



# The Bangchak Petroleum Public Company Limited

## Management Discussion and Analysis of Business Operation

For the year ended December 31, 2016



**Summary of the Company and its subsidiaries' operating result for the second quarter ended 31<sup>st</sup> December 2016**

In 2016, the consolidated financial statement recorded revenue from sale of goods and rendering of services of Baht 144,705 million, and Net Profit of Baht 4,729 million which was the Net Profit attributable to owners of the Company of Baht 4,773 million, or earning per share of 3.47 Baht.

EBITDA Structure of the Company and its subsidiaries.						Unit: Million Baht		
	Q4/2015	Q3/2016	Q4/2016	YoY	QoQ	2015	2016	YoY
<b>Total Revenue</b>	<b>35,136</b>	<b>36,686</b>	<b>40,481</b>	<b>15%</b>	<b>10%</b>	<b>151,140</b>	<b>144,705</b>	<b>-4%</b>
<b>Total EBITDA</b>	<b>1,401</b>	<b>2,798</b>	<b>3,287</b>	<b>135%</b>	<b>17%</b>	<b>11,081</b>	<b>11,363</b>	<b>3%</b>
<i>EBITDA Refinery<sup>1/</sup></i>	130	1,503	2,367	N/A	57%	5,097	5,756	13%
<i>EBITDA Marketing<sup>2/</sup></i>	549	607	(3)	-101%	-101%	2,497	2,527	1%
<i>EBITDA Power Plant<sup>3/</sup></i>	865	612	795	-8%	30%	3,005	2,559	-15%
<i>EBITDA Biofuel<sup>4/</sup></i>	113	(65)	131	16%	303%	355	326	-8%
<i>EBITDA Exploration and Production<sup>5/</sup></i>	(26)	171	71	371%	-59%	472	323	-32%
<i>EBITDA Others<sup>6/</sup></i>	(56)	(31)	(73)	-29%	-137%	(171)	(129)	-25%
Profit attributable to owners of the Company	(112)	1,178	1,131	N/A	-4%	4,151	4,773	15%
<b>Basic earnings per share (Baht)</b>	<b>(0.08)</b>	<b>0.86</b>	<b>0.82</b>			<b>3.01</b>	<b>3.47</b>	<b>15%</b>

Note: 1/ EBITDA from Refinery Business of the Company, BCP Trading Pte. Ltd. and Bongkot Marine Services Co., Ltd.

2/ EBITDA from Marketing Business of The Company, Bangchak Greenet Co.,Ltd., and Bangchak Retail Co., Ltd.

3/ EBITDA from Power Plant Business of BCPG Plc. and its subsidiaries

4/ EBITDA from Bangchak Biofuel Co., Ltd., Bangchak Bioethanol (Chachoengsao) Co., Ltd., and Ubon Bio Ethanol Co, Ltd.

5/ EBITDA from Nido Petroleum Limited

6/ EBITDA from BCP Energy International Pte, Ltd., BCP Innovation Pte. Ltd., and others

In 2016, Bangchak refinery's average crude run was decreased compared to 2015, from the annual turnaround maintenance between 8<sup>th</sup> February - 23<sup>rd</sup> March totaling 45 days. However, total sales volume was increased by 5% YoY, especially in sales volume through retail market (service stations), since the company had reserved its oil products to sell during refinery's maintenance period. This was according to the company's strategy to serve the retail market as its main priority, in response to the boosted domestic demand due to the declining retail oil product prices, the economic recovery and the consecutive tourism growth from 2015. Consequently, total marketing margin was slightly increased compare to previous year.

Average Dubai crude oil price in 2016, compared to 2015, was decreased by 18% (average Dubai crude oil price in 2016 and 2015 was 41.43 and 50.84 \$/BBL respectively), due to the lower oil demand from China earlier this year. In addition, OPEC's crude oil production continuously to hit its highest production record in 2016. However, the crude oil price during the end of the year was supported by the supply-reduction deal of The Organization of the

Petroleum Exporting Countries (OPEC) and 12 non-OPEC countries. Consequently, the company recorded an inventory gain of Baht 590 million and its subsidiaries recorded an inventory loss of Baht 98 million, resulted in an inventory gain of Baht 488 million as a group.

In 2016, The Company and its subsidiaries recorded a gain from crude and product oil price hedging contract of Baht 107 million, a gain from foreign currency forward contracts of Baht 39 million, and a gain on foreign exchange of Baht 237 million, from Bath appreciation. While the company's strategy focusing on business expansion lead to non recurring higher cost of selling and administrative expenses related to acquisition and establishing subsidiaries company activities, resulting in a decline in some business performance. However, the consolidated performance of the company and its subsidiaries was superior to previous year. As a result, in 2016, the Company and its subsidiaries recorded a total EBITDA of Baht 11,356 million, increased 3% YoY.

**The summary of business performance by sector were as follows:**

Bangchak refinery's average crude run was recorded at 101.39 KBD, decreased from the annual turnaround maintenance (TAM). However, crude run was steadily higher than the target of 96 KBD afterwards. Market GRM was recorded at 5.99 \$/BBL, reduced from last year, since Dated Brent/Dubai crack spread (DTD/DB) expanded while most of the products crack spreads dropped, especially in Gas Oil/Dubai crack spread (GO/DB), which was the majority of Bangchak's refining products, was decreased by 19% YoY. Despite the spread issue, Market GRM had been driven by cost reduction from quality improvement project and Co-generation system that saves cost of electricity with thermal energy. In addition, the crude oil prices was increased at the end of the year, resulted in an inventory gain of Baht 590 million refinery business, and a gain from crude and product oil price hedging contract of Baht 112 million. EBITDA was increased by 13% YoY.

Marketing business sales volume was 5,789 million litres, increased by 7% YoY, from the rise in domestic oil demand in both retail and industrial markets, supported by the declining retail oil product prices and a growth in tourism sector. The company's retail market share remained in the 2<sup>nd</sup> rank at 15.1%, as the company prioritizes its selling of finished products through service stations and opening new and quality service stations. Total marketing margin was 0.79 baht per litre, increased by 3% YoY. In 2016, marketing business incurred in a higher cost of selling and administrative expenses, resulting from the sales volume oriented strategy and business expansion, by establishing Bangchak Retail Co., Ltd. to operate non-oil business. Consequently, EBITDA was slightly decreased from the previous year.

Solar Power business which is currently operated by BCPG Plc., a subsidiary of the company, recorded an increase in total revenue by 2%YoY. Its solar power business in Japan had the total electricity sales of 19.50 million kWh from the operating projects, and two of agricultural cooperatives solar farms have started the commercial operation with PPA of 7 MW. However, solar power business in Thailand recorded a lower total electricity sales by 8.93 kWh (-3%) YoY, mainly from decreasing in irradiation hours of all the 3 phases and the lower average electric price (exclude adder). Solar Power business recorded a higher selling, general and administrative expenses comparing to the previous year, due to the cost of acquiring SunEdison (Japan), preparing project under construction and development, and its initial public offering (IPO) which lead to diminishing EBITDA by 15% YoY.

Biofuel business recorded a revenue of Baht 7,093 million, increased by 31% YoY, due to Bangchak Biofuel Co., Ltd.'s 2<sup>nd</sup> biodiesel plant and Bangchak Bioethanol (Chachoengsao) Co., Ltd.'s ethanol plant commencement. B100 sales volume grew in response to the new biodiesel Plant. However, in order to cope with the rising crude palm oil price earlier this year, the government announced a reduction in B100 mixing portion with diesel since July (B100 portion in with diesel: 25 July reduced from 7% to 5%, 25 August reduced from 5% to 3%, and 25 November increased from 3% to 5%). As a result, Biodiesel business was unable to reach its target production, and recorded the average daily production rate at 406 thousands litres. Moreover, the volatility of the crude palm oil prices resulted in the Baht 143 million inventory loss for the year (including allowance for loss on decline in value of inventories (LCM) of Baht 7 million). Consequently, biodiesel business EBITDA was decreased by 23% YoY. However, ethanol business recorded an additional EBITDA from Bangchak Bioethanol (Chachoengsao) Co., Ltd, and a higher share of profit from Ubon Bio Ethanol Co., LTD. In sum, biofuel business record an EBITDA of Baht 326 million, decreased by 8% YoY.

Exploration and Production Business recorded a revenue of Baht 1,503 million, with the total sales volume of 995,880 barrels. The decline in revenue followed the fact that the average selling price per cargo dropped as the market price was lower and the sale volume decreased as the production volume declined in accordance with the Natural-Divide Production Curve. However, Nido is still focusing on its cost saving program on both the expenses in production and selling, general and administrative responding to the low crude oil price environment. In 2016, The Board of Directors of the company resolved to inject AUD 25.94 million into BCP Energy International Pte., Ltd. (BCPE) for taking all the entitlement right under Nido Petroleum Limited's pro rata entitlement offer of new ordinary shares. The proceeds will be used to finance Nido's participates interest share of the cost of drilling the Galoc appraisal well. BCPE's stake in Nido was increased from 81.25% to 96.98%.

Consolidated Statement of Income						Unit: Million Baht		
	Q4/2015	Q3/2016	Q4/2016	YoY	QoQ	2015	2016	YoY
Revenue from sale of goods and rendering of services	35,136	36,686	40,481	15%	10%	151,140	144,705	-4%
Cost of sale of goods and rendering of services	(33,097)	(33,774)	(36,721)	11%	9%	(139,686)	(132,809)	-5%
<b>Gross Profit</b>	<b>2,039</b>	<b>2,912</b>	<b>3,759</b>	<b>84%</b>	<b>29%</b>	<b>11,454</b>	<b>11,896</b>	<b>4%</b>
Investment income and other income	99	113	404	309%	258%	543	754	39%
Selling and administrative expenses	(1,672)	(1,473)	(2,071)	24%	41%	(5,175)	(6,189)	20%
Gain (loss) from crude and product oil price hedging contract	(312)	11.0	(66)	79%	-703%	(407)	107	126%
Gain (loss) from foreign currency forward contracts	24	13	(32)	-230%	-341%	(155)	39	125%
Gain (loss) on foreign exchange	92	156	(253)	-375%	-263%	178	237	33%
Reversal of allowance for gain/(loss) from impairment of assets	(70)	3	31	145%	802%	(65)	37	157%
Share of profit (loss) of associate	4	(1)	16	318%	N/A	12	21	69%
<b>Profit before finance costs and income tax expense</b>	<b>203</b>	<b>1,734</b>	<b>1,788</b>	<b>778%</b>	<b>3%</b>	<b>6,385</b>	<b>6,902</b>	<b>8%</b>
Finance costs	(412)	(369)	(415)	1%	13%	(1,615)	(1,484)	-8%
<b>Profit/(loss) before income tax expense</b>	<b>(208)</b>	<b>1,365</b>	<b>1,372</b>	<b>759%</b>	<b>1%</b>	<b>4,770</b>	<b>5,418</b>	<b>14%</b>
Income tax (expense) credit	17	(233)	(164)	N/A	-30%	(673)	(689)	2%
<b>Profit for the period</b>	<b>(191)</b>	<b>1,132</b>	<b>1,209</b>	<b>733%</b>	<b>7%</b>	<b>4,097</b>	<b>4,729</b>	<b>15%</b>
Owners of the Company	(112)	1,178	1,131	N/A	-4%	4,151	4,773	15%
Non-controlling interests	(79)	(47)	77	198%	266%	(53)	(44)	18%
<b>Earnings per share (Baht per Share)</b>	<b>(0.09)</b>	<b>0.86</b>	<b>0.82</b>	<b>N/A</b>	<b>-4%</b>	<b>3.01</b>	<b>3.47</b>	<b>15%</b>

In 2016, the company and its subsidiaries recorded a Net Profit attributable to owners of the Company of Baht 4,773 million, an increase of Baht 623 million (15% YoY) when compared to 2015, with details as follows:

- 1) Total revenue from sale of goods and rendering of services of Baht 144,705 million, a decrease of 4% YoY, mainly from the reduction in finished oil product sales volume from the previous year. However, total sales volume increased by 5% YoY, and expanded in every sales channels of the company.
- 2) Gross Profit was recorded at Baht 11,896 million, increased 4% YoY. Even Market GRM was 5.99 \$/BBL, decreased by 3.06 \$/BBL, compared to 2015. However, Gross Profit of biodiesel Business was decreased due to the higher average the crude palm oil (CPO) price, which is the raw material for B100 production. In 2016, the Company and its subsidiaries recorded an Inventory Gain of Baht 488 million, while in 2015, there was an Inventory Loss totaling of Baht 4,434 million.

- 3) Investment income and other income was recorded at Baht 754 million, an increase of Baht 221 million (+39% YoY). As in Q4/2016, there was a profit from bargain purchase of Baht 227 million, from the acquisition of Solar Power business of Sun Edison in Japan.
- 4) Selling and administrative expense was recorded at Baht 6,189 million, an increase of 20% YoY, mainly due to the increased expense of BCPG Plc., of Baht 555 million and Bangchak Retail Co., Ltd of Baht 136 million. Mainly from the Baht 385 million increment of expense related to human resources, as the number of employee increased, and advisory expenses for the company. Advertising expense and other expense for the company's strategy focusing on increase of sale volume and business expansion. Moreover, an increase of depreciation and amortization in 2016.
- 5) Gain from crude and product oil price hedging contract of Baht 107 million from the gain from oil product hedging, while in 2015, the Company recorded loss from crude and product oil price hedging contract of Baht 407 million.
- 6) Gain on foreign currency forward contracts at Baht 39 million, an increase of 125% YoY, from the appreciation of Thai Baht against US Dollar compared to the previous year, while in 2015, the Company recorded loss on foreign currency forward contracts of Baht 155 million.
- 7) Gain on foreign exchange was recorded at Baht 237 million, an increase of 33% YoY from the appreciation of Thai Baht against US Dollar compared the previous year. However, the weakening of Japanese Yen resulting in a loss on foreign exchange of business in Japan of Baht 86 million.
- 8) The company and its subsidiaries recorded a gain on reversal of an impairment loss of Baht 37 million, from the increment of Contingent Resource estimates in Exploration and Production Business, while in 2015 recorded impairment loss of Baht 65 million.
- 9) Finance costs was recorded at Baht 1,484 million, a decrease of 4% YoY, due to the partial prepayment of long-term loan from financial institutions.
- 10) In 2016, BCP Innovation Pte. Ltd., a subsidiary of the company, recorded a gain from a change in fair value of asset available for sale, LAC (Lithium Americas Corp.), of Baht 235 million, which will be recorded in other comprehensive income.

Performance of each company details are as follows:

Statement of Income of the company and its subsidiaries		Unit: Baht Million
2016	Revenue from sale of goods and rendering of services	Net Profit
The Bangchak Petroleum Plc.	137,064	4,502
Bangchak Green Net Co., Ltd.	29,286	82
Bangchak Biofuel Co.,Ltd.	6,830	117
BCPG Plc. Group	3,084	1,541
Bangchak Retail Co., Ltd.	31	(89)
Bangchak Bioethanol (Chachoengsao) Co.,Ltd.	263	22
Nido Petroleum Ltd.	1,503	(568)
Other <sup>1/</sup>	876	35

Note: 1/ BCP Energy International Pte. Ltd., BCP Innovation Pte. Ltd., BCP Trading Pte. Ltd.,



## Summary of events in 2016

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- **January 2016** BCPG Plc., a subsidiary of The Company, has signed Purchase and Sale Agreement to purchase the entire solar power plant business of Sun Edison in Japan with total Power Purchase Agreement (PPA) of 164 Megawatts (MW) (installed capacity of 198 MW), within the Budget of JPY 9,626 million (equivalent to THB 2,915 million).
- **February 2016** Company has set up two new subsidiaries in accordance with the Company's Board of Directors Meeting as follow
  - BCPG investment Holdings Pte., Ltd. and BSE Energy Holdings Private Pte., Ltd., which were established in Singapore with the objectives of investment holdings.
  - Bangchak Retail Co., Ltd., which was established in Thailand with the objectives to engage in businesses related to food, beverages, consumer product, wholesale and retail sale, transportation, education, and warehouse.
- **February 2016** There was an Annual Turnaround Maintenance of Bangchak refinery, totaling 45 days (between 8<sup>th</sup> February - 23<sup>rd</sup> March 2016).
- **April 2016** BCPG Plc., a subsidiary of The Company, has purchased the entire solar power plant business of Huang Ming Japan Co., Ltd., for 2 solar power plant projects in Japan with total Power Purchase Agreement (PPA) of 30 Megawatts (MW) (installed capacity of 36 MW).
- **April 2016** The Company's Annual General Meeting of Shareholders of the Company resolved to approve the profit allocation from retained earnings for dividend payment for the second-half-year operations of 2015 at the rate of Baht 1.00 per share.
- **April 2016** The Company has reported to the Stock Exchange of Thailand, on the change of investment scheme of BCP Bioethanol Co., Ltd., from ordinary shares purchase to be joint venture investment with SIMA Inter Product Co., Ltd. The new company will be renamed from "BCP Bioethanol Co., Ltd." to "Bangchak Bioethanol (Chachoengsao) Co., Ltd." The Company hold 85% shares in the joint venture company.
- **May 2016** The Company has reported to the Stock Exchange of Thailand on the establishment of a new subsidiary company in Singapore "BCP Trading Pte. Ltd. (BCPT)" in Singapore, with the objectives to trade commodities which include crude oil, petroleum products, petrochemicals and other related chemical and to conduct other business. The Company hold 100% shares in BCPT.
- **May 2016** The Company has reported to the Stock Exchange of Thailand on the establishment of joint venture company "Bongkot Marine Services Co., Ltd." with the objectives to engage in businesses related to floating storage unit (FSU). The Company hold 30% shares and Prima Marine Co., Ltd. hold 70% shares in the joint venture company
- **July 2016** Bangchak Biofuel Co., Ltd. started the new 2<sup>nd</sup> Biodiesel Plant commercial production and sales, with an average production capacity of 450 thousands litres per day.



- **August 2016** The Company launched the new technology “Green S Revolution” for all of its gasohol products. The technology is an innovation for new gasoline engines using direct injection gasoline (DIG) system, and will help enhance engines efficiency
- **August 2016** The Company’s Board of Directors meeting resolved to approve on profit allocation of the unappropriated retained earnings for interim dividend payment for Company’s shareholders at Baht 0.80 per share.
- **September 2016** BCPG Plc., a subsidiary of the company has finished the initial public offering (IPO) process of its ordinary shares which are listed in the Stock Exchange of Thailand. Newly issued shares of 590 million shares were offered at Baht 10 per share (Par value = Baht 5 per share). The IPO resulted in the Company's shareholding in BCPG Plc. to be 70.35%.
- **September 2016** The Company has reported to the Stock Exchange of Thailand on the establishment of a new associated company “Oam Suk Social enterprise Co., Ltd.” with the objectives to engage in business related to the procurement of agricultural products, rice, and other organic crops for processing, marketing, distribution, and research and development. The Company hold 40% shares and Buddhist Economic Foundation holds 60% shares in the associated company.
- **October 2016** The Company has reported to the Stock Exchange of Thailand on the equity injection into BCP Energy International Pte., Ltd. (BCPE), for BCPE to take up all of its pro rata entitlement under the Nido Petroleum Limited’s entitlement offer representing AUD 25.94 million in proceeds, to fund appraisal wells program in the Mid-Galoc area of Galoc oil field in Philippines, which NIDO and other stakes of Galoc field will use for further development of the field. After the capital increase completed BCPE’s shareholding in Nido increased from 81.25% to 96.98%.
- **November 2016** Bangchak Retail Co., Ltd., which is a subsidiary of The Company, launched the SPAR Supermarket from the Netherlands at Bangchak Ratchapruek Service Station, Bangkok for the first time. The supermarket will operate under the concept “SPAR FRESH & EASY FOOD MARKET”, to provide customers with a distinct advantage, such as excellent fresh food, and promote the community by developing and selling products under the brand SPAR.



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

### 1) Refinery Business

Crude Oil Price								Unit: \$/BBL		
	Q4/2015	Q3/2016	Q4/2016			YoY	QoQ	2015	2016	YoY
	AVG	AVG	MAX	MIN	AVG	%	%			
Dubai (DB)	40.68	43.19	54.20	41.90	48.25	19%	12%	50.84	41.43	-19%
Dated Brent (DTD)	43.76	45.86	55.41	41.91	49.33	13%	8%	52.39	43.73	-17%
DTD/DB	3.09	2.67	4.98	-0.91	1.08	-65%	-60%	1.55	2.30	49%

### Crude Oil Price Situation

Average Dubai crude oil price in 2016, compared to 2015, was decreased by 9.14 \$/BBL due to lower oil demand as China's economic growth was slowdown. Meanwhile, the western countries sanction on Iran had been lifted in January which put more pressure on crude oil price as more supply from Iran could potentially flow into the market. OPEC's crude oil production also continued hitting highest output record in 2016 as OPEC countries wanted to increase their market share before supply-reduction deal in December. Furthermore, the U.S. dollar had continued to strengthen as expectation that the U.S. economy under president-election Donald Trump will expand at a faster pace and the FED raises interest rates in December. All these factors are bearish sentiments to crude oil prices.

In Q4/2016, average Dubai crude oil price was 48.25\$/BBL, increased by 5.06 \$/BBL from the average price in the previous quarter. The oil price was supported by the supply-reduction deal of The Organization of the Petroleum Exporting Countries (OPEC) in November. OPEC agreed to curb production for the first time since 2008 by 1.2 million barrels per day, which produced around 33.7 million barrels per day, to 32.5 million barrels per day. Moreover, 12 non-OPEC countries also made commitments to cut output by 0.56 million barrels per day in December, led by Russia, Oman and Mexico excluded the U.S. Thus, the overall reduction deal between OPEC and other producers would cut almost 1.76 million barrels per day in oil output starting from January 2017 for six months. In addition, the national oil companies of both OPEC and non-OPEC, including top producer in Saudi Arabia, Kuwait, UAE and Russia, had notified customers in Asia that they would reduce volume for crude delivery in order to comply with the agreement in mid-December. Market also expected other producers would have preliminary cut crude output from January 2017 onwards as well.

However, there are some pressures for crude oil price as OPEC's output hit a record high in November, rising to 33.87 million barrels per day. Moreover, a hike in The U.S. interest rate in mid-December has made flow of money away from commodities into the U.S. dollar that hovered near a 14-year peak against a basket of major currencies. Furthermore, production at the major Libyan oilfield of Sharara and El Feel had gradually resumed after the lifting of a two-year pipeline blockade. Lastly, Crude oil price was also pressured on prospect of rising US shale production as working oil production rigs had increased from the lowest level 316 rigs in May to more 529 rigs in the last week of 2016.

For comparing of Dated Brent/Dubai crack spread in 2016 and 2015, the spread was increased by 0.75\$/BBL in 2016. The spread was supported by lower light crude supply due to the U.S. oil production decline in the early year.

In addition, Nigeria's oil supply was lower as strike problems. While Chinese demand decreased as slowdown economic growth as also supported crack.

However, the average Dated Brent/Dubai spread in Q4/2016 was 1.08 \$/BBL, the spread was decreased by 1.59 \$/BBL compared to previous quarter. The spread was pressured by higher light crude oil supply from Libyan and shale oil productions in the U.S. have recovered to continue rising from the middle year. Meanwhile, heavy crude oil was support as OPEC and non-OPEC agreed to curb production for 6 months starting in January 2017.

Crack Spreads								Unit: \$/BBL		
	Q4/2015	Q3/2016	Q4/2016			YoY	QoQ	2015	2016	YoY
	AVG	AVG	MAX	MIN	AVG	%	%			
UNL95/DB	18.72	11.59	17.86	11.98	14.59	-22%	26%	18.33	14.83	-19%
IK/DB	14.04	11.11	13.78	10.82	12.27	-13%	10%	13.85	11.56	-17%
GO/DB	13.71	10.93	14.78	9.48	12.04	-12%	10%	13.63	10.80	-21%
FO/DB	-6.56	-4.27	1.05	-5.92	-1.63	75%	62%	-5.03	-4.97	-1%

### Crack Spreads Analysis

- ❖ An average Mogas/Dubai crack spread in 2016 decreased by 3.50 \$/BBL, compared to 2015, driven by lower gasoline import from Indonesia according to the start of new Residue Fluid Catalytic Cracker in the fourth quarter of 2015. Indian gasoline demand also slowdown for the first time in almost two and a half years due to severe flooding. Moreover, the higher retail price in Korea led to lower gasoline demand. In addition, the first round of Chinese product export quotas for 2016 were higher than the previous year as the government allowed independent refineries to export oil product for the first time.

An average Mogas/Dubai crack spread in the Q4/2016 was 14.59 \$/BBL, compared to the average of 11.59\$/BBL in Q3/2016. The spread had been supported by gasoline demand growth due to 50% tax break on vehicle with 1.6 liter or smaller engines which expired in last December. In India, 500 and 1,000 rupee demonetization led to a temporary surge in gasoline sales, as the government allowed the use of these scrapped notes for payments at fuel stations until mid-December. Moreover, summer season in Africa region also supported gasoline demand. On the supply side, the crack spread was supported by the peak of refineries maintenance of the year in October that led to one-year lowest level of light distillates stock in Singapore. The major refinery in India had fire incident during the maintenance period that caused the delay in startup. Lastly, Colonial pipeline Line 1 in the U.S., which carries gasoline capacity 1.37 million barrels per day from the Gulf coast to Far East and North, shut down because of explosion and leak for one week in November.

- ❖ An average of Jet (Kerosene)/Dubai crack spread was decreased by 2.29 \$/BBL in 2016, compared to 2015. This was due to warmer winter in 2016 compared to previous year in Asia, led to lower demand for heating. Moreover, kerosene demand in India declined 10.6% compared to the previous year as LPG demand remained record highs which displacing the kerosene demand.

An average of Jet (Kerosene)/Dubai crack spread in Q4/2016 was 12.27 \$/BBL, compared to the average of 11.11\$/BBL in Q3/2016. The spread had been supported by the increasing demand for heating compare to the previous quarter as winter began.

- ❖ An average of Gasoil/Dubai crack spread in 2016 decreased by 2.83 \$/BBL, compared to 2015. This was due to the overall demand weakened as a result of warmer than usual winter in many regions which led to decreasing heating oil demand compare to the previous year. Furthermore, Chinese oil demand also decreased as slowdown growth of industry sector. According to China's environmental problems, the government cut working hours for coal miners that led to lower diesel demand about 6% in 2016 compare to the previous year. Moreover, the market still remained oversupplied with plenty of diesel.

An average of Gasoil/Dubai crack spread was 12.04 \$/BBL, compared to the average of 10.93 \$/BBL in the previous quarter. The spread had been driven by strong diesel demand in China from uptick in coal mining activities for power, and tighter scrutiny on truck overloading has also leading to higher freight mileage for diesel trucks. Moreover, Indian's diesel demand was increased after the monsoon has passed in November 2016 and Indian economic plan to boost country's GDP from 16% to 25% by 2025, implied to upcoming higher diesel demand. On the supply-side, supply also declined from refineries maintenances in both Saudi Arabia and India in Q4/2016.

- ❖ The average of Fuel Oil/Dubai crack spread slightly increased by 0.06 \$/barrel in 2016, compared to 2015. This was because the overall bunker demand increased. It is also driven by demand from South Korea and Japan for electricity generation in the late 2016. While, the fuel oil arbitrage inflow from Europe to Asia was slowdown due to higher Russian fuel oil export tax effective in 2017.

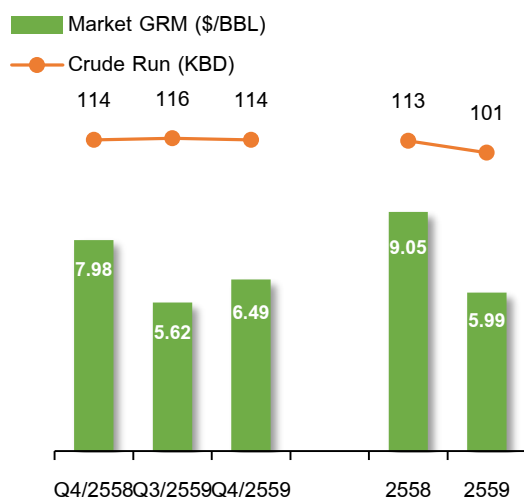
The average of Fuel Oil/Dubai crack spread was -1.63 \$/BBL, compared to an average of -4.27 \$/BBL in Q3/2016. The spread had been stronger because the higher demand in fuel oil in power generation in Japan as nuclear power plant shut down for routine maintenance in December. In addition, the nuclear situation in South Korea was also supportive for fuel oil demand as the five nuclear units were taken offline in September following the earthquake and by that time it was unclear when these units would be able to come back until it restarted again in December. Meanwhile, the other four nuclear units in South Korea also shut down for scheduled maintenance in October. Moreover, the tight fuel oil market was partly due to strong demand from Pakistan which suffered from a hydroelectric power shortage because some dams was unable to operate due to low water levels. There was also an increase in bunker demand in the last quarter due to higher shipping activities before year end. On the supply-side, crack remained strong due to lower arbitrage inflows from Russia as higher fuel oil export tax starting in 2017 that forced the refineries to upgrade their units for high valued products throughput.

## Refinery Business Performance

Refinery Business Performance								
	Q4/2015	Q3/2016	Q4/2016	YoY	QoQ	2015	2016	YoY
Average Crude Run (KBD)	114.37	115.59	113.82	0%	-2%	112.94	101.39	-10%
Utilization Rate (%)	95%	96%	95%	0%	-1%	94%	84%	-10%
Average FX (THB/USD)	36.00	35.01	35.57	-1%	2%	34.40	35.47	3%
(Unit: Million Baht)								
Market GRM	3,023	2,092	2,416	-20%	15%	12,838	7,887	-39%
GRM Hedging	(339)	11	(74)	78%	-774%	(472)	39	124%
Inventory Gain/ (Loss) <sup>1/</sup>	(1,631)	120	907	156%	658%	(4,354)	590	114%
<b>Total GRM</b>	<b>1,053</b>	<b>2,223</b>	<b>3,250</b>	<b>209%</b>	<b>46%</b>	<b>8,012</b>	<b>8,516</b>	<b>7%</b>
<b>EBITDA</b>	<b>130</b>	<b>1,503</b>	<b>2,367</b>	<b>N/A</b>	<b>57%</b>	<b>5,097</b>	<b>5,756</b>	<b>13%</b>

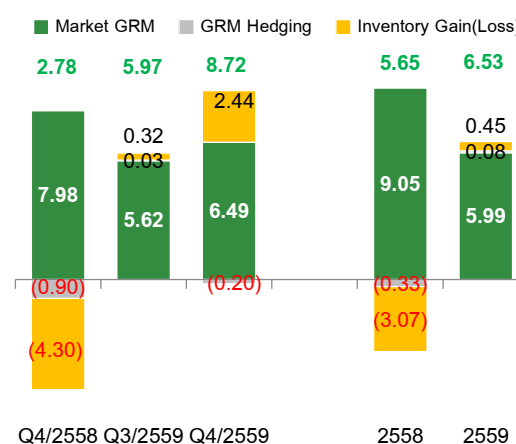
Note: 1/ Inventory Gain/ (Loss) in Q3/2016 was included a reversal of LCM.

### Market GRM and Crude Run



### Total GRM

Unit: \$/BBL



### Total Sales Volume in each market category of the Company

Unit: Million Litre

Marketing Business	Q4/2015	Q3/2016	Q4/2016	YoY	QoQ	2015	2016	YoY
Retail	851	879	921	8%	5%	3,285	3,609	10%
Industrial	538	503	570	6%	13%	2,124	2,180	3%
<b>Total</b>	<b>1,390</b>	<b>1,382</b>	<b>1,492</b>	<b>7%</b>	<b>8%</b>	<b>5,410</b>	<b>5,789</b>	<b>7%</b>
<b>Wholesale Business</b>								
Petroleum traders in accordance with section 7	154	260	258	68%	-1%	653	807	24%
Export	278	259	247	-11%	-5%	1,084	934	-14%
<b>Total</b>	<b>432</b>	<b>519</b>	<b>505</b>	<b>17%</b>	<b>-3%</b>	<b>1,738</b>	<b>1,741</b>	<b>0%</b>
<b>Total Sales Volume</b>	<b>1,822</b>	<b>1,902</b>	<b>1,997</b>	<b>10%</b>	<b>5%</b>	<b>7,148</b>	<b>7,530</b>	<b>5%</b>

Note: Total sales volume figures excluding the swap amount between petroleum traders in accordance with section 7 and the sales volume of crude

For the year 2016, Bangchak refinery's average crude run was 101.39 KBD compared to 112.94 KBD in 2015, as a result of the annual turnaround maintenance (TAM) between 8<sup>th</sup> February - 23<sup>rd</sup> March, totaling of 45 days. However, after the annual turnaround maintenance, the refinery's average crude run was steadily higher than 110 KBD. The consistently high crude run was a result of the well-planned production process, refining logistics system management, together with the YES-R projects which enabled a consistent and smooth production process.

Market GRM was decreased to Baht 4,952 Million (-39%) when compared to last year, from the expansion in Dated Brent/Dubai crack spread in 2016 to be at an average of 2.30 \$/BBL, compared to 1.55 \$/BBL in 2015, as a result of lower light crude supply earlier this year. Moreover, most products crack spreads were contracted, especially Gas Oil/Dubai crack spread (GO/DB), Bangchak refinery's major products, which was pressured down from a weaker demand and the market oversupply situation of diesel product. Gasoline/Dubai crack spread (UNL95/DB) was driven down by the lower gasoline imports from Indonesia and increased supply from China. Jet (Kerosene)/Dubai crack spread (IK/DB) was narrower from the lower demand for heating oil. However, Fuel Oil/Dubai crack spread slightly increased from the higher demand in fuel oil. All these factors put more pressure on market GRM. In 2016, Bangchak refinery's cost of production was decreased from quality improvement projects and the Co-generation power plant which help reduce of the cost of electricity with thermal energy.

The continuity of upward trend in crude oil prices, especially during Q4/2016, resulted in an inventory gain of Baht 590 million in 2016 (including a reversal of allowance for loss on decline in value of inventories (LCM) of Baht 105 million). Refinery business recorded a gain from crude and product oil price hedging contract of Baht 112 million. As a result, in 2016, total GRM was recorded at Baht 8,588 million (+7%), and refinery business EBITDA was recorded at Baht 5,756 million (+13% YoY)

In Q4/2016, an average crude run was 113.82 KBD or 95% utilization rate. Market GRM was increased by Baht 324 million (+15% QoQ), due to the contraction of Dated Brent/Dubai crack spread in Q4/2016 to be at 1.08 \$/BBL, compared to 2.67 \$/BBL in the last quarter, from higher light crude oil supply from Libya and the recovered shale oil productions in the U.S. Moreover, most of petroleum products crack spread was increased when compared to the previous quarter, from a significant increase in Gasoline/Dubai crack spread (UNL95/DB) which was driven up by the demand increased from China, India and Africa. On the supply side, Gasoline crack spread was supported by the supply reduction, as many refineries enter their maintenance period of the year. Moreover, Gas Oil/Dubai crack spread (GO/DB) and Jet (Kerosene)/Dubai (IK/DB) crack spread was improved by an increase of oil demand. Fuel Oil/Dubai crack spread (FO/DB) had been stronger because the higher fuel oil demand for power generation in Japan, South Korea and Pakistan. On the supply-side, Fuel Oil crack remained strong due to lower arbitrage inflows from Russia. By these factors, market GRM was increased. As a result, in Q4/2016, Refinery business recorded a total GRM at Baht 3,250 million (+46% QoQ) Moreover, by the higher of crude oil price in this quarter, inventory gain was recorded at Baht 907 million. However, there was a loss from crude and product oil price hedging contract of Baht 74 million. Consequently, EBITDA was recorded at Baht 2,367 million (+57% QoQ).

## 2) Marketing Business

Marketing Business						Unit: Million Litre		
Sales Volume (Million Litre)	Q4/2558	Q3/2559	Q4/2559	YoY	QoQ	2558	2559	YoY
Retail (Service Stations)	851	879	921	8%	5%	3,285	3,609	10%
Industrial	538	503	570	6%	13%	2,124	2,180	3%
<b>Total</b>	<b>1,390</b>	<b>1,382</b>	<b>1,492</b>	<b>7%</b>	<b>8%</b>	<b>5,410</b>	<b>5,789</b>	<b>7%</b>
Sales volume in each product category (Million Litre)								
LPG	30	12	14	-53%	19%	78	73	-7%
Gasoline	6	11	11	87%	5%	37	42	13%
Gasohol	398	423	416	4%	-2%	1,513	1,650	9%
Jet Fuel	181	187	225	24%	20%	678	822	21%
Diesel	727	694	771	6%	11%	2,914	2,992	3%
Fuel Oil and Others	48	56	55	14%	-2%	190	211	11%
<b>Total</b>	<b>1,390</b>	<b>1,382</b>	<b>1,492</b>	<b>7%</b>	<b>8%</b>	<b>5,410</b>	<b>5,789</b>	<b>7%</b>
<b>Total Marketing Margin (Baht / Litre)</b>	<b>0.90</b>	<b>0.80</b>	<b>0.56</b>	<b>-38%</b>	<b>-31%</b>	<b>0.76</b>	<b>0.79</b>	<b>3%</b>
<b>EBITDA (Million Baht)</b>	<b>549</b>	<b>607</b>	<b>(3)</b>	<b>-101%</b>	<b>-101%</b>	<b>2,497</b>	<b>2,527</b>	<b>1%</b>

Note: Marketing Margin figure was the attributable to the Company only.

In 2016, marketing business continued to expand its sales volume. The sales volume was 5,789 million litres, an increase of 379 million litres (+7%) compared to the previous year. The sales volume was higher both in the retail and industrial market, as the declining retail oil product prices and a growth in tourism had boosted domestic oil demand.

The number of service stations at the end of 2016 was 1,075 stations. There were 55 newly opened service stations during the year and the company closes down some stations with less than target sales volume. Most of newly service stations were standard stations with modern image and include other non-oil businesses such as Inthanin coffee shops, minimarts, commercial partner of leading brands etc., in order to better meet with customers' need. The company also improves quality and appearance of existing service stations to expand the thruput per service station. Moreover, in November, the company launched "Bangchak Greenovative Experience", the new model of service stations to meet the lifestyles of modern people in Thailand, with engaging environmental conservation, and launched the SPAR Supermarket from the Netherlands which is one of the world's largest retailer and wholesaler. Bangchak is the sole master licensee in Thailand. SPAR Thailand will operate under the concept "SPAR FRESH & EASY FOOD MARKET" to provide customers with a distinct advantage from the quality of fresh food and service. Moreover, there are community products under the brand SPAR according to Bangchak's policy, to increase its competitive advantage in retail market.

Sales volume through retail market (service stations) was increased by 324 million litres (+10%), as the decline in retail oil product prices helped spur domestic oil demand, especially in the gasohol 95 sales volume which was increased by 31% YoY, as a result of the retail price dropped stimulating consumption. Moreover, the company continued to maintain its 2<sup>nd</sup> rank of market share in retail sales volume, its market share from January to December 2016 was at 15.1%.



Sales volume through industrial market was increased by 56 million litres (+3%), from the economic recovery and the continuous growth in tourism sector, resulting in an expansion in the tourism-related industrial transportation. The decline in oil prices also helped inducing industrial factories to switch from other sources of energy to oil products. Moreover, there were temporary shut down of some refineries during the year, enable the company to expand its sales volume in such period.

Total marketing margin in 2016 was at 0.79 Baht per litre, increased by 3%, as the lower crude oil price affected production cost, while oil product prices adjusted slower to the changing cost, but at the end of the year, marketing margin was decreased from a higher crude oil price. In 2016, marketing business had higher cost of selling and administrative expenses resulting from the company's sales volume oriented strategy and business expansion. Also from the establishment of Bangchak Retail Co., Ltd. to operate non-oil businesses. Consequently, marketing business recorded an EBITDA of Baht 2,527 million, slightly increased compared the previous year.

In Q4/2016, when compared to Q3/2016, Total sales volume increased by 110 million litres (+8%) from the previous quarter. The higher sales volume both in retail and industrial market was due to the travelling season and year-end long holiday, resulted in the rise of oil demand.

Sales volume through retail market (service stations) increased by 42 million litres (+5%), resulted in an expansion of diesel sales volume from the previous quarter. However sales volume of gasohol product was slightly decreased, as the flooding in Thailand's southern region at the end of November 2016 affected service stations in this area.

Sales volume through industrial market increased by 67 million litres (+13%), especially in Jet fuel and diesel products. from the seasonal factor in year-end travelling season and sugar cane harvesting time of the sugar industrial customers, supported the increase in diesel sales volume.

Total marketing margin in Q4/2016 was at 0.56 Baht per litre (-31%). Retail margin decreased from the unchanged retail oil product prices in October and from the company's policy to fix oil price in December, to support the consumers during the travelling season, while increasing crude oil prices in the quarter increased the company's crude oil cost. Industrial margin decreased as the market oversupply situation of finished products led to the higher competition. In Q4/2016, marketing business incurred in a higher cost of selling and administrative expenses related human resources, sales promotion, and service stations maintenance. As a result, in Q4/2016, marketing business recorded an EBITDA of Baht -3 million.

### 3) Power Plant Business

Power Plant Business Performance						Unit: Million kWh		
	Q4/2015	Q3/2016	Q4/2016	YoY	QoQ	2015	2016	YoY
<b>Revenue (Million Baht)</b>	<b>766</b>	<b>785</b>	<b>757</b>	<b>-1%</b>	<b>-4%</b>	<b>3,024</b>	<b>3,084</b>	<b>2%</b>
<b>Electricity Sales (Million kWh)</b>								
Solar Power Business – Thailand (PPA of 118 MW)	66.40	61.01	63.02	-5%	3%	263.32	254.40	-3%
Solar Power Business – Japan (PPA of 11 MW)	N/A	8.07	4.90	N/A	-39%	N/A	19.50	N/A
<b>Total Electricity Sales</b>	<b>66.40</b>	<b>69.07</b>	<b>67.93</b>	<b>2%</b>	<b>-2%</b>	<b>263.32</b>	<b>273.90</b>	<b>4%</b>
<b>EBITDA (Million Baht)</b>	<b>865</b>	<b>612</b>	<b>795</b>	<b>-8%</b>	<b>30%</b>	<b>3,005</b>	<b>2,559</b>	<b>-15%</b>

In 2016 when compared to 2015, Power Plant business recorded an increase in total revenue by Baht 60 million (+2%), mainly from the additional revenue recognized from the acquisition of Solar Power business in Japan, which currently has an operation plant with a PPA of 20 MW.

For the year 2016, Solar Power business in Thailand (PPA of 125 MW) recorded a lower total electricity sales by 8.93 kWh (-3% YoY), primarily as a result of a decrease in irradiation hours of all the 3 phases, from the higher amount of rainfall this year, while last year experienced a draught from the El Niño phenomenon. Also, the reduction in revenue was partly due to the decreased average electric price (exclude adder). Nevertheless, in December 2016, the solar farms for Agricultural Cooperatives which BCPG Plc. supports have started the commercial operation for 2 plants (PPA of 7 MW), from the total of 3 plants (total PPA of 12 MW). The Agricultural Cooperatives solar farm which is situated in Bang Pa-In district, Ayutthaya province was effected by the water penetration in the construction site, thus has to delay its construction process, but there was no other damage, and the plant is expected to start the commercial operation within 1H2017. For Solar Power business in Japan (operating plant with PPA of 20 MW), total electricity sales from the operating projects was 19.50 million kWh during the year.

In 2016, Power Plant business recorded an increase in selling, general and administrative expenses when compared to the previous year, due to the expenses incurred from the acquisition of the entire solar power business of SunEdison in Japan, the expenses from preparation of other projects under construction and development, and the expenses incurred from the initial public offering (IPO) of newly issued ordinary shares. As a result, Solar Power business recorded an EBITDA of Baht 2,559 million (-15% YoY)

In Q4/2016 when compared to Q3/2016, Solar Power business recorded a decline in total revenue by Baht 28 million (-4% QoQ). Solar Power business in Thailand (PPA of 125 MW) recorded a higher total electricity sales by 2.01 MW (+3%), mainly due to the increment in electricity sales of Phase 2 and 3 by about 5%, even though the solar irradiation hours was lower due to the shorter daylight hours in winter season, but the cool temperature during the quarter led to the superior production efficiency. Moreover, there was an additional electricity sales from the commercial operation start of 2 Agricultural Cooperatives solar farms in December. The electricity sales from solar power plant phase 1, however, was reduced by 3%, due to the solar irradiation hours in the area which dropped more than the other phases. For Solar Power business in Japan, total electricity sales declined by 3.17 kWh (-39%), as a result of the lower solar

irradiation hours of all phases, especially in Nikaho project (PPA of 8.8 MW), from the shorter daylight hours and the snow during winter season in Japan.

For Q4/2016, selling, general and administrative expense increased from the previous quarter, from the expenses related to human resources which normally rise during the end of the year. Moreover, there was a loss on foreign exchange of Baht 219 million, from the rapid depreciation of the Japanese Yen during the quarter. As a result, in Q4/2016, power plant business recorded an EBITDA of Baht 795 million (-8% YoY) and (+30% QoQ).

#### 4) Biofuel Business

In 2016, Biofuel business recorded an EBITDA of Baht 326 million, which comprised of EBITDA from Bangchak Biofuel Co, Ltd. of Baht 262 million, EBITDA from Bangchak Bioethanol (Chachoengsao) Co., Ltd. of Baht 42 million, and a share of profit from Ubon Bio Ethanol Co, Ltd of Baht 21 million.

In Q4/2016, Biofuel business recorded an EBITDA of Baht 131 million, which comprised of EBITDA from Bangchak Biofuel Co, Ltd. of Baht 70 million, EBITDA from Bangchak Bioethanol (Chachoengsao) Co., Ltd. of Baht 46 million, and a share of profit from Ubon Bio Ethanol Co, Ltd of Baht 16 million.

Biodiesel business performance by Bangchak Biofuel. Co., Ltd									
	Q4/2015	Q3/2016	Q4/2016	YoY	QoQ		2015	2016	YoY
Revenue (Million Baht)	1,423	1,553	1,189	-16%	-23%		5,414	6,830	26%
Utilization Rate (%)	102%	56%	49%	-52%	-12%		101%	80%	-21%
Average Daily Production Rate (Thousands of litres per day)	367	452	398	9%	-12%		365	406	11%
B100 Sales Volume (Million litre)	57	44	39	-31%	-11%		199	215	8%
<b>EBITDA (Million Baht)</b>	<b>109</b>	<b>(61)</b>	<b>70</b>	<b>-36%</b>	<b>215%</b>		<b>342</b>	<b>262</b>	<b>-23%</b>

Average Sales Price (Source: Department of Energy Business, Ministry of Energy)									
	Q4/2015	Q3/2016	Q4/2016	YoY	QoQ		2015	2016	YoY
B100 (Baht / Litre)	28.26	37.62	33.58	19%	-11%		30.93	35.11	14%
Crude Palm Oil (CPO) (Baht / Kg.)	24.97	33.96	30.13	21%	-11%		27.27	31.95	17%

In 2016, when compared to 2015, Biodiesel business recorded a revenue increment of Baht 1,416 million (+26%), partly as a result of the growth in B100 sales volume by 16 million litres (+8%), due to the expansion of its customer base in preparation for the new 2<sup>nd</sup> Biodiesel Plant which started its commercial operation in July 2016. (2<sup>nd</sup> plant has an average production capacity of 450 thousands litres per day, resulting in the total production capacity of Biodiesel business to be 810 thousands litres per day). The increment in revenue was also due to the higher B100 average price which rose as the crude palm oil (CPO) price elevated, as the draught caused oil palm supply to drop from last year. However, in order to handle with the rising crude palm oil price earlier this year, the government announced a reduction in B100 mixing portion with diesel from July onwards. As a result, Biodiesel business was unable to utilize its production capacity according to plan, and recorded an 80% utilization rate, or an average daily production rate of 406 thousands litres.

In 2016, Biodiesel business recorded a decline of Gross Margin when compared to last year, primarily due to the Baht 143 million Inventory Loss for the year (including allowance for loss on decline in value of inventories (LCM) of Baht 7 million), as the government reduced the portion of B100 mixing with diesel, leading to CPO and B100 average price contraction during the time. While in 2015, Inventory Loss was recorded at Baht 19 million. Nevertheless, Biodiesel business recorded a Baht 17 million income from the delayed construction penalty fee of the 2<sup>nd</sup> Biodiesel Plant. From the reasons mentioned, Biodiesel business recorded an EBITDA of Baht 262 million (-23%) YoY.

In Q4/2016, when compared to Q3/2016, Biodiesel business recorded a revenue decline of Baht 364 million (-23%), partly due to the reduction in B100 sales volume by 5 million litres (-11%), as the government changed the B100 mixing portion with diesel, led to the decrease in B100 demand when compared to the previous quarter. (B100 mixing portion with diesel: 25<sup>th</sup> July reduced from 7% to 5%, 25<sup>th</sup> August reduced from 5% to 3%, and 25<sup>th</sup> November increased from 3% to 5%). The decrease in revenue was also due to the 11% drop in B100 price, as the crude palm oil (CPO) price declined.

For Q4/2016, Biodiesel business recorded an Inventory Loss of Baht 28 million (including a reversal of allowance for loss on decline in value of inventories (LCM) of Baht 54 million), while in Q3/2016 Inventory Loss was recorded at Baht 153 million (including allowance for loss on decline in value of inventories (LCM) of Baht 61 million). As a result, in Q4/2016, Biodiesel business recorded an EBITDA of Baht 70 million (-36%) YoY and (+215%) QoQ.

Fuel Ethanol business performance by Bangchak Bioethanol (Chachoengsao) Co., Ltd.			
	Q3/2559	Q4/2559	2559
Revenue (Million Baht)	0	263	263
Utilization Rate (%)	N/A	83%	83%
Average Daily Production Rate (Thousands of litres per day)	N/A	125	125
Ethanol Sales Volume (Million litre)	N/A	11	11
<b>EBITDA (Million Baht)</b>	<b>(3)</b>	<b>46</b>	<b>42</b>
<b>Average Sales Price</b> (Source: Department of Energy Business, Ministry of Energy)			
Ethanol (Baht / Litre)	23.14	23.11	23.12

For Fuel Ethanol business, on September 21<sup>st</sup>, 2016, Ethanol plant (production capacity of 150 thousands litres per day) of Bangchak Bioethanol (Chachoengsao) Co., Ltd., a subsidiary of the company, has started its commercial operation, and started selling its Ethanol product in October 2016. The Average Daily Production Rate was recorded at 125 thousands of litres per day, or 83% utilization rate. As a result, in the year 2016, Fuel Ethanol business recorded an EBITDA of Baht 42 million.

## 5) Exploration and Production Business

Exploration and Production Business Performance									
	Q4/2015	Q3/2016	Q4/2016	YoY	QoQ		2015	2016	YoY
Production Volume <sup>1/</sup> (barrels per day net to Nido)	3,189	2,838	2,631	-17%	-7%		3,172	2,860	-10%
Sales Volume (barrels net to Nido)	411,008	196,474	203,903	-50%	4%		1,285,969	995,885	-23%
Revenue (Million Baht)	620	644	327	-47%	-49%		2,344	1,503	-36%
<b>EBITDA (Million Baht)</b>	<b>(26)</b>	<b>171</b>	<b>71</b>	<b>226%</b>	<b>-59%</b>		<b>472</b>	<b>323</b>	<b>-32%</b>

Note: 1/ production volume of Galoc oil field only

In 2016 when compared to 2015, Exploration and Production business recorded a revenue of Baht 1,503 million, a decrease of Baht 841 million from the previous year, partly due to the average selling price per cargo which dropped from last year, as global crude oil price decreased by 19% YoY (average Dubai crude oil price in 2016 and 2015 was 41.43 and 50.84 \$/BBL respectively). The decline in revenue was also due to a reduction in sales volume, corresponding to the production volume which was lower according to the Natural-Decline Production Curve. For the year 2016, Galoc oil field recorded a total production volume of 1,873,150 barrels (1,046,707 barrels net to Nido), and Nido & Matinloc oil field recorded a total production volume of 126,365 barrels (32,632 barrels net to Nido). Total sales volume for the year was 995,885 (net to Nido).

In Q4/2016 when compared to Q3/2016, Exploration and Production business recorded a revenue decline of Baht 317 million, as in the quarter, Nido has realized revenue of 1 cargo of oil sold which was the cargo sold in November 2016, while in the previous quarter, Nido has realized revenue of 2 cargoes of oil sold. The selling price per cargo in the quarter was slightly lower than the last quarter, which was consistent to the global crude oil price which declined in November, the month which Nido recorded sales.

In Q4/2016, Galoc oil field recorded an Uptime of 99.95%, and a production volume of 4,709 barrels per day (2,631 barrels per day net to Nido). The details of crude oil selling during the quarter, as disclosed by the Nido Petroleum Limited (NIDO) in the Australian Securities Exchange (ASX) were as follows:

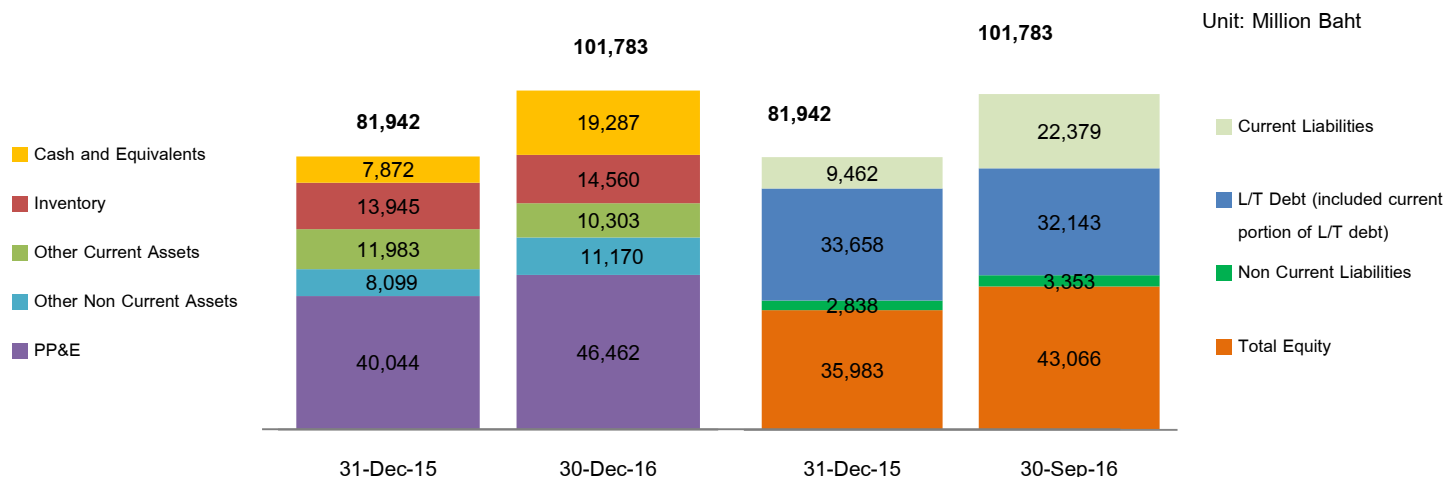
- Galoc oil field in November sold 1 cargo totaling of 347,977 barrels (194,448 barrels net to Nido) with FOB price of 44.62 \$/BBL.
- Nido & Matinloc oil field totaling 35,875 barrels (9,455 barrels net to Nido).

Further, Nido still focus on its cost saving program on both the expenses related to production and selling, general and administrative expenses, in response to the low crude oil price environment. As a result, in 2016, the selling, general and administrative expenses was decreased by 26% YoY. From the reasons mentioned, in 2016, Exploration and Production business recorded an EBITDA of Baht 323 million (-32% YoY), and in Q4/2016 recorded an EBITDA of Baht 71 million (+226% YoY), and (-59% QoQ).

Moreover, in 2016, the Board of the Directors of the company resolved to inject equity into BCP Energy International Pte. Ltd. (BCPE) for BCPE to take up all of its pro rata entitlement under the Nido Petroleum Limited's entitlement offer representing AUD 25.94 million in proceeds, to fund appraisal wells program in the Mid-Galoc area of

Galoc oil field in Philippines, which NIDO and other stakes of Galoc field will use for further development of the field. As a result, BCPE's shares in Nido has increased from 81.25% to 96.98%.

### Financial Position of the Company and its subsidiaries (Consolidated)



### Assets

As of December 31, 2016, Total Assets of the Company and its subsidiaries were Baht 101,783 million, an increase of Baht 19,841 million when compared to the end of 2015. The changes in assets were mainly from:

- Cash and cash equivalents were increased by Baht 11,415 million. Details are stated under Analysis of the Cash Flow Statement.
- Current Investment was decreased by Baht 2,800 million from the withdrawal of the company's short term fixed deposits in financial institutions of Baht 3,500 million, but for BCPG Plc. increased by Baht 700 million.
- Trade Accounts Receivable were increased by Baht 788 million, due to a higher total sales volume and selling price per unit in December 2016, compared to December 2015. Meanwhile, Trade Accounts Receivable of Nido Petroleum Ltd. was declined.
- Other Accounts Receivable was increased by Baht 449 million, mainly from an increase in prepaid expense of the Company and BCPG Plc., for the solar power plant preparation.
- Inventory was increased by Baht 615 million, mainly due to the price per unit of finished oil which was increased from higher crude oil prices in the end of the year. However, volume of finished oil inventory was slightly decreased. In addition, inventory of Bangchak Biofuel Co, Ltd., and Nido Petroleum Ltd. was increased compare to the previous year.
- Investment in subsidiaries increased by Baht 5,494 million, primarily from the capital increase in BCPG Plc. of Baht 3,300 million, BCP Innovation Pte. Ltd. of Baht 181 million, Bangchak Retail Co., Ltd. of 800 million, Bangchak Bioethanol (Chachoengsao) Co., Ltd. of Baht 425 million, BCP Trading Pte. Ltd. of Baht 35 million, and BCP Energy International Pte. Ltd. of Baht 702 million. Moreover, the Company recorded gain on reversal of an impairment loss of Nido Petroleum Ltd. of Baht 51 million. However, the elimination of related parties transaction resulted in the consolidated financial statement showing total investment in subsidiaries of Baht 0.



- Investment in associates increased from Bongkot Marine Services Co., Ltd. (The Company hold 30% shares) and Oam Suk Social enterprise Co., Ltd. (The Company hold 40% shares)
- Property, plant and equipment were increased by Baht 6,418 million, primarily from Baht 3,780 million investment in refinery machinery and equipment of the company and of Bangchak Biofuel Co, Ltd., Marketing and office equipment of Baht 1,415 million. For BCPG Plc., the increment was from an acquisition of solar power business of Baht 1,530 million, and construction work in progress of Baht 3,053 million. An increase from Bangchak Bioethanol (Chachoengsao) Co., Ltd. of Baht 855 million, and other of Baht 143 million. Meanwhile, depreciation for the year was recorded at Baht 4,491 million.
- Intangible Assets increased by Baht 2,234 million, mainly from the company's investment in SAP license, the acquisition of solar power business in Japan, and the right to sell electricity of the Solar Power Plant in Japan of BCPG Plc.
- Other non-current assets were increased by Baht 872 million, mainly from leasehold right improvement, other long-term investments of BCP Innovation Pte. Ltd (from an investment in LAC), and maintenance fee of the Solar Power Plant in Japan of BCPG Plc.

## Liabilities

As of December 31, 2016, Total Liabilities of the Company and its subsidiaries was Baht 57,875 million, an increase of Baht 11,916 million, mainly from:

- Short-term loans from financial institutions of the Company and its subsidiaries was Baht 7,444 million.
- Trade Accounts Payable were increased by Baht 3,772 million, from the higher value of crude oil purchase in December 2016 than in December 2015. And, a higher finished oil imports.
- Other payables were increased by Baht 388 million, from payables of construction work in progress in solar power plant of BCPG Plc. of Baht 176 million, Cash Dividends Payable of Baht 90 million and other payable from subsidiaries, but decreased from the hedging contracts liabilities of Baht 160 million.
- Other liabilities were increased by Baht 656 million, from the Contingent Liability of BCPG Plc.
- Long-term loans from financial institutions (including current portion of long-term loans) were decreased by Baht 1,516 million, primarily due to company's long-term loan prepayment, but increased partly from the loan draw down of the company's subsidiaries.
- Other non-current liabilities were increased by Baht 516 million, mostly from an increase in employee benefit obligations by Baht 198 million, and deferred tax expense of Baht 320 million.



## Equities

As of December 31, 2016, Total Equity of the Company and its subsidiaries was Baht 39,542 million, an increase of Baht 4,062 million. The Consolidated book value was Baht 28.72 per share. The changes in equity were mainly from:

- Retained Earnings were increased by Baht 2,225 million, from Net Profit for the year of Baht 4,773 million, dividend payment of Baht 2,478 million, and an actuarial loss of Baht 70 million.
- Paid in Capital in Excess of Par Value was increased by Baht 1,594 million, from newly issued ordinary shares of BCPG Plc. and Nido Petroleum Ltd.
- Other component of equity were increased by Baht 242 million, by gain from foreign currency translation differences for foreign operations of Baht 7 million, and change in fair value of available for sale assets of Baht 235 million.

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

In 2016, the Company and its subsidiaries had net cash received from operating activities of Baht 13,288 million, net cash used in investing activities of Baht 8,154 million, net cash received in financing activities of Baht 6,391 million. As a result, the Company and its subsidiaries had an increase in Cash and cash equivalents of Baht 11,525 million, as there was Cash and cash equivalents of Baht 7,872 million on January 1, 2016 and an effect of exchange rate changes on balances held in foreign currencies of Baht -110 million, resulting in Cash and cash equivalents as of December 31, 2016 at Baht 19,287 million.

Details of cash received and used are as follows:

Cash Flows		Unit: Million Baht	
Cash Flows	31-Dec-15	31-Dec-16	
Net cash received (used in) operating activities	12,032	13,288	
Net cash received (used in) investing activities	(11,342)	(8,154)	
Net cash received (used in) financing activities	(892)	6,391	
<b>Net increase (decrease) in cash and cash equivalents</b>	<b>(202)</b>	<b>11,525</b>	
Cash and cash equivalents as at 1 January	7,954	7,872	
Effect of exchange rate changes on balances held in foreign currencies	120	(110)	
<b>Cash and cash equivalents as at 30 September</b>	<b>7,872</b>	<b>19,287</b>	

- The Company and its subsidiaries had net cash received from operating activities of Baht 13,288 million, mainly from
  - Net cash received from operating activities of Baht 11,286 million which was from Net Profit of Baht 4,729 million added back Non-Cash Expenses of Baht 4,384 million, Finance Costs and Income Tax credit of Baht 2,173 million.



- Cash used in the operating assets decreased by Baht 1,767 million, mainly increased from Inventory of Baht 515 million, Trade Accounts Receivable increase of Baht 797 million, Other Receivables increase of Baht 189 million, and Other Assets increase of Baht 266 million.
- Cash from operating liabilities increased by Baht 4,185 million, mainly increased from in Trade Accounts Payable of Baht 3,775 million, Other Payables of Baht 87 million, and other liabilities of Baht 323 million.
- Income Tax Paid of Baht 416 million.

2) Net Cash used in investing activities of Baht 8,154 million, mainly from

- Investment in property, plant and equipment of Baht 9,250 million, an investment in refinery machinery and equipment, marketing and office equipment of the company of Baht 4,791 million, an investment in Biodiesel plant machinery and equipment of Baht 404 million, construction work in progress in solar power plant of BCPG Plc. of Baht 3,053 million, from Bangchak Bioethanol (Chachoengsao) Co., Ltd. of Baht 855 million, and from Bangchak Retail Co., Ltd. of Baht 272 million.
- Other long-term investments increased by Baht 168 million, and current investment decreased by Baht 2,799 million.
- Net cash outflow on acquisition of subsidiary of Baht 963 million, from the acquisition of solar power business of SunEdison in Japan and purchase of shares in joint venture of Baht 44 million.
- Leasehold right of service stations increased by Baht 451 million, and purchase of intangible assets increased by Baht 492 million.
- Received cash from the disposal of other investment in ASEAN Potash Chaiyaphum Public Company Limited of Baht 203 million.
- Received cash from interest received of Baht 209 million, and dividend received of Baht 3 million.

3) Net cash used in financing activities of Baht 6,391 million, mainly from

- Received cash from short-term loan from financial institution of Baht 7,362 million, from the company of Baht 7,190 million, Bangchak Biofuel Co, Ltd., of Baht 120 million, BCPG Plc. of Baht 7 million, and Ubon bio Ethanol Co, Ltd., of Baht 45 million.
- Received cash from long-term loan from financial institution of the company and its subsidiaries of Baht 9,611 million. (Bangchak Biofuel Co, Ltd., of Baht 617 million, BCPG Plc. of Baht 8,569 million, and Bangchak Bioethanol (Chachoengsao) Co., Ltd. of Baht 425 million.)
- BCPG Plc. received cash from selling of equity of Baht 5,711 million.
- Long-term loan from financial institution repayment of Baht 12,032 million, from the company of Baht 11,230 million, and BCPG Plc. of Baht 802 million.
- Dividend payment of 2,753 million and financial costs of Baht 1,641 million.

## Financial Ratios (Consolidated)

Profitability Ratios (%)					
	Q4/2015	Q3/2016	Q4/2016	2015	2016
EBITDA Margin	3.99%	7.63%	7.56%	7.33%	7.70%
Profit Margin	-0.54%	3.08%	2.99%	2.71%	3.27%
Return on Equity (ROE) <sup>1/</sup>	12.07%	9.52%	12.73%		
Return on Assets (ROA)	8.04%	5.99%	7.51%		

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

Liquidity and Financial Policy Ratios (times)			
	31-Dec-15	30-Sep-16	31-Dec-16
<b>Liquidity Ratios</b>			
Current Ratio	3.22	2.80	1.69
Quick Ratio	1.89	1.94	1.13
<b>Financial Policy Ratios</b>			
Interest bearing Debt to Equity	0.94	0.91	0.86
Net Interest bearing Debt to Equity	0.59	0.45	0.38
	<b>Q4/2015</b>	<b>Q3/2016</b>	<b>Q4/2016</b>
DSCR	3.73	1.56	1.76

## Financial Ratios Calculation

- EBITDA Margin (%) =  $\frac{\text{EBITDA}}{\text{Revenue from sale of goods and rendering of services}}$
- Profit Margin (%) =  $\frac{\text{Profit attributable to owners of the Company}}{\text{Revenue from sale of goods and rendering of services}}$
- Return on Equity (%) =  $\frac{\text{Profit attributable to owners of the Company (Yearly)}}{\text{Total Equity attributable to owners of the Company (Average)}}$
- Return on Assets (%) =  $\frac{\text{EBIT (Yearly)}}{\text{Total Asset (Average)}}$
- Current Ratio (times) =  $\frac{\text{Current Asset}}{\text{Current Liabilities}}$
- Quick Ratio (times) =  $\frac{\text{Current Asset} - \text{Inventory}}{\text{Current Liabilities}}$
- DSCR =  $\frac{\text{EBITDA (Yearly)}}{\text{Paid for long-term debt} + \text{Finance cost}}$
- Interest bearing Debt to Equity (times) =  $\frac{\text{Interest bearing Debt}}{\text{Total equity}}$
- Net Interest bearing Debt to Equity =  $\frac{\text{Interest bearing Debt} - \text{Cash and cash equivalents} - \text{Current investments}}{\text{Total equity}}$

Note:

1/ Average Total Equity attributable to owners of the Company

- Yearly =  $\frac{\text{Total Equity attributable to owners of the Company of the year before} + \text{Total Equity attributable to owners of the Company of this year}}{2}$
- Quarterly =  $\frac{\text{Total Equity attributable to owners of the Company of the quarter of the year before} + \text{Total Equity attributable to owners of the Company the quarter this year}}{2}$

2/ Average Total Assets

- Yearly =  $\frac{\text{Total Assets of the year before} + \text{Total Assets of the Company of this year}}{2}$
- Quarterly =  $\frac{\text{Total Assets of the Company of the quarter of the year before} + \text{Total Assets of the Company the quarter this year}}{2}$

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.

Environment Management Accounting: EMA		Unit: Million Baht		
	2015	2016	Δ	
<b>Material Costs of Product Outputs</b> : Consist of crude oil, ethanol, biodiesel, chemical, energy and utilities in production	93,032	73,360	(19,672)	
<b>Material Costs of Non-Product Outputs</b> : Consist of slop and sludge oil, waste water, chemical surplus	42	77	35	
<b>Waste and Emission Control Costs</b> : Consist of maintenance cost of environmental control equipment and depreciation and other fees	398	315	(83)	
<b>Prevention and Other Environmental Management Costs</b> : Consist of monitoring and measurement cost, environmental management system expenses	12	25	13	
<b>Total Expenses</b>	<b>93,484</b>	<b>73,777</b>	<b>(19,707)</b>	
<b>Benefit from by-product and waste recycling</b>	(17)	(16)	2	

In 2016, total expenses related to environment decreased by Baht 19,707 million (-21%) when compared to last year. The main reason was due to a decrease in the Material Costs of Product Outputs which was reduced by Baht 19,672 million, from the global oil price which dropped by 19% from the previous year, and from the refinery's turn around annual maintenance which led to the lower crude run from 112.94 KBD in 2015 to 101.39 KBD this year. This was in accord with the Material Costs of Non-Product Outputs which was increased by Baht 35 million, from the higher slop and sludge oil. Meanwhile, Waste and Emission Control Costs was decreased by Baht 83 million (-21%), primarily from the reduction in depreciation of emission control equipment by Baht 109 million. Prevention and Other Environmental Management Costs was slightly increased.

Benefit from by-product and waste recycling decreased by Baht 2 million (-10%) during the year, as liquid sulfur and glycerin value was lower by Baht 3.3 million, and the sellable residue metal scrap value were reduced by Baht 1.7 million.

## Executive management's prospects to tendencies and strategies in 2017

### Economic outlook

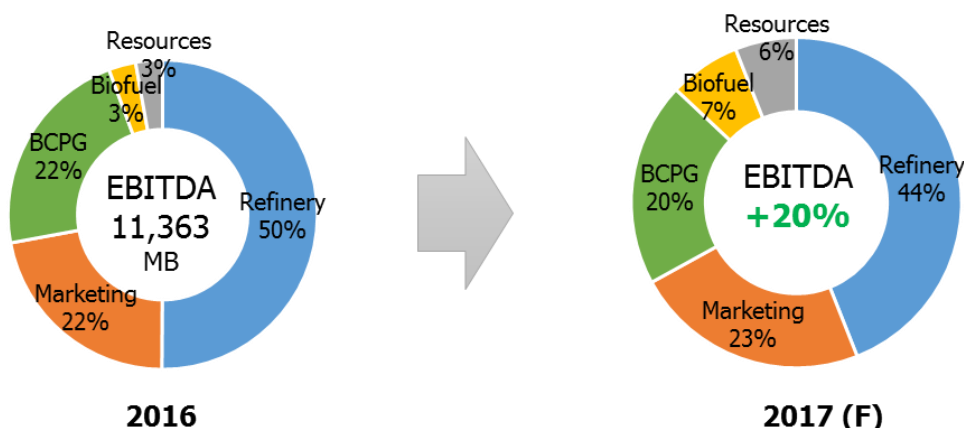
According to IMF World Economic Outlook, 2017 global economic activity is projected to accelerate, but volatile, following the 3 main factors. Firstly, the political situation of the United Kingdom (UK) after the referendum to secede from EU (Brexit), which would post a huge effect on European economic and monetary situation, especially in the UK. Secondly, the recovery of the US economy after the downturn in 2016. Lastly, the slowdown growth in emerging and developing countries, which was mainly due to the changing Chinese economic policy which aim to focus on domestic consumption instead of imports and exports. As a result, Central banks in many countries are expected to maintain their policy interest rates at a low level, in order to support the country's Gross Domestic Product.

For Thai economy in 2017, the Bank of Thailand forecasted a further improvement from the previous year, leading by domestic factors. Household purchasing power tend to expand after the depletion of first-car scheme leasing debt, the personal income tax restructuring and the increase of minimum wage. Private investment sector is likely to be recovered due to the prospective growth in service sector and positive externality of Thai government mega infrastructure projects. Export sector is expected to slightly recover from the positive factors in some trading partners, and economic stimulus policies in the neighboring countries.

### Oil market situation outlook

Due to the oil production cut agreement of both OPEC and non-OPEC group, crude oil price is expected to increase to around 50-55 \$/BBL, resulting in the increment of Shale oil rig counts. However, crude oil price is expected to be more steady at around 50 – 60 \$/BBL, as other oil producers tends to resume their production if crude oil price rise to a higher level. Moreover, the oil market may face demand risk from the slowdown economic situation, notably in China, the uncertainty in the Eurozone political situation, and the increment of political interest rate in the US which would result in the appreciation of the USD and the adverse effect on the commodity products, including oil prices. The Bangchak Petroleum Plc. expects average Dubai crude oil price in 2017 to stay between 50 – 60 \$/BBL, while average Dated Brent/Dubai crack spread (DTD/DB) is forecasted to be narrower than in 2016, and stay between 0.8 – 1.8 \$/BBL, pressured by the inclination of the US Shale oil (of which characteristic is light grade) production return, while OPEC oil production cut agreement helped limiting heavy grade crude oil supply. For crack spread situation, Gross Refinery Margin on Dubai crude oil for the Hydrocracking refineries in Singapore is expected to slightly decline from 2016, due to the new commercial operation start of a number Asian refineries. On the other hand, finished oil product demand tends to decelerate, as the effect of the lower oil price which support demand is limited, and the possibility of the Asian economy to be effected by the change of US trading policy, after the new president is elected.

## The Bangchak Petroleum Group's Business outlook in 2017



In the year 2017, the company's managements expects the company and its subsidiaries' business performance to be superior to 2016, as the group's EBITDA is planned to expand around 20% YoY. This is achievable as several of the company's business units' performances are believed to improve, especially the Refinery business, of which utilization rate is expected increase from the plan to run at full capacity, as there is no Annual Turnaround Maintenance (TAM) this year. Biodiesel and Fuel Ethanol business also plan to boost its utilization rates. As well as marketing business which will be using a more solid marketing strategies, both in service stations and Non-oil business, to push forward the company's market share continuously. Moreover, the crude oil price which projected to be at a level higher than 50 \$/BBL, is beneficial to the Resources businesses performance to improve. Important factors for each business are as follows:

Business	Substantial Estimation
<b>Refinery</b>	<ul style="list-style-type: none"> <li>Plans a higher crude run at an average of 111 KBD (93% Utilization)</li> <li>Gross Refinery Margin (GRM) is expected at 6 – 7 \$/BBL</li> <li>Refinery Improvement programs are continued, in order to expand GRM.</li> </ul>
<b>Marketing</b>	<ul style="list-style-type: none"> <li>Sales volume are expected at 530 million litres per month, and the portion of retail market would be increased from 62% to 65%.</li> <li>Marketing Margin (MKM) is anticipated at 0.75 – 0.80 Baht/Litre</li> <li>Plans to open 100 new service stations, focusing main roads and strategic locations, with modern image and include other non-oil businesses in order to meet with customers' need. The quality and appearance of existing service stations will also be improved.</li> <li>Plans to expand Inthanin coffee shop by an additional of 120 branches, and SPAR by an additional of 55 branches, to increase an ability to compete in retail business.</li> </ul>
<b>Biofuel</b>	<ul style="list-style-type: none"> <li>Biodiesel business estimated a 20% expansion in sales volume, as the company expects the government to maintain B100 mixing portion in diesel at 5%. Production rate is planned at 710,000 Litres / Day.</li> </ul>

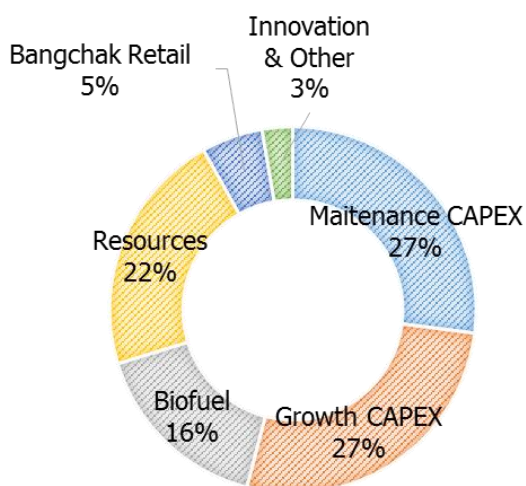




<b>Biofuel</b>	<ul style="list-style-type: none"> <li>● Fuel Ethanol business will realize full year performance, and production rate is planned at 130,000 Litres / Day.</li> <li>● The possibility of business restructuring is being considered in response to Thailand 4.0 policy in Biotech.</li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>● E&amp;P business is expected to record a performance improvement from the higher crude oil price. Galoc oil field production is estimated at 2,000 barrels / day. E&amp;P business is open for new investment opportunities.</li> <li>● Nido still focus on its cost saving program on both the expense related to production and Selling, General and Administrative expenses.</li> <li>● The additional investment in 50 million newly issued common shares of Lithium Americas Corp., at the price of CAD 0.85 per share, investment value totaling of CAD 42.50 milion, is expected to be completed in April 2017. The proceeds will be utilized for development of Lithium mining projects of Minera Exar S.A. (Cauchari Olaroz Project) in Argentina, which is expected to start production in 2019.</li> </ul>

### Capital Expenditure Plan in 2017

In the year 2017, the company and its subsidiaries projects its Capital Expenditure to be Baht 18,500 million (excluded BCPG Plc.) Details for the Capital Expenditure as follows:



Unit: THB Million		Capital Expenditure Projection
Maintenance CAPEX		5,000
Growth CAPEX		5,000
Biofuel		3,000
Resources		4,000
Bangchak Retail		1,000
Innovation & Other		500
<b>Total</b>		<b>18,500</b>