



The Bangchak Petroleum Public Company Limited

Management Discussion and Analysis of Business Operation

For the three-month period and the nine-month period

ended September 30, 2014





Executive Summary

In Q3/2014, the Consolidated Financial Statement recorded a revenue from sale of goods and rendering of services of Baht 46,835 million, an EBITDA of Baht 1,429 million, a net profit of Baht 410 million, a net profit attributable to the equity owners of the Company amounted Baht 381 million and earnings per share of Baht 0.28 per share. In this quarter, BCP refinery had resumed its production after the Annual Turnaround Maintenance from May 1 to June 15, 2014. In addition, the Solar Power Plant Business was fully-generated its electricity of all three phases (PPA of 118 MW).

The Consolidated Financial Statement recorded an increase of Baht 779 million (+2% YoY) in revenue from sale of goods and rendering of services when compared to Q3/2013, however, there was a decrease in EBITDA of Baht 1,163 million (-45% YoY). When compared to Q2/2014, the revenue from sale of goods and rendering of services increased by Baht 6,059 million (+15% QoQ) and EBITDA was decreased by Baht 971 million (-40% QoQ).

Refinery business reported an average crude run of 96.99 thousand barrel per day, a decreased from 100.61 thousand barrel per day in Q3/2013 due to a temporary shutdown of Hydrogen Plant Unit for equipment inspection and reparation. Total GRM was Baht 766 million (2.66 \$/BBL), a decreased by Baht 329 million from a significant drop of crude oil price due to an abundant supplies while demand increased slowly which led to an inventory loss of Baht 1,408 million. However, average crude run was increased from Q2/2014 due to the resume of refinery production after the Annual Turnaround Maintenance.

In Q3/2014, Total sales volume was 1,664 million litres, a decrease of 17 million litres from Q3/2013 (-1% YoY), which was a decrease in sales volume through wholesale business by 5% but increase in sales volume through retail business by 0.42%. When compared to Q2/2014, total sales volume increased by 305 million litres (+22% QoQ) from higher sales volume through Industrial and Wholesale Business due to the refinery resuming production after the Annual Turnaround Maintenance.

Total Marketing Margin was 0.71 Baht per litre, an increase of 0.18 Baht per litre (+35% YoY) from higher sales volume of Gasohol E85 which had higher marketing margins when compared to other products, and there was the Annual Turnaround Maintenance of Thai refineries in 2014 which led to a less competition in industrial market when compared to the same period last year. However, total Marketing Margin was decreased by 0.09 Baht per litre (-11% QoQ) which decreased by both Retail Margin and Industrial Margin.

Revenues from Solar Power business (PPA of 118 MW) was recorded at Baht 743 million, an increase of Baht 363 million (+95% YoY) from the operations of all 5 sites solar power plant phase 3 (PPA of 48 MW). As a result, the total Electricity Sales for Q3/2014 was 63.47 million kWh, an increase of 29.81 million kWh (+89% YoY). When compared to Q2/2014, revenue of solar power business was increased by Baht 31 million (+4% QoQ). Total electricity sales increased by 1.88 million kWh (+3% QoQ) from the quarterly fully-generated its electricity of solar power plant phase 3.

Revenue from Biodiesel Business was recorded at Baht 1,243 million in Q3/2014, an increase of Baht 223 million from Q3/2013 (+22% YoY) from an increase in B100 price during the period and government's policy of increasing the portion of B100 mixing with diesel from 5% in Q3/2013 to 7% in Q3/2014. When compared to Q2/2014, revenue from Biodiesel was increased by Baht 127 million (+11% QoQ) from the government's B100





mixing policy; however CPO price in Q3/2014 was continuously decreased from the beginning of this year due to an oversupply of palm oil.

In Q3/2014, Company has expanded the business into exploration and production of petroleum business. BCP Energy International Pte, Ltd., (“BCP Energy”) a subsidiary of the company has entered into a share purchase agreement of Nido Petroleum Limited (“NIDO”) which is incorporated in Australia and its principal activities are the exploration and production of petroleum and natural gas. Taking control of NIDO will enable Company to expand the business into exploration and production of petroleum business and form the fundamental development of exploration and production of petroleum business in accordance with the Company’s expansion direction. BCP Energy had purchased share of NIDO from Petroleum International Investment Corporation of 402.95 million common shares (equivalent to 19.66% of total issued shares capital) and entered a bid implementation deed to make a tender offer to purchase all of the outstanding shares. On 19 September 2014, BCP Energy achieved over 50.1% relevant interest thereby NIDO became subsidiary of the Group. As at 30 September 2014, BCP Energy has acquired 1,431.97 million common shares in NIDO, representing 65.44% equity interest.

On 31 July 2014, the Company entered into a share purchase agreement with conditions precedent with Sima Inter Product Co., Ltd. to purchase 7.65 million common shares equivalent to 85% of registered capital of BCP Bioethanol Co., Ltd. BCP Bioethanol Co., Ltd will be established after completing the conditions precedent to the share purchase agreement, for the acquisition of assets related to production and distribution ethanol, including permits, contracts and other rights from Sima Inter Product Co., Ltd. The purpose of the investment is in line with the Company’s strategy to expand the renewable energy business.

For the nine-month ended 30 September 2014, the Consolidated Financial Statement recorded a revenue from sale of goods and rendering of services of Baht 137,267 million, a total EBITDA of Baht 6,418 million, a net profit of Baht 3,263 million, a net profit attributable to the equity owners of the Company amounted Baht 3,201 million and earnings per share of Baht 2.32 per share.





The Company and its subsidiaries' operating results were summarized as below;

Unit: Million Baht

	Q3/2013 ^{1/}	Q2/2014	Q3/2014	YoY	QoQ	9M/2013	9M/2014
Revenue from sale of goods and rendering of services	46,056	40,776	46,835	2%	15%	138,431	137,267
Total EBITDA^{2/}	2,592	2,400	1,429	-45%	-40%	7,622	6,418
<i>Core business</i>							
<i>EBITDA Refinery</i>	<i>1,811</i>	<i>1,007</i>	<i>113</i>	<i>-94%</i>	<i>-89%</i>	<i>5,147</i>	<i>2,551</i>
<i>EBITDA Marketing^{3/}</i>	<i>352</i>	<i>670</i>	<i>612</i>	<i>74%</i>	<i>-9%</i>	<i>1,250</i>	<i>1,889</i>
<i>Renewable business</i>							
<i>EBITDA Solar Power^{4/}</i>	<i>361</i>	<i>682</i>	<i>709</i>	<i>96%</i>	<i>4%</i>	<i>976</i>	<i>1,832</i>
<i>EBITDA Biofuel^{5/}</i>	<i>69</i>	<i>41</i>	<i>54</i>	<i>-22%</i>	<i>33%</i>	<i>256</i>	<i>204</i>
<i>EBITDA Exploration and Production^{6/}</i>	<i>-</i>	<i>-</i>	<i>(59)</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>(59)</i>
Profit attributable to owners of the Company	1,359	1,258	381	-72%	-70%	3,963	3,201
Basic earnings (loss) per share (Baht)	0.99	0.91	0.28			2.88	2.32

1/ The Company and its subsidiaries' operating results of Q1/2013, Q2/2013 and Q3/2013 were restated according to the new and revised TFRS that are effective from 1 January 2014.

2/ The different between total EBITDA and the sum of each business EBITDA was due to the elimination items

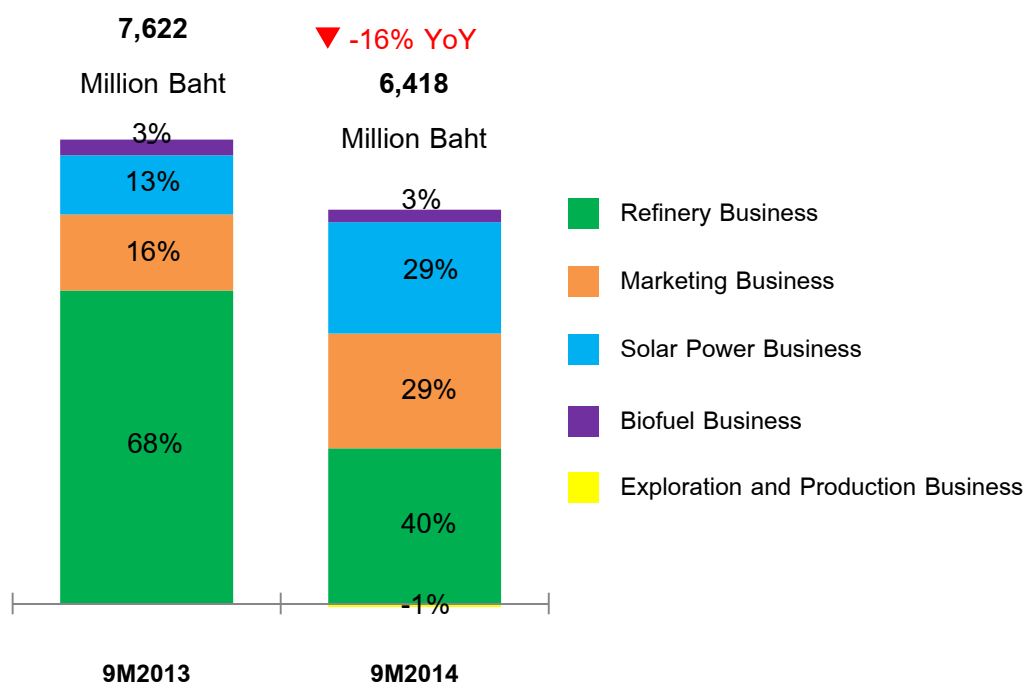
3/ EBITDA from Marketing Business and Bangchak Greenet Co.,Ltd

4/ EBITDA from Solar Power Plant Business, Bangchak Solar Energy Co.,Ltd. and its subsidiaries

5/ EBITDA from Bangchak Biofuel Co., Ltd. and share of profit/ (loss) from Ubon Bio Ethanol Co, Ltd

6/ EBITDA from BCP Energy International Pte, Ltd. and its subsidiary

EBITDA Structure





Changes in accounting policies

From 1 January 2014, according to the adoption of new and revised TFRS, the Company has changed its accounting policies in the following items which have material effects to financial statements, :

- TFRIC Interpretation 4 – Determining whether an arrangement contains a lease
- TFRIC Interpretation 13 - Customer loyalty programmes

Details can be found under section 3(b) to 3(d) of Footnotes to The Company's Financial Statements.

The impacts to the Company's Financial Statements 2013 are as follows

Statement of Financial Position

Unit: Million Baht

As of 31 December 2013	Before	Effect		After
		TFRIC 4	TFRIC 13	
Assets				
Property, plant and equipment	31,771	1,146	-	32,917
Deferred tax assets	336	(12)	14	338
		1,134	14	
Liabilities and equity				
Other current liabilities	565	-	70	635
Finance lease liabilities (including current portion)	-	1,085	-	1,085
Retained earnings - Unappropriated	21,835	49	(56)	21,828
		1,134	14	





Statement of Income

Unit: Million Baht

Statement of income for period	Consolidated		Separate	
	Q3/2013	9M/2013	Q3/2013	9M/2013
Profit before income tax expense – as reported	1,652	4,878	1,460	4,332
Changes before tax as a result of the adoption retrospectively of:				
TFRIC 4 Determining whether an Arrangement contains a Lease	6	11	6	11
TFRIC 13 Customer Loyalty Programmes	(5)	(13)	(5)	(13)
Profit before income tax – restated	486	3,224	311	2,870
Income tax expense – as reported	(66)	(586)	(62)	(569)
Changes to income tax expense as a result of the adoption retrospectively of:				
TFRIC 4 Determining whether an Arrangement contains a Lease	(1)	(2)	(1)	(2)
TFRIC 13 Customer Loyalty Programmes	1	3	1	3
Income tax expense – restated	(66)	(586)	(62)	(569)
Profit - restated	420	2,638	248	2,301
Decrease in basic earnings per share (in Baht)	-	0.001	-	0.001

A reclassification of item in Statement of Income

The expense of product transportation to customer which previously under Selling Expense then reclassified to be under Cost of sale of goods and rendering of services in order to be in line with Revenue from sales of goods and rendering of service (which include revenue of product transportation). The effects of the change are shown as follows:

Unit: Million Baht

Statement of income	Increase (Decrease)		
	Q2/2014	Q3/2014	9M/2014
Cost of sale of goods and rendering of services	96	103	199
Selling Expenses	(96)	(103)	(199)





Analysis of the Consolidated Statement of Income

Unit: Million Baht

	Q3/2013 ^{1/} (Restated)	Q2/2014 ^{2/}	Q3/2014	YoY (%)	QoQ (%)	9M 2013	9M 2014
Revenue from sale of goods and rendering of services	46,056	40,776	46,835	2%	15%	138,431	137,267
Cost of sale of goods and rendering of services	(43,450)	(38,791)	(45,520)	5%	17%	(131,788)	(131,450)
Gross Profit	2,606	1,985	1,314	-50%	-34%	6,643	5,817
Investment income and other income	71	623	107	52%	-83%	1,813	819
Selling and administrative expenses	(982)	(959)	(1,005)	2%	5%	(2,910)	(2,815)
Gain from crude and product oil price hedging contract	230	83	176	-23%	111%	446	350
Gain (loss) from foreign currency forward contracts	(51)	27	5	N/A	-81%	(505)	86
Gain (loss) on foreign exchange	95	60	175	84%	189%	243	482
Reversal of allowance for loss from impairment of assets	(3)	0.14	3	N/A	2202%	(29)	4
Share of profit (loss) of associate	1	(6)	(10)	N/A	60%	30	(5)
Profit before finance costs and income tax expense	1,966	1,813	765	-61%	-58%	5,731	4,738
Finance costs	(315)	(369)	(392)	25%	6%	(856)	(1,024)
Profit before income tax expense	1,652	1,444	373	-77%	-74%	4,876	3,714
Income tax expense	(278)	(178)	36	N/A	N/A	(864)	(451)
Profit for the period	1,373	1,267	410	-70%	-68%	4,012	3,263
Owners of the Company	1,359	1,258	381	-72%	-70%	3,963	3,201
Non-controlling interests	14	9	29	99%	229%	49	62
Earnings per share (Baht per Share)	0.99	0.91	0.28			2.88	2.32

Note: 1/ The Company and its subsidiaries' operating results of Q1/2013, Q2/2013 and Q3/2013 has been restated to be consistent with the new and revised TFRS that are effective for annual periods beginning on or after 1 January 2014.

2/ Expense of product transportation to customer which previously under Selling Expense then reclassified to be under Cost of sale of goods and rendering of services.



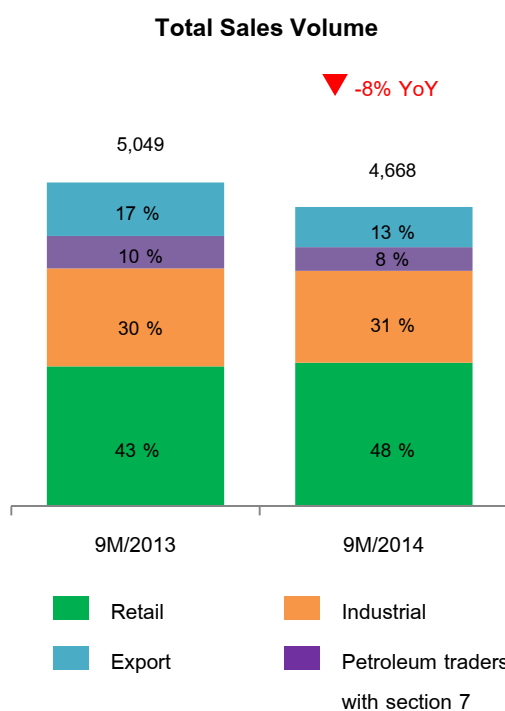


Sales volume in each market category of the Company

Unit: Million Litre

Marketing Business	Q3/2013	Q2/2014	Q3/2014	YoY (%)	QoQ (%)
Retail	725	780	746	3%	-4%
Industrial	492	431	475	-3%	10%
Total	1,216	1,210	1,221	0.42%	1%
Wholesale Business					
Petroleum traders in accordance with section 7 ^{1/}	167	18	160	-4%	773%
Export	298	130	283	-5%	118%
Total	464	148	442	-5%	199%
Total Sales Volume	1,681	1,358	1,664	-1%	22%

Note: 1/ Total sales volume figures excluding the swap amount between petroleum traders in accordance with section 7 and the sales volume of crude



Marketing Business	9M/2013	9M/2014
Retail	2,181	2,239
Industrial	1,528	1,433
Total	3,710	3,672
Wholesale Business		
Petroleum traders in accordance with section 7 ^{1/}	505	370
Export	834	627
Total	1,339	997
Total Sales Volume	5,049	4,668





Summary of The Company and its subsidiaries' Operating Results

Comparison of Q3/2014 and Q3/2013 Operating Results

In Q3/2014, Consolidated Financial Statement recorded revenue from sale of goods and rendering of services of Baht 46,835 million, an increase of Baht 779 million (+2% YoY); mainly from revenue of Solar Power Plant Business which was quarterly fully-generated its electricity of all three phase (PPA of 118 MW) and revenue from Biodiesel Business which was increased as a result from a rising in B100 price during the period and government's policy of increasing the portion of B100 mixing with diesel from 5% in Q3/2013 to 7% in Q3/2014.

Gross profit was decreased by Baht 1,292 million (-50% YoY); mainly from a decreasing in total GRM effected by an inventory loss of Baht 1,408 million as a result from a significant drop of crude oil price due to an abundant supplies while a demand increased slowly.

The Company recorded other income of Baht 107 million, an increase of Baht 36 million from Interest received from Short term investment and there was a gain from crude and product oil price hedging contract of Baht 176 million, a decreased of Baht 54 million from Q3/2013

Financial costs were increased of Baht 77 million (+25% YoY) due to the debenture issuance of Baht 10,000 million in April 2014. In Q3/2014, Company had consoled financial costs from NIDO Petroleum of Baht 18 million into the company financial statements.

The Company's recorded Reversal of income tax expense of Baht 36 million as a result of Profit before finance costs and income tax expense in Q3/2014 were mainly the revenues under BOI tax exempt privileges of solar power and biodiesel businesses.

The Consolidated Financial Statement recorded a net profit of Baht 410 million, a decrease of Baht 964 million (-70% YoY). Net Profit attributable to the owners of the Company was Baht 381 million, a decrease of Baht 978 million (-72% YoY). Earnings per share of 0.28 Baht, compared to 0.99 Baht in Q2/2013.

Comparison of Q3/2014 and Q2/2014 Operating Results

Consolidated revenue from sale of goods and rendering of services increased by Baht 6,059 million (+15% QoQ) from an increasing in total sales volume due to the resume of refinery production after the Annual Turnaround Maintenance (46 days) in Q2/2014.

Gross profit was decreased by Baht 670 million (-34% QoQ); mainly from a decreasing in total GRM effected by an inventory loss of Baht 1,408 million as a result from a significant drop of crude oil price.

Other income was decreased of Baht 516 million from Q2/2014 which recorded an Insurance Compensation of Baht 521 million. There was a gain from crude and product oil price hedging contract of Baht 176 million, an increase of Baht 93 million from Q2/2014.

The Company's recorded Reversal of income tax expense of Baht 36 million as a result of Profit before finance costs and income tax expense in Q3/2014 were mainly the revenues under BOI tax exempt privileges of solar power and biodiesel businesses.

Financial Costs increased by Baht 23 million (+6% QoQ). In this quarter, Company had consoled financial costs from NIDO Petroleum of Baht 18 million into the company financial statements.





Consolidated net profit was decreased by Baht 857 million (-68% QoQ). Net Profit attributable to the owners of the Company decreased by Baht 877 million (-70% QoQ). An Earnings per share was 0.28 Baht, compared to 0.91 Baht in Q2/2014.

Summary of The Company and its subsidiaries' performance by Business Unit

Core Business

Crude Oil Price Situation

In Q3/2014, an average Dubai crude oil price had decreased by 4.68 \$/BBL from the average price in the previous quarter. The crude oil price was under pressured as the market concern over oil supply shortage in the Middle East and North Africa had been relieved. Libya's oil production had been partially resumed from 200,000 BPD to over 800,000 BPD by end of the quarter while the unrest of the invasion of the Islamic State (IS) in northern of Iraq did not affect Iraq oil export and US and its allies in Arab Gulf tried to fight with the IS to limit the unrest. The tension in Ukraine did not affect the production and transportation of oil in the market.

Moreover, crude oil price had been pressured by the continuingly appreciation of dollar as a result of US economic outlook improvement. The US economy grew by +4.6% (QoQ) in Q2/2014 compared to a contraction of -2.1% in Q1/2014. The Federal Reserve gradually reduced its stimulus package while the market expected the Federal Reserve to raise the interest rates in the mid-2015 had made the capital flow back to the US and boosted the dollar strengthening situation. In contrast, the euro had been under pressure from the economic slowdown. The Eurozone economy had been flat during the Q2/2014, compared to the growth of +0.2% in the Q1/2014. The euro zone economy seems to be under pressured in the Q3/2014 from the conflict between EU countries together with US and Russia over the unrest in Ukraine. The sanctions against Russia had made Europe's economics weakened. The European Central Bank (ECB) decided to cut its policy rate from 0.15% to 0.05% after the inflation continued to decline. The Chinese economy grew 7.5% in Q2/2014 (YoY), compared to 7.4% growth in Q1/2014, while the manufacturing index remained in a slightly positive figure.

For Q3/2014 compared to the same period of last year, the average crude oil price had decreased by 4.75 \$/BBL as there was an oversupply of crude oil in the summer. The growing of US light crude oil production made the US imports less crude from Africa. Moreover, Libya's oil production rapidly recovered, while the demand from Europe was low and The OPEC did not cut back its crude oil production level which translated into an oversupplied of crude oil in the market.

An average of DTD Brent/Dubai spread was 0.48 \$/BBL, compared to an average of 3.53 \$/BBL in the previous quarter. The spread had been narrowed down because of the oil prices continued to decline. Dated Brent crude oil has been pressured by an oversupply of light crude oil in the market while U.S. continued to lower its light crude oil import volume which affected the oil producer in West Africa, in particularly Nigeria and Angola, to give a deeper discount to the buyers. Moreover, Libya's oil production had increased during Q3/2014, while demand of crude oil in Europe was low. In conversely, demand for heavy oil increased after Asian refineries returned from their turnarounds and demand increased from the seasonal





factor (summer demand). All in all, it explained the narrowed spread between Dated Brent and Dubai crude oil price.

When compared to the same period last year, the spread had decreased by 3.61 \$/BBL. In Q3/2013, the spread was supported by the drop in crude oil production of Libya from 1.3 MBD to less than 500,000 BPD as there was a domestic unrest which created a tight supply and widening the spread.

Crack Spreads Analysis

- An average Gasoline 95 Octane/Dubai crack spread in Q3/2014 was 13.24 \$/BBL, compared to an average of 16.06 \$/BBL in the previous quarter. In the beginning of the quarter, the spread was supported by the demand from Middle East as well as from Indonesia as it was in the Ramadan period between (June 28 – Jul 27, 2014) and the celebration of the end of Ramadan period. However, the import demand from Vietnam had decreased after its domestic refinery finished their maintenance and resumed production (Between May – July, 2014). While, South Korea and Taiwan refiners also restarted their secondary after finished their turnaround maintenance which add more gasoline supply to the market. Gasoline demand declined later in the quarter after the end of Ramadan period and summer driving season in the U.S. Moreover, the gasoline market had been pressured from the heavy supply inflows of Naphtha from the West to Asia while Naphtha cracker unit plant in Taiwan was undergone its maintenance during September-October, 2014. The Middle East gasoline product import was drop after SATORP refinery which had a capacity of 400,000 BPD operated at its full capacity. It was expected that in Q4/2014, Saudi Arabia will test its new production capacity of 400,000 BPD in Yanbu and also, UAE will likely to start the operation of Ruwais refinery which has a capacity of 417,000 BPD within Q1/2015. If everything was as expected, it will likely made petroleum product supplies in the Middle East to increase and pressured the product crack spread.

However, when compared to the same period last year, the spread had increased by 0.61 \$/BBL mainly from an emergency shutdown of Malaysia and US refineries, and Australia's imports of gasoline increased due to its domestic refinery closure.

- An average of Jet (Kerosene)/Dubai crack spread was 14.50 \$/BBL, compared to an average of 14.29 \$/BBL in the previous quarter. The spread had slightly improved by a stronger demand during travelling season.

When compared to the same period last year, the spread declined by 2.47 \$/BBL mainly from the decline in arbitrage from Asia to Europe, resulting in a supply overhang in the region. Moreover, China also cut its Jet fuel imports due to an increase in its domestic production from new refinery capacities.





- An average of Diesel/Dubai crack spread was 14.42 \$/BBL, compared to an average of 16.02 \$/BBL in the previous quarter. The spread had been weakened by an increase of supply after refineries in Asia came back from their turnarounds in September. Indonesian diesel demand fell due to slower mining activities and the use of biodiesel in transport and industrial use. Furthermore, diesel demand for electricity generation from Saudi Arabia had declined as there were new refineries ramp up its production and the domestic demand decreased late in the quarter, after the end of the summer. India's demand fell during the monsoon season, causing an increase in exporting diesel to the market. An export of diesel from Taiwan had increased as Formosa refinery came back from its annual turnaround. An oversupply of diesel in Asia forced South Korea refiners to cut their utilization rate.

When compared to the same period last year, the spread declined by 2.97 \$/BBL mainly from the new refineries capacities in Asia and Middle East. The export of diesel from Asia to Europe was unable to be executed as the demand of Europe was low and export competition from US and Russia whom had lower cost of export.

- An Average of Fuel oil/ Dubai crack spread was -8.39 \$/BBL, compared to an average of -10.60 \$/BBL in the previous quarter. An increase in the crack spread was supported by an increase in Singapore bunker demand and electricity-generation demand in North Asia during summer in August. However, demand from China private refineries (Teapot) remained low as Chinese government granted crude import quotas.

When compared to the same period last year, the spread increased by 2.18 \$/BBL from the western arbitrage flow to Asia had decreased as the supply from Europe decreased as a result of low refinery utilization rates from a slow demand in refined petroleum products.





The table of oil prices and crack spreads comparison

Unit: USD/bbl

	Q3/2013	Q2/2014	Q3/2014			YoY	QoQ	9M/2013	9M/2014
	AVG.	AVG.	MAX	MIN	AVG.	%	%	AVG.	AVG.
DB	106.20	106.13	109.16	94.00	101.45	-4.48%	-4.42%	104.99	103.97
DTD Brent/DB	4.09	3.53	2.29	-2.16	0.48	-88.20%	-86.33%	3.47	2.55
UNL95/DB	12.63	16.06	20.21	7.00	13.24	4.82%	-17.58%	15.05	14.60
IK/DB	16.97	14.29	16.60	11.41	14.50	-14.57%	1.44%	17.43	15.25
GO/DB	17.39	16.02	17.10	-11.98	14.42	-17.07%	-10.00%	17.86	16.05
FO/DB	-10.57	-10.60	-4.20	-12.61	-8.39	20.62%	20.86%	-7.19	-9.14





1) Refinery Business Performance

The table of refinery business performance

Refinery Business	Q3/2013	Q2/2014	Q3/2014	YoY (%)	QoQ (%)	9M/2013	9M/2014
Average Crude Run (KBD)	100.61	48.45	96.99	-4%	100%	98.72	81.09
Utilization Rate (%)	84%	40%	81%	-	-	82%	67%
Average FX (THB/USD)	31.61	32.60	32.25	2%	-1%	30.53	32.55

Unit: Million Baht

	Q3/2013 ^{1/} (Restated)	Q2/2014	Q3/2014	YoY (%)	QoQ (%)	9M/2013	9M/2014
Market GRM	1,414	703	1,997	41%	184%	5,115	4,551
GRM Hedging	230	83	176	-23%	111%	446	350
Gain/ (Loss) from Inventory	926	309	(1,408)	N/A	N/A	568	(1,054)
Total GRM	2,570	1,094	766	-70%	-30%	6,129	3,846
EBITDA	1,811	1,007	113	-94%	-89%	5,147	2,551

Unit: USD/BBL

	Q3/2013 ^{1/} (Restated)	Q2/2014	Q3/2014	YoY (%)	QoQ (%)	9M/2013	9M/2014
Market GRM	4.83	4.89	6.94	44%	42%	6.22	6.32
GRM Hedging	0.78	0.58	0.61	-22%	5%	0.54	0.49
Gain/ (Loss) from Inventory	3.17	2.15	(4.89)	N/A	N/A	0.69	(1.46)
Total GRM	8.78	7.61	2.66	-70%	-65%	7.45	5.34

Note: 1/ The Company and its subsidiaries' operating results of Q1/2013, Q2/2013 and Q3/2013 were restated according to the new and revised TFRS that are effective for annual periods beginning on or after 1 January 2014.





Comparison of Q3/2014 and Q3/2013 operating results

In Q3/2014, Refinery business had an average crude run of 96.99 thousand barrel per day (Utilization rate of 81%) decreased from the same period of last year which was at 100.61 thousand barrel per day as a result of a temporary shutdown of Hydrogen Plant (there was an irregularities in equipment operation, therefore, the unit was temporary seized operation for inspection and reparation) causing the total average crude run to decrease.

Market GRM was Baht 1,997 million, an increase of Baht 583 million (+41% YoY) mainly from the lower import crude cost when compared to last year. As the reference price for the low sulfur crude (sweet crude), which was Dated Brent, was declined to be in line with Dubai crude oil price (the spread between Dated Brent and Dubai crude oil price was at 0.48 \$/BBL, a decrease from 3.61 \$/BBL in Q3/2013) from the higher supply of light sweet crude from West Africa countries, especially from Libya. Together with the lower level of light crude oil import of US as there was an increasing in the shale oil production, while European countries oil demand were low as a result of slower than expected economic recovery. As a result, the Market GRM was high despite the lower crack spreads of products from the slower demand growth in Asia and Europe and from the new refineries capacities from Asia and Middle East including the refinery which came back from its annual turnaround.

There was a record of gain from crude and product oil price hedging contract (GRM hedging) of Baht 176 million, a decrease of Baht 54 million (-23% YoY) and from the decline in crude oil price, the company recorded an inventory loss of Baht -1,408 million. Therefore, the total GRM was recorded at Baht 766 million and Refinery business recorded an EBITDA of Baht 113 million, a decrease of Baht 1,698 million (-945 YoY)

Comparison of Q3/2014 and Q2/2014 operating results

In Q3/2014, Refinery business had average crude run of 96.99 thousand barrel per day (Utilization rate of 81%) an increase from Q2/2014 which was at 48.45 thousand barrel per day. There was a scheduled Annual Turnaround Maintenance in Q2/2014.

Market GRM increased Baht 1,295 million (+184% QoQ) as a result of an increase of crude run and a narrowed spread between Dated Brent and Dubai crude oil price which decreased 3.05 \$/BBL from an increase in supply. As well as, in Q3/2014 Bangchak's refinery has a higher value product yield as a result of the Hydrocracking unit operation (In the late of Q2/2014, the startup of refining process from Annual Turnaround Maintenance was in hydro-skimming mode which produced less gasoline and diesel.

The total GRM was decreased Baht 329 million (-30% QoQ), therefore, in Q3/2014 Refinery business recorded a decrease in an EBITDA of Baht 894 million (-89% QoQ).





2) Marketing Business and Bangchak Green Net Co., Ltd.

Sales volume in each market category of Marketing Business

Unit: Million Litre

Marketing Business	Q3/2013	Q2/2014	Q3/2014	YoY (%)	QoQ (%)	9M/2013	9M/2014
Retail (Service Stations)	725	780	746	3%	-4%	2,181	2,239
Industrial	492	431	475	-3%	10%	1,528	1,433
Total	1,216	1,210	1,221	0.42%	1%	3,710	3,672

Sales volume in each product category of Marketing Business

Unit: Million Litre

	Q3/2013	Q2/2014	Q3/2014	YoY (%)	QoQ (%)	9M/2013	9M/2014
Diesel	618	639	632	2%	-1%	1,990	1,920
UNL 91	12	12	12	-	-	19	36
Gasohol	329	344	363	10%	6%	945	1,031
Gasohol 91	132	133	143	9%	8%	394	403
Gasohol 95	88	87	92	5%	6%	258	262
Gasohol E20	83	84	82	-1%	-2%	231	246
Gasohol E85	27	40	46	74%	14%	61	120
Jet Fuel	179	147	148	-17%	1%	531	476
Fuel Oil	50	39	39	-22%	1%	147	122
LPG	15	16	16	5%	-	33	48
Lubricant	12	13	11	-14%	-19%	45	37
Others	0.28	0.25	0.14	-52%	-46%	1.05	0.99
Total	1,216	1,210	1,221	0.42%	1%	3,710	3,672

The table below shows detail of Marketing Margin

Unit: Baht per Litre

	Q3/2013 ^{1/} (Restated)	Q2/2014	Q3/2014	YoY (%)	QoQ (%)	9M/2013	9M/2014
Retail Margin (Service Stations)	0.75	1.04	0.98	30%	-6%	0.74	0.99
Industrial Margin	0.20	0.35	0.29	45%	-17%	0.25	0.31
Total Marketing Margin^{2/}	0.53	0.80	0.71	35%	-11%	0.53	0.73

Note: 1/ Marketing Margin figure was the attributable amount to the Company only.





Comparison of Q3/2014 and Q3/2013 Operating Results

In Q3/2014, total sales volume of marketing business was 1,221 million litre, an increase of 5 million litre (+0.42% YoY). Retail sales volume increased by 21 million litre (+3% YoY) whereas Industrial sales volume decreased by 16 million litre (-3% YoY).

Gasohol products sales volume increased 10% YoY, especially for Gasohol E85 which increased 74% from demand growth and the result of the Company's E85 service station expansion. In Q3/2014, there was a total of 146 E85 service stations, an increase of 59 stations from Q3/2013.

Total marketing margin was 0.71 Baht per litre, an increase of 0.18 Baht per litre (+35% YoY). The margin increased in both Retail and Industrial markets. Retail Margin increased by 0.23 Baht per litre (+30% YoY) from the growing number of sales volume in Gasohol E85 products which had higher marketing margin compared to other products. Industrial Margin increased by 0.09 Baht per litre (+45% YoY) from the Annual Turnaround Maintenance of Thai refineries in year 2014 which led to a less competition in industrial market when compared to the same period last year.

Therefore, in Q3/2014, EBITDA of Marketing Business was Baht 612 million, an increase of Baht 259 million (+74% YoY).

Comparison of Q3/2014 and Q2/2014 Operating Results

Total sales volume of marketing business in Q3/2014 decreased by 11 million litre (+1% QoQ) from Q2/2014. Retail sales volume decreased by 4% QoQ from a less demand in agricultural sector due to a seasonal effect resulted to a decrease of cooperative service stations sales volume. Whereas, the Industrial sales volume increased 10% from the resume of refinery production after the Annual Turnaround Maintenance in Q2/2014 and there was the Annual Turnaround Maintenance of other refinery in Thailand.

Total Marketing Margin was 0.71 Baht per litre, an increase of 0.09 Baht per litre (-11% QoQ) from both Retail Margin and Industrial Margin. Retail Margin increased by 0.06 Baht per litre (-6% QoQ) from a decreasing in Marketing Margin of Gasohol products. Industrial Margin decreased 0.06 Baht per litre (-17% QoQ) from a higher competition in industrial market due to the return of other refinery operation after the Annual Turnaround Maintenance in Q2/2014. Therefore, EBITDA was decreased by Baht 58 million (-9% QoQ)





Renewable Business

1) Solar Power Business

Electricity Sales (Million kWh)	Q3/2013	Q2/2014	Q3/2014	YoY (%)	QoQ (%)
Phase 1	15.66	17.67	17.06	9%	-3%
Phase 2	18.00	20.09	18.87	5%	-6%
Phase 3	-	23.83	27.62	N/A	16%
Total	33.66	61.60	63.47	89%	3%
Revenue (Million Baht)	381	712	743	95%	4%

Comparison of Q3/2014 and Q3/2013 Operating Results

In Q3/2014 Solar Power Business (PPA of 118 MW) had a total electricity sales of 63.47 million kWh, an increase of 29.81 million kWh (+89% YoY) from the commercial operations of Solar Power Plant Phase 3 (PPA of 48 MW) in April 2014.

Solar Power Plant Phase 1 (PPA of 38 MW) had a total electricity sales of 17.06 million kWh (+9% YoY). Solar Power Plant Phase 2 (PPA of 32 MW) had a total electricity sales of 18.87 million kWh (+5% YoY). Total electricity sales of Phase 1 and Phase 2 were increased from the higher average irradiation rate of each site when compared to Q3/2013. Solar Power Plant Phase 3 (PPA of 48 MW) had a total Electricity Sales of 27.62 million kWh from the commercial operations in April 2014.

Total revenue from solar power business (PPA of 118 MW) was Baht 743 million, an increase of Baht 363 million (+95% YoY). Total EBITDA was Baht 709 million, an increase of Baht 348 million (+96% YoY).

Comparison of Q3/2014 and Q2/2014 Operating Results

In Q3/2014, total Electricity Sales of all three phases (PPA of 118 MW) was increased by 1.88 million kWh (+3% QoQ). Solar Power Plant Phase 1 (PPA of 38 MW) had a decrease in electricity sales by 0.61 million kWh (-3% QoQ), Solar Power Plant Phase 2 (PPA of 32 MW) had a decrease in total electricity sales by 1.22 million kWh (-6% QoQ), and Solar Power Plant Phase 3 had an increase in electricity sales by 3.79 kWh. As it is a rainy season in the third quarter, average irradiation rate of all three phases was decreased from the previous quarter; however, electricity sales of Solar Power Plant Phase 3 was increased due to the fully-operated in Q3/2014.

Total revenue from solar power business was increased by Baht 31 million (+4% QoQ). Total EBITDA was increased by Baht 27 million (+4% QoQ).





2) Biofuel Business

In Q3/2014, Biofuel business recorded an EBITDA of Baht 54 million, which comprised of an EBITDA from Biodiesel Business of Baht 63 million and share of loss from Ubon Bio Ethanol Co, Ltd of Baht 10 million (as it was in the Annual Turnaround Maintenance period).

The table of biodiesel business performance (by Bangchak Biofuel Co., Ltd)

Biodiesel Business	Q3/2013	Q2/2014	Q3/2014	YoY (%)	QoQ (%)	9M/2013	9M/2014
Revenue (Million Baht)	1,020	1,116	1,243	22%	11%	3,138	3,782
Utilization Rate	93%	98%	101%	9%	3%	94%	100%
Average Daily Production Rate (Thousand litre per day)	334	352	364	9%	3%	340	359
B100 Sales Volume (Million litre)	38	39	47	24%	21%	124	126
EBITDA (Million Baht)	68	46	63	-7%	36%	226	209

Comparison of Q3/2014 and Q3/2013 Operating Results

In Q3/2014, Biodiesel business had higher sales revenue when compared to the same period last year due to a growing biodiesel demand from the government's policy of increasing the portion of B100 mixing with diesel from 5% in Q3/2013 to 7% in Q3/2014 and an increase in B100 price. Nevertheless, B100 price was continuingly decreased from the beginning of this year as there was an oversupply of crude palm oil (CPO) in Thailand and in the region; Indonesia, who was the main CPO producer, increased its CPO export due to its weak domestic demand hence, lower regional CPO price. As a result, Thailand's CPO producer focused more on domestic market as the regional price was pressured by the export CPO. (According to Department of Energy Business the B100 reference price was 29.51 Baht per litre in Q3/2014, 31.45 Baht per litre in Q2/2014 and 37.33 Baht per litre in Q1/2014)

In Q3/2014, EBITDA of Biodiesel Business was Baht 63 million; comprised of an inventory loss of Baht 16 million as CPO and B100 prices drop from beginning of the year while the normal operation EBITDA was at Baht 79 million, the figure had continuingly improved as a result of higher average daily production rate (In Q3/2013, EBITDA of Biodiesel Business was Baht 68 million; there was an inventory gain of Baht 14 million and EBITDA from the normal operation was Baht 54 million.)





Comparison of Q3/2014 and Q2/2014 Operating Results

In Q3/2014, Biodiesel business had higher sales revenue when compared to the previous quarter due to a growing biodiesel demand from the government's policy of increasing the portion of B100 mixing with diesel to 7% while in Q2/2014, the biodiesel demand growth was interrupted by a temporary government's policy of decreasing the portion of B100 mixing with diesel from 7% to 5% during February 17 until May 13, 2014 as there was a shortage of crude palm oil (CPO) which was the raw material of B100 production.

The selling price of B100 had continually declined further since the beginning of the year as the local producer reduced its export volume.

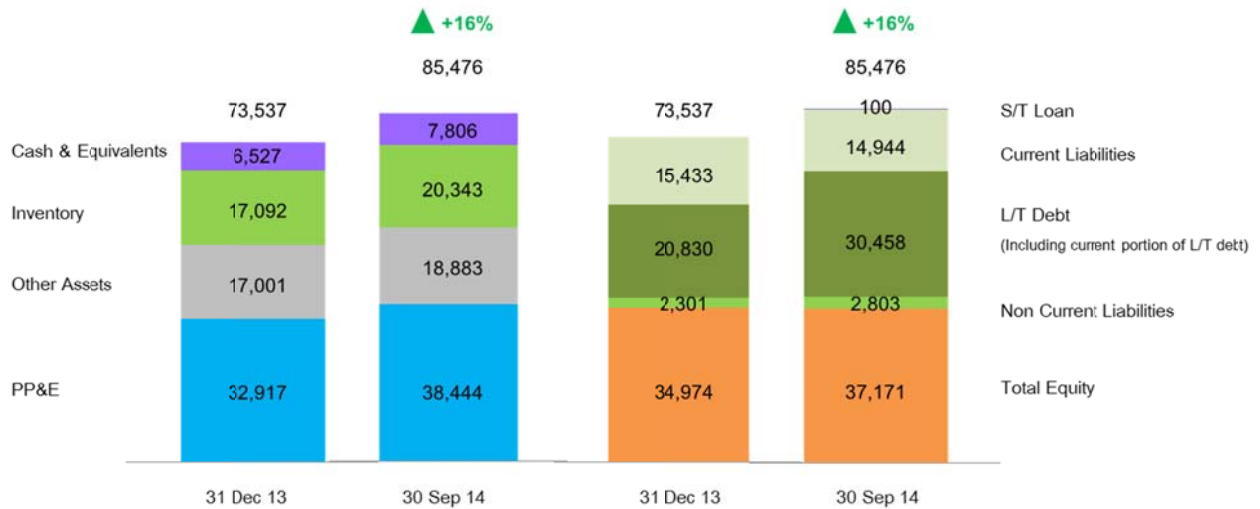
In Q3/2014, EBITDA of Biodiesel Business was Baht 63 million, an increase of Baht 17 million (+36% QoQ) from the previous quarter, there was an inventory loss of Baht 16 million while the normal operation EBITDA was at Baht 79 million, the figure had continually improved as a result of higher average daily production rate (In Q2/2014, EBITDA of Biodiesel Business was Baht 46 million; there was an inventory loss of Baht 15 million and EBITDA from the normal operation was Baht 61 million.)





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

Unit: Million Baht



Note: 1/ The Company and its subsidiaries' operating results of Q1/2013, Q2/2013 and Q3/2013 has been restated to be consistent with the new and revised TFRS that are effective for annual periods beginning on or after 1 January 2014.

Assets

As of September 30, 2014, Total Assets of the Company and its subsidiaries were Baht 85,476 million, an increase of Baht 11,939 million when compared to the end of 2013. The changes in assets were mainly from:

- Cash and cash equivalents as of September 30, 2014 was increased by Baht 1,279 million (Details are stated under Analysis of the Cash Flow Statement, Section 4)
- Trade Accounts Receivable - net was decreased by Baht 649 million from a decrease in total sales volume in September 2014 of Baht 247 million compared to December 2013, and Trade Accounts Receivable of NIDO of Baht 395 million
- Inventory was increased by Baht 3,250 million, as crude oil and finished oil products' inventory increased from 4.3 million barrels in December 31, 2013 to 5.6 million barrels in September 30, 2014.
- Oil Fuel Fund subsidies receivable was decreased by Baht 197 million. The Company received deferred payment of 2013 Oil Fuel Fund subsidies, mainly from LPG, Gasohol E20, Gasohol E85, and high-speed Diesel products.
- Investments in subsidiaries was increased by Baht 5,827 million from an investment in Bangchak Solar Energy which the Company held 100% of total share of Baht 1,462 million, an investment in subsidiaries which the Company held 49% of total share of Baht 1,513 million which were Bangchak Solar Energy (Prachinburi) Company Limited, Bangchak Solar Energy (Chaiyaphum1) Company Limited, Bangchak Solar Energy (Buriram) Company Limited, Bangchak Solar Energy (Buriram1) Company Limited, and Bangchak Solar Energy (Nakornratchasima) Company Limited and investment in NIDO of 65.44% (as of 30





September), a total consideration of Baht 2,852 million. As a statement was reported on a consolidated basis, these transactions were eliminated.

- Property, plant and equipment was increased by Baht 5,527 million, from an investment of Solar Power Plant of Baht 3,450 million, refinery machinery and equipment of Baht 2,125 million, Exploration and production of petroleum assets of Baht 1,404 million and others of Baht 577 million. Depreciation and amortization amount for nine-month period was Baht 2,029 million.
- Goodwill of Baht 360 million from NIDO acquisition. As of 30 September 2014, company equity portion in NIDO was 65.44%
- Intangible assets increased of Baht 1,412 million, mainly from expense for exploration and resource estimation of NIDO.

Liabilities

As of September 30, 2014, Total Liabilities of the Company and its subsidiaries were Baht 48,305 million, an increase of Baht 9,742 million from the end of 2013. The changes in liabilities were mainly from:

- Short-term loan from financial institution of Baht 100 million from Bangchak Biofuel Co., Ltd.
- Trade Accounts Payable was decreased by Baht 359 million, mainly from a decrease in Trade Account Payable between related parties of Baht 530 million, a decrease of Baht 1,100 million. On December 31, 2013, there was a Trade Account Payable of crude oil and petroleum products transaction between the Company and PTT Plc. in which due date was on a public holiday but such amount had been paid in January 2014.

Trade Accounts Payable – Others was increased, as in September 2014, the Company bought more petroleum products from other major oil companies when compared to end of 2013, to serve the Company's sales through retail market.

- Long-term loans from financial institutions and Debentures (including current portion of long-term loans) was increased by Baht 9,626 million from a Debenture Issuance of Baht 9,987 million (Net from Debenture Issuance expenses of Baht 13 million) and repayment of Long-term loans portion of Baht 774 million (excluded long-term loans portion of NIDO). There was a decrease in USD loans of Baht 69 million due to an adjustment impact in foreign exchange rate.

Equities

As of September 30, 2014, Total Equity attributable to owners of the Company was Baht 35,901 million, an increase of Baht 1,177 million from Net Profit of the nine-month period ended 30 September 2014 of Baht 3,201 million and Dividend Payment of Baht 1,859 million and other component of equity (foreign currency translation differences for foreign operations) of Baht 165 million. Consolidated book value was Baht 26.07 per share.





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

In Q3/2014, the Company and its subsidiaries had net cash received from operating activities of Baht 2,217 million, net cash used in investing activities of Baht 7,335 million and net cash received in financing activities of Baht 6,389 million. As a result, there was a net increase in cash and cash equivalents of Baht 1,270 million. Cash and cash equivalents on 1 January, 2014 was Baht 6,527 million and there was an effect of exchange rate changes on balances held in foreign currencies of Baht 8 million, when accounted for all activities, cash and cash equivalents as of September 30, 2014 was Baht 7,806 million.

Details of cash received and used are as follows:

Unit: Million Baht

Cash Flows	30 September 2014	30 September 2013 ^{1/} (Restated)
Net cash received (used) from operating activities	2,217	(763)
Net cash received (used) in investing activities	(7,335)	(3,723)
Net cash received (used) in financing activities	6,389	(1,683)
Net increase (decrease) in cash and cash equivalents	1,270	(6,169)
Cash and cash equivalents at 1 January	6,527	8,006
Effect of exchange rate changes on balances Held in foreign currencies	8	-
Cash and cash equivalents at 31 September	7,806	1,836

Note: 1/ The Company and its subsidiaries' operating results of Q1/2013, Q2/2013 and Q3/2013 were restated according to the new and revised TFRS that are effective for annual periods beginning on or after 1 January 2014.

Cash received and used details are as follows:

- The Company and its subsidiaries had net cash received from operating activities of Baht 2,217 million, mainly from
 - Net cash received from operating activities of Baht 6,689 million which was from Net Profit of Baht 3,263 million added back Non-Cash Expenses of Baht 1,950 million, Finance Costs and Income Tax of Baht 1,476 million.
 - Cash used in the operating assets of Baht 3,141 million, mainly from an increase in Inventory of Baht 3,162 million, a decrease in Trade Account Receivable of Baht 1,065 million, other Receivable of Baht 1,000 million and an increase in Other Assets of Baht 44 million.
 - Cash used in operating liabilities of Baht 591 million, mainly from a decrease in Trade Accounts Payable of Baht 615 million, an increase in Other Payables of Baht 181 million and a decrease in Other liabilities of Baht 157 million.





- Income Tax Paid of Baht 740 million.
2. Net cash used in investing activities of Baht 7,335 million, mainly from
- Investment in property, plant and equipment of Baht 6,315 million which were mainly from an investment in Solar Power Plant of Baht 3,450 million, refinery machinery and equipment of Baht 2,125 million and Other of Baht 740 million.
 - Current investment of Baht 716 million.
 - Share payment of Baht 58 million in Fuel Pipeline Transportation Co., Ltd.
 - Net cash outflow on acquisition of subsidiary of Baht 1,561 million (Net from beginning cash of NIDO).
 - Interest income of Baht 115 million.
 - Other of Baht 232 million.
3. Net cash received in financing activities of Baht 6,389 million, mainly from
- Short-term loan from financial institution and Debenture Issuance of Baht 10,087 million.
 - Repayment of long – term loans of Baht 862 million. (included Repayment of NIDO).
 - Dividend Payment of Baht 1,881 million which was a Dividend Payment of the Company of Baht 1,859 million and payment to Non-control Interest of Baht 22 million.
 - Finance costs of Baht 955 million.





Financial Ratios (Consolidated)

	Q3/2013	Q2/2014	Q3/2014	9M/2013	9M/2014
Profitability Ratios (%)					
EBITDA Margin	5.63%	5.88%	3.05%	5.51%	4.68%
Profit Margin	2.98%	3.11%	0.87%	2.90%	2.38%
Return on Equity (ROE) ^{1/}	15.71%	13.91%	11.12%		
Return on Assets (ROA)	10.74%	8.87%	7.45%		

	31 Dec 13	30 Jun 14	30 Sep 14
Liquidity Ratios (times)			
Current Ratio	2.22	2.62	2.48
Quick Ratio	1.18	1.14	1.25
Financial Policy Ratios (times)			
DSCR ^{2/}	4.51	4.38	3.55
Interest bearing debt to Equity	0.63	0.85	0.85
Net Interest bearing debt to Equity	0.42	0.59	0.64

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

2/ DSCR in 2013 was excluded prepayment loan of Baht 5,500 million





Financial Ratios Calculation

▪ 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)	=	(Current Asset – Inventory) / Current Liabilities
▪ DSCR	=	EBITDA (Yearly) / (Paid for long-term debt + Finance cost)
▪ 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

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 is 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. 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

	Q3/2013	Q3/2014	△
Material Costs of Product Outputs			
: Consist of crude oil, ethanol, bio-diesel, chemical, energy and utilities in production	34,899	34,754	-145
Material Costs of Non-Product Outputs			
: Consist of slop and sludge oil, waste water, chemical surplus	42	17	-25
Waste and Emission Control Costs			
: Consist of maintenance cost of environmental control equipment and depreciation and other fees	49	109	+60
Prevention and Other Environmental Management Costs			
: Consist of monitoring and measurement cost, environmental management system expenses	2.9	5.68	+3
Total Expenses	34,993	34,886	-107
Benefit from by-product and waste recycling			
: The revenue realization from liquid sulfur, glycerin, waste paper	1.74	2.48	+0.74

In Q3/2014, the average crude run of the refinery was 96.99 thousand barrel per day which was decreased from Q2/2013 (-3.6% YoY) from a decreasing in crude inventory. (In Q3/2014, there was a crude inventory of 3,600 million litre compared to 4,600 million litre in Q3/2013) Total Expenses related to environment decreased by Baht 107 million which was from a decrease in Material Costs of Product Outputs of Baht 145 million and Material Costs of Non-Product Outputs of Baht 25 million. Waste and Emission Control Costs and Prevention of Baht 60 million and Other Environmental Management Costs were increased of Baht 3 million, however, Benefit from by-product and waste recycling increased by Baht 0.74 million.

