio-Based Product Business

For the Bio-Based Business performance in 2018, total EBITDA was THB 692 million, mainly attributed to the Biodiesel Production Business THB 460 million and to the Ethanol Production Business THB 298 million.

Note: BBGI Plc. is in the process of filing for its initial public offering with the The Securities and Exchange Commission.

Biodiesel Production and Sales Business

Biodiesel Business Performance	Q4/2017	Q3/2018	Q4/2018	YoY	QoQ	2017	2018	YoY
Average Daily Production Volume (K.L./day) (Production Capacity 930 K.L./day)	68.84	62.69	69.11	0.4%	10%	244.54	264.10	8%
B100 Sales Volume (Million litre)	72.16	66.07	73.99	3%	12%	248.67	281.08	13%
Revenue (Million Baht)	1,745	1,460	1,401	-20%	-4%	6,699	6,186	-8%
Average Sales Price (Source: Department of Energy Business, Ministry of Energy)								
B100 (Baht / Litre)	24.79	25.18	21.85	-12%	-13%	28.80	24.16	-16%
Crude Palm Oil (CPO) (Baht / Kg.)	20.49	20.23	16.94	-17%	-16%	24.85	19.59	-21%

Performance comparison between 2018 and 2017 the biodiesel production and sales business earned THB 6,186 million in revenue, a decrease of THB 513 million, with factors that affected operations as follow:

- B100 production volume in 2018 was recorded at 264 million liters, an increase of 8% YoY coinciding with increase sales volume which was recorded at 281 million liters, an increase of 32 million liters (+13% YoY), as the government mandating the increase in proportion of B100 mixture as follow:

B100 mixing portion	5% portion of B100	7% portion of B100
Year 2017	127 days	238 days
Year 2018	0 days	365 days

- Average selling price for B100 product much decreased from the previous year, following the direction of diminishing crude palm oil price, which is the main reason for the reduction in revenue, even with the increase in sales volume. The crude palm oil price stabilized at a low level since the beginning of the year, a result of the high level of excess supplies both domestically and abroad. Later in the year, crude palm oil price decreased



significantly as there was a higher oil palm supply entering the market, resulting in the higher domestic palm oil stock to be at 430,000 tons.

3. Gross profit increased from the previous year, in consequent of increased sales volume combined with the capability to procure raw material and manage inventory better than last year.

Performance compared between Q4/2018 and Q3/2018, the biodiesel production and sales business recorded a decrease in revenue of THB 59 million due to the following factors that affected operations as follow:

1. Production output for B100 product of Q4/2018 increased 10% compared to the previous quarter, corresponding to the increase in B100 product sales volume that rose by 8 million liters (+12% QoQ) due to the country entering tourism and harvesting season, driving demand for diesel up.
2. Average selling price of B100 product and the price of crude palm oil adjusted down from the preceding quarter, as there was a larger amount of palm oil supply entering the market, resulting in the domestic palm oil stock to be at a higher level than in the previous quarter.
3. Gross profit is still affected by the movement of crude palm oil price which are still in a low level, due to the amount of excess palm oil reserves remaining at a high level.

Ethanol Production and Sales Business

Ethanol Business	Q4/2017	Q3/2018	Q4/2018	YoY	QoQ	2017	2018	YoY
Average Daily Production Volume (K.L./day)								
Bangchak Bioethanol (Chachoengsao)(BBE) (Production capacity 150 K.L./day)	12.09	11.85	12.34	2%	4%	43.66	44.57	2%
KSL Green Innovation (KGI) (Production capacity 150 K.L./day)	7.44	30.61	13.96	88%	-54%	7.44	105.19	N/A
Ethanol Sales Volume (Million litre)	24.64	46.48	32.31	31%	-30%	55.02	149.17	171%
Revenue (Million Baht)	620	1,156	744	20%	-36%	1,374	3,602	162%
Average Sales Price (Source: Department of Energy Business, Ministry of Energy)								
Ethanol (Baht / Litre)	24.91	23.40	23.31	-6%	-0.4%	24.79	23.70	-4%

Performance comparison between 2018 and 2017, ethanol production and sales business recorded THB 3,602 million in revenue, an increase of THB 2,227 million, with factors that affected operations as follow:

1. Bangchak Bioethanol (Chachoengsao) Co., Ltd. produced 45 million liters of ethanol, a marginal increase from the previous year. KSL Green Innovation Co., Ltd. produced 105 million liters of ethanol, also a slight increase from the previous year. As a result, total ethanol product sales volume increased by 94 million liters (+171% YoY), as in 2018, KSL Green Innovation Co., Ltd.'s performance was realized for the full year, while in 2017 its performance was realized only for the final 2 months of the year.



2. Average ethanol product price declined, as domestic ethanol stock stayed at a high level. Also, ethanol price declined following the decrease in price of its raw material, molasses; the main material in domestic ethanol production. The lowered price of molasses was the result of excess sugarcane output.
3. Compared to the previous year, gross profit of ethanol product produced from cassava reduced from a significant increase in cost of fresh cassava and cassava chips. As for gross profit of ethanol product produced for molasses increased from diminishing raw material cost.

Performance compared between Q4/2018 and Q3/2018, the ethanol production and sales business recorded a decreased revenue of THB 412 million due to the following factors that affected operations as follow:

1. Bangchak Bioethanol (Chachoengsao) Co., Ltd. increased ethanol production by 4% when compared to the previous quarter. KSL Green Innovation Plc. recorded a decline in its ethanol production volume, as the Nam Pong plant underwent its planned annual maintenance between 16 September – 15 October 2018, and their Bo Ploy plant also underwent a planned annual maintenance between the 26 October – 15 December 2018, therefore total sales volume of ethanol products was lower than the previous quarter.
2. Average selling price of ethanol product in this quarter reduced from the previous quarter.
3. Gross profit of ethanol product produced from cassava improved due to the cost of fresh cassava and cassava chip receding. Meanwhile, the gross profit for ethanol product produced from molasses wind down from the increase in raw material price according to the molasses price.

5.) Natural Resources Business Group

As for the performance of the natural resources business in 2018, EBITDA was recorded at THB 117 million, chiefly from the exploration and production business with performance as follow:

The Exploration and Production Business by Nido Petroleum Limited

E&P Business Performance	Q4/2017	Q3/2018	Q4/2018	YoY	QoQ	2017	2018	YoY
Production Volume ^{1/} (barrels per day net to Nido)	2,045	1,764	0	N/A	N/A	2,231	1,859	-17%
Sales Volume (barrels net to Nido)	206,052	3,447	5,556	-97%	61%	820,560	407,964	-50%
Revenue (Million Baht)	388	16	17	-96%	6%	1,510	963	-36%
EBITDA (Million Baht)	25	194	52	112%	-73%	295	396	34%

Note: 1/ production volume of Galoc oil field only

2018 performance compared to 2017, the exploration and production business recorded revenue of THB 963 million, a decline of THB 547 million, but recorded EBITDA of THB 396 million, an increase of THB 101 million due to the following factors:



1. The Galoc field had an uptime of 99.98% and average production at 3,327 barrels per day (net to Nido 1,859 barrels per day, a decline of 17% YoY, with respect to the natural decline curve).
2. Sales revenue declined, as there was no sales volume contributed from Galoc oil field in the latter half of the year, after the company group divested its total shares held in Nido Production (Galoc) Pty. Ltd., which is an indirect subsidiary of the company group that owns 55.8% of the Galoc field and Tamarind Galoc Pte. Ltd., resulted in this year's total sales net to Nido to be 407,964 barrels (Galoc field 385,697 barrels, and Nido & Matinloc 22,267 barrels), while in 2017 total sales was 820,560 barrels (Galoc field 787,250 barrels, and Nido & Matinloc 33,310 barrels).
3. In Q2/2018, as a result of the company group's divestment of Nido Production (Galoc) Pty. to Tamarind Galoc Pte. Ltd., the company group recorded a loss from impairment of assets for exploration and production of petroleum in the amount of THB 412 million in the consolidated financial statement, and record a loss from impairment in investment in subsidiary, recorded in company only financial statement THB 272 million, respectively. The company group recorded a profit from the transaction in the amount of THB 78 million in 2018.

In Q3/2018, BCP established the following new subsidiaries in Thailand, BCPR Co., Ltd. with BCPR Co., Ltd. establishing its own subsidiary in Singapore, BCPR Pte. Ltd., to joint invest with Seacrest Capital Group in the Draugen Field and Gjøa Field obtained from A/S Norske Shell through subscribing new shares from OKEA AS, a company incorporated under the laws of Norway; operating the development and production of petroleum in Norway, in the proportion of 90% of the newly issued shares, which is worth in total NOK 939 million (approximately THB 3,618 million) and were ascribed OKEA shares in the amount of 49.33% of total registered capital. Additionally, as of 30 November 2018 OKEA has made payments for the rights to the Draugen Field and Gjøa Field to Shell, and was successfully transferred the full rights to the mentioned oil fields. OKEA AS is considered associated company to Bangchak. This year the company realized share of loss from its investment in the associated company of THB 3 million, mostly a result of unrealized loss on foreign exchange as a result of US Dollar loan value conversion on financial statement.

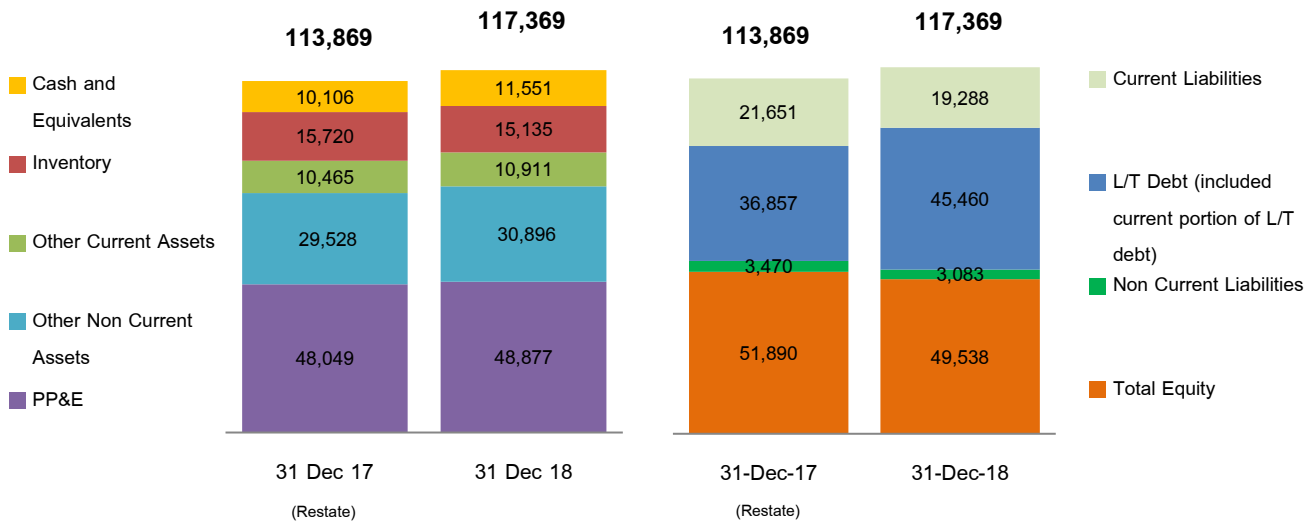


Statement of Financial Position



Financial Position of the Company and its subsidiaries (Consolidated)

Unit: THB million



Note: Restatement of financial statement 2017 due to the changes in the fair value of the interest acquired in Geothermal Power Plant project in Indonesia.

Assets

As of the 31 December 2018, the company and its subsidiaries has Total Assets in the amount of THB 117,369 million, an increase of THB 3,500 million when compared to the 31 December 2017, changes in assets are as follow:

- Cash and cash equivalents increased by THB 1,445 million. Details are stated in Analysis of the Cash Flow Statement
- Net Trade Account Receivable decreased THB 543 million, primarily from the company's trade account receivables, as the oil sales volume in December 2018 reduced, and selling price per unit of the finished oil products was lower than in December 2017.
- Inventory decreased by THB 585 million, mainly from the lower crude oil inventory of BCP Trading Pte. Ltd. and NIDO Petroleum Ltd., and from BBGI Plc.'s lower finished oil products inventory. For the company, inventory value was higher from the increment in average cost per unit, although crude oil and oil product inventory volume was lower than the previous year, recorded at 3.2 million barrels and 1.9 million barrels respectively. Moreover, the company group recorded a provision for lower of cost or market (LCM) of THB 696 million.
- Oil fund subsidy receivable increased by THB 439 million, as the waiting period for the company to receive the cash extended, and the subsidize rate for diesel products increased.



- Investments in subsidiaries which was recorded in only the company's financial statement which increased by THB 568 million. However, due to the elimination for the transaction between related parties, the amount of investment recorded in consolidated financial statement was recorded at zero, with details as follow:
 - Established a subsidiary called BCPR Co., Ltd., with registered capital of THB 1 million, and later increased its registered capital to THB 660 million in November 2018. And established an indirect subsidiary in Singapore called BCPR Pte. Ltd., to joint invest with Seacrest Capital Group, in subscribing new shares of OKEA AS, a company established under the laws of Norway.
 - BCP Innovation Pte. Ltd. increased its registered capital by THB 99 million, to invest in Bonumose LLC. and Enevate Corporation.
 - Established BCV Bio-based Co., Ltd., BCV Energy Co., Ltd., BCV Innovation Co., Ltd., and BCV Partnership Co., Ltd., each with registered capital of THB 20 million (total of THB 80 million), to invest in New Start-ups relating to innovations.
 - Impairment loss in investment in BCP Energy International Pte. Ltd. which invested in Nido Petroleum Ltd. at THB 271 million.
- Investment in associated companies and joint ventures increased by THB 3,890 million, mostly due to the investment in OKEA AS in the amount of USD 112.41 million (approximately THB 3,618 million)
- Other long term investments decreased by THB 2,531 million, primarily from the company's subsidiary, BCP Innovation Pte. Ltd, adjusted its net fair value on available-for-sale investment (LAC) of which share price reduced from CAD 11.18 as of 31 December 2017, to CAD 4.31 as of 31 December 2018.
- Property, plant and equipment net increased by THB 828 million, investment was made primarily in 1.) Refinery machinery of THB 3,782 million, 2.) Sales equipment, and office equipment at THB 1,514 million, 3.) Power plant work in progress at THB 1,481 million, 4.) Land at THB 705 million. 5.) Electricity generation equipment at THB 648 million 6.) Business acquisition in Lom Ligor of BCPG Plc. at THB 174 million. The company and its subsidiaries also sold assets by THB 2,605 million, mostly were the selling of solar power plant assets to infrastructure fund in Japan. Meanwhile, depreciation for the period recorded at THB 4,455 million, and impairment loss on petroleum exploration & production assets (Galoc) was recorded at THB 412 million.

Liabilities

As of 31 December 2018, the company and its subsidiaries has Total Liabilities in the amount of THB 67,831 million, increased by THB 5,853 million, changes in liabilities were as follow:

- Short term loans from financial institutions increased by THB 958 million, mainly from BBGI Plc., and BCPG Plc. increased by THB 819 million and THB 161 million, respectively
- Trade Accounts Payable decreased by THB 3,336 million, primarily from the volume and price of crude oil purchased lowered by THB 2,454 million. While oil trading business recorded a lower transaction volume by THB 656 million.



- Excise Tax and Oil fund expense payable increased by THB 350 million according to the higher contribution rate from the company to oil fund for Gasohol and Gasoline products.
- Loans from financial institutions decreased by THB 2,387 million, from the loan repayment by THB 4,231 million, and company's subsidiaries loan drawdown by THB 1,629 million. There was also adjustments to the effects of foreign currency conversion of financial statement in the amount of THB 187 million, and the amortized issuance cost of THB 28 million.
- Debentures increased from the bond issuance in the amount of THB 4,000 million (tenor of 2-7 years with coupon rate of 2.13 – 3.42% per annum) issued on 10 August 2018, and the amount of THB 7,000 million (tenor of 10 years with coupon rate of 4.04% per annum) issued on 20 December 2018
- Decommissioning provisions for exploration and production business declined by THB 455 million, following the share divestment in Nido Production (Galoc) Pty. Ltd. which hold the right in Galoc oil field, in Q3/2018.

Equities

As of the 31 December 2018, the company and its subsidiaries' total equity was THB 49,538 million, total equity attributable to owners of the company was THB 42,715 million, a decrease of THB 2,765 million, mostly increased from the net profit for the period of THB 2,463 million, paid dividend by THB 2,685 million, and other component of equity decreased by THB 2,576 million (result of differences in net fair value change in available-for-sale investment (LAC) which reduced). Book value per share was THB 31.02.



Cash Flows Statement of the Company and its subsidiaries (Consolidated)



As of 31 December 2018, the Company and its subsidiaries had net cash received from operating activities of THB 5,950 million, net cash used in investing activities of THB 9,100 million, net cash received from financing activities of THB 4,725 million, and decrease from the effects of exchange rate conversion on balances held in foreign currencies in the amount of THB 131 million. As a result, net cash and cash equivalents increased by THB 1,445 million, as there was cash in the amount of THB 10,106 million as of 1 January 2018, resulting in remaining cash as of 31 December 2018 in the amount of THB 11,551 million, details for each activity are as follow:

Cash Flows (Unit: Million Baht)	2017 (Restated)	2018
Net cash received (used in) operating activities	13,851	5,950
Net cash received (used in) investing activities	(18,960)	(9,100)
Net cash received (used in) financing activities	(3,761)	4,725
Effect of exchange rate changes on balances held in foreign currencies	(310)	(131)
Net increase (decrease) in cash and cash equivalents	(9,181)	1,445
Cash and cash equivalents as at 1 January	19,287	10,106
Cash and cash equivalents as at 31 December	10,106	11,551

Note: Restatement of financial statement 2017 due to the changes in the fair value of the interest acquired in Geothermal Power Plant project in Indonesia.

Details of cash received and used are as follows:

- 1) Net cash received from operational activities in the amount of THB 5,950 million are mainly attributed to:
 - Cash received from operating activities of THB 10,440 million, which was from Net Profit of THB 3,235 million, added back Non-Cash Expenses of THB 5,167 million, added back Financial Costs and Tax expense of THB 2,038 million.
 - Net cash used in operating assets and liabilities of THB 3,360 million, mainly from (1) Trade account receivable decreased by THB 514 million. (2) Inventory increased by THB 400 million. (3) Other receivables and other assets increased by THB 1,314 million. (4) Trade account payable decreased by THB 2,965 million (5) Other liabilities and other liabilities increased by THB 852 million (primarily from a decrease in excise tax and oil fund payables.)
 - Corporate Income Tax paid by THB 1,130 million.
- 2) Net Cash used in investing activities of THB 9,100 million, mainly from:



- Cash received from interest and dividends in the amount of THB 114 million.
- Cash paid for investment in subsidiaries and associated companies by THB 3,822 million, from share purchase in Lom Ligor Co., Ltd. to invest in wind power plant by THB 204 million, and share purchase in OKEA AS by THB 3,618 million.
- Cash received from the selling of investment of THB 731 million, from the disposal of the shares held in Nido Production (Galoc) Pty. Ltd.
- Cash received from the selling of property, plant and equipment of THB 3,031 million, mainly from the selling of BCPG Plc.'s solar power plant assets into Infrastructure Fund in Japan.
- Cash paid for investment in property, plant and equipment in the amount of THB 7,705 million, mainly attributed to investment in heavy machinery, refinery cracking units, selling and office equipment, and power plant assets.
- Cash paid for the right to lease and Intangible assets by THB 1,109 million.

3) Net Cash received from financing activities of THB 4,725 million, mainly from:

- Cash paid for financial cost in the amount of THB 1,618 million.
- Dividend paid in the amount of THB 3,091 million, attributed to the company THB 2,685 million and BCPG Plc. paid dividend for non-controlling interest in the amount of THB 406 million.
- Cash received from short term loans from financial institution increased by THB 982 million, mainly attributed to BBGI Plc.
- Cash received from bond issuance of THB 11,000 million, and cash received from long term loans from financial institution in the amount of THB 1,629 million of BCPG Plc. and BBGI Plc.
- The company and its subsidiaries repaid long term loan from financial institution of THB 4,231 million.



Financial Ratios



Financial Ratios (Consolidated)

Profitability Ratios (%)	Q4/2017	Q3/2018	Q4/2018	2017	2018
Gross Profit Margin	7.76%	7.15%	0.87%	7.87%	5.95%
EBITDA Margin	8.33%	7.78%	-0.62%	7.94%	5.32%
Net Profit Margin	3.65%	4.14%	-3.02%	3.58%	1.68%
Return on Equity ^{1/} (ROE)	13.19%	12.50%	5.59%		
Return on Assets (ROA)	7.10%	8.28%	4.56%		

1/ Profit and Total equity attributable to owners of the Company

	31-Dec-17	30-Sep-18	31-Dec-18
Liquidity Ratios			
Current Ratio	1.52	1.43	1.47
Quick Ratio	0.80	0.69	0.80
Financial Policy Ratios			
Interest bearing Debt to Equity	0.79	0.78	0.94
Net Interest bearing Debt to Equity	0.59	0.65	0.70
	Q4/2017	Q3/2018	Q4/2018
DSCR ^{2/}	2.47	2.53	1.77

2/ DSCR Calculation is not including long term debt prepayment



Financial Ratios Calculation

▪ Gross Margin	=	Gross Profit / Revenue from sale of goods and rendering of services
▪ EBITDA Margin (%)	=	EBITDA / Revenue from sale of goods and rendering of services
▪ Profit Margin (%)	=	Profit attributable to owners of the Company / Revenue from sale of goods and rendering of services
▪ Return on Equity (%)	=	Profit attributable to owners of the Company (Yearly) / Total Equity attributable to owners of the Company (Average)
▪ Return on Assets (%)	=	EBIT (Yearly) / Total Asset (Average)
▪ Current Ratio (times)	=	Current Asset / Current Liabilities
▪ Quick Ratio (times)	=	(Cash & Equivalents + Short term investments + Trade Account Recievable) / Current Liabilities
▪ Interest bearing Debt to Equity (times)	=	Interest bearing Debt / Total equity
▪ Net Interest bearing Debt to Equity	=	(Interest bearing Debt – Cash and cash equivalents – Current investments) / Total equity
▪ DSCR	=	EBITDA (Yearly) / (Paid for long-term debt + Finance cost)

Note:

1/ Average Total Equity attributable to owners of the Company

- Yearly = (Total Equity attributable to owners of the Company of the year before + Total Equity attributable to owners of the Company of this year) / 2
- Quarterly = (Total Equity attributable to owners of the Company of the quarter of the year before + Total Equity attributable to owners of the Company the quarter this year) / 2

2/ Average Total Assets

- Yearly = (Total Assets of the year before + Total Assets of the Company of this year) / 2
- Quarterly = (Total Assets of the Company of the quarter of the year before + Total Assets of the Company the quarter this year) / 2

3/ The numerator of ROE is defined as the Profit attributable to owners of the Company and have to be annualized.

4/ The numerator of ROA is defined as EBIT and have to be annualized.

5/ Interest Bearing Debt defined as Short-term loans + Long-term loans (including Current portion of long-term loans) + Debentures + Finance lease liabilities (including current portion of finance lease liabilities)



Environment Management Accounting (EMA)



Having the environmental concerns and social responsibilities, the Company has prepared the environmental management accounting report since 2005, aiming to enable the benefit of its usage for other organizations as well as for the company. The environmental cost accounting helps the Company to keep track with the information which is useful for enhancing the environmental management effectiveness, and resource utilization. The Environmental Cost Accounting report covers refinery business unit, Bangchak and Bang Pa-in Oil distribution Centre.

(Unit: Million Baht)

Environment Management Accounting : EMA	FY2017	FY2018	change
Material Costs of Product Outputs	94,982	103,552	8,570
: Consist of crude oil, ethanol, biodiesel, chemical, energy and utilities in production			
Material Costs of Non-Product Outputs	93.19	111.94	18.75
: Consist of slop and sludge oil, waste water, chemical surplus			
Waste and Emission Control Costs	279.17	315.48	36.31
: Consist of maintenance cost of environmental control equipment and depreciation and other fees			
Prevention and Other Environmental Management Costs	12.95	9.38	(3.57)
: Consist of monitoring and measurement cost, environmental management system expenses			
Total Expenses	95,367	103,989	8,621
Benefit from by-product and waste recycling	(12.26)	(15.62)	(3.36)

Total environmental cost in 2018 increased from 2017 by approximately THB 8,621 million (+9% YoY) mainly due to Material Cost of Product Output which was higher by THB 8,570 million, with respect to the global crude oil price which rose 25% from last year. In 2018, the average production rate was recorded at 102.39 KBD. Due to the refinery's turnaround annual maintenance in 2018, Material Costs of Non-Product Outputs was higher by THB 18.75 million, in accordance with the quantity of product that is below quality standard which increased by THB 18.69 million. Waste and Emission Control Costs increased by THB 36.31 million, primarily from the increment in environmental control equipment depreciation cost of THB 33.38 million, maintenance cost of environmental control equipment increased by THB 1.64 million, and waste management cost increased by THB 1.79 million. However, Prevention and Other Environmental Management Costs declined by THB 3.57 million.

Benefits from by-products and waste recycling inclined by THB 3.36 Million (+27% YoY), mostly due to amount of sellable iron and aluminum scrap which increased.

Air quality from the refinery's flue

To monitor the environment, the Company has been constantly measuring air quality emitted from the refinery's various flues, to which the amount of pollutant such as dust, nitrogen oxide, and sulfur dioxide emitted is far below the required standard set by the Thai Ministry of Industry.





2019 Economic Situation Perspective

The International Monetary Fund (IMF) expects the global economy to display growth, while exhibiting propensity to slow down with respect to diminishing Chinese economy expansion, the political instability of countries in the Eurozone, together with the uncompleted Brexit terms in early 2019, and the Japanese economy that shows minuscule growth from exports to the US. While some emerging market countries are experiencing currency crises which have left them with capital outflow and have tendencies to enter a state of economic recession. Also the US, although displaying high growths, but due to measures to stimulate the economy coming to the end of its run combined with the effects of the retaliations from its trade partners, US economic growth could be lower than previously expected. As well as the ASEAN countries economy, which has always seen high growth, would be effected from contracting exports as well. Therefore, expected economic expansion in 2019 was adjusted downward to 3.5%.

Thai economy in 2019 is expected to experience a slower expansion compared to the previous year, displaying growth ranging in the 3.5 to 4.5%, with risk factors from global economic slowdown, while finance and household debt that remains high; acting a restrictive factor. However, fostering confidence in the tourism industry among Chinese tourists will be another important growth-supporting factor that is recovering. Exports remain satisfactory, although affected by the trade restrictions between the US and China. Improving consumer confidence, and revived private and government sector investments under the planned EEC development project, are helping economic slowdown to further pace out. Whereas general inflation in 2019 is in a low level at 0.7 to 1.7% range, with tendency to gradually adjust upward from the 1.1% in 2018.

However, in measuring the Thai economic condition, considerations must account risk factors i.e. the trade restrictions between the US and China, geopolitical risks that may hinder Thailand's trade partners, and the resurgence of the tourism sector via Chinese tourists, which could cause Thai economic growth to not expand as expected.

Crude Oil Price and crack spread situation

The International Energy Agency (IEA) expects global crude oil demand to expand by 1.4 million barrels per day in 2019 compared to the 1.28 million barrels per day expansion in 2018. Demand in Asia would be the main contributor to the growth of global oil demand, especially in China and India, from their policy to invest in basic infrastructure and tendency for their economy to strongly expand. Although China will be affected by their trade dispute with the US, the fundamentals in their economy and technology are still be able to drive its growth. As for oil supply in 2019, the production from the OPEC members is likely to increase by 0.8 million barrels per day, and an increase of 1.5 million barrels per day by non-OPEC countries; mostly a result of US production that is expected to expand by 1.1 million barrels per day, rose further from the US production increment during 2018 which grew less than expected by 2.3 million barrels per day, due to complications with the pipeline from the Permian fuel to ports did not have adequate capacity. However, in the latter half of 2019, a new pipeline is expected to be completed and will allow US Shale Oil



production to increase. Furthermore, the developments in technological production capacity will assist in lowering US production cost, to the point where production will be possible amidst periods of bearish price. These factors may cause the global oil market approach an excess supply scenario in the latter half of the year. From assessment, it is estimated that Dubai crude oil price in 2019 will move between 55-65 \$/BBL, even though oil market in 2019 is pressured from global economic slowdown that was a result of the trade war between China and the US, the appreciating US dollar, and US oil production which is likely to increase. Whereas the bearish oil price stimulates global demand, along with help from the OPEC group and their allies working to lower production and reduce oil supply.

Dated Brent and Dubai (DTD/DB) crack spread is expected to average between 1-2 \$/BBL, to which in the first half of 2019 the spread will narrow down due to the OPEC group curbing production and the sanction placed on Iran by the US, effectively lowering the supplies of Heavy crude in the market; serving to bolster the Dubai price. However, during the latter half of 2019, the spread is expected to be widen after demand for low Sulphur crude increases as a means to produce low Sulphur fuel oil (0.5% Sulphur) to be used in ocean freighter to comply with the new International Maritime Organization (IMO) standard, which will likely result in the Brent crude price to increase following the trend.

In terms of the refining margin, it is estimated that the Dubai crude refining margin for Hydrocracking refineries in Singapore is likely to be lower than in 2018 from receding global economic growth. The International Monetary Fund (IMF) lowered their estimation of 2019 global economic growth by 0.2% from the previous estimate in October 2018, which was 3.5% growth compared to 2018. As well as, the Gasoline crack spread which has been at low levels for some time after global Gasoline stock remained at high levels. However, in the latter part of 2019, refining margin is expected to increase through demands from ocean freighters that will be using low Sulphur fuel oil in accordance with IMO standards, the production of these low Sulphur fuel oil requires a portion of Diesel product blending, which will in turn likely to increase Diesel crack spread.

