



บริษัท โกลบอล เพาเวอร์ ซินเนอร์ยี จำกัด (มหาชน)
Global Power Synergy Public Company Limited

MANAGEMENT DISCUSSION & ANALYSIS

MD&A

Q2/2019

THE INNOVATIVE POWER
FLAGSHIP OF PTT GROUP



Executive Summary

Operating Highlights in Q2/2019 ¹	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-
				QoQ	YoY			
(Unit: Million Baht)								
Operating revenue	6,587	9,067	19,990	120%	203%	12,329	29,057	136%
Gross Profit	1,836	2,493	6,011	141%	227%	3,483	8,504	144%
EBITDA	1,631	2,129	5,402	154%	231%	3,112	7,531	142%
Shares of profit of associates and joint ventures	155	130	106	(18%)	(32%)	306	236	(23%)
Net profit for the company	1,053	942	1,081	15%	3%	1,973	2,023	3%
Adjusted Net Income	1,053	942	1,441	53%	37%	1,973	2,383	21%
Gross profit margin (%)	28%	27%	30%	3%	2%	28%	29%	1%
Net profit margin (%)	16%	10%	5%	(5%)	(11%)	16%	7%	(9%)
Adjusted Net Income margin (%)	16%	10%	7%	(3%)	(9%)	16%	8%	(8%)

Note: 1. In the second quarter of 2019, the company has changed the classification of operating income and cost of sales resulting in the operating income until the gross profit being reported differently from the previous periods



GLOW Acquisition and Accounting Record

On the 14th March 2019, Global Power Synergy Public Company Limited (GPSC) ('company') completed the acquisition of Glow Energy Public Company Limited (GLOW) from ENGIE Global Developments B.V. purchasing shares amounting to 69.11%. In addition, the company have also completed a Mandatory Tender Offer from GLOW which ended on the 22nd May 2019 of 26.14%, which has resulted in the company being able to recognize net profit for the company at 95.25% after the 22nd May 2019.

Consequently, on the 19th June 2019, the Board of Directors has passed the resolution of approving the delisting of GLOW's from being the listed securities on the Stock Exchange of Thailand. The company has informed the Stock Exchange of Thailand (SET) to make a tender offer for GLOW's remaining stock of 4.75% at the offering price of 90.8136 Baht per share, in which the tender offer period will be of 45 business days and the delisting process is expected to be completed by December 2019.



Q2/2019 Operating Highlights

For Q2/2019, the EBITDA of the company was at Baht 5,402 million, increased by Baht 3,273 million or 154% from Q1/2019, and increased Baht 3,771 million or 231% from Q2/2018. This is mainly due to the immediate recognition of GLOW's performance after the acquisition of GLOW including Independent Power Producer (IPP), Small Power Producer (SPP) and Very Small Power Producer (VSPP) and Others.

For Q2/2019, the adjusted net income was at Baht 1,441 million from the assessment of the fair value of net assets and allocation of business acquisition costs, in which if the amortization expenses was still to be included, amounting Baht 360 million from the 14th March 2019 (the first day that GPSC has recognize GLOW's performance in the consolidated financial statement) until the 30th May 2019 according to the consolidated financial statement of the company, the net profit of the company will be Baht 1,081 million. This is an increase from Q1/2019 by Baht 139 million or 15%, and an increase from Q2/2018 by Baht 28 million. Both GPSC and GLOW has shown consistency in the sales of both electricity and steam to industrial users when comparing to the previous quarter showing the ability and capability of both companies to operate stably. However, in Q2/2019, the company will have to recognize the interest expense and the advisory fee for the acquisition of GLOW, as well as recognizing the employee benefit expenses for the group.

For 1H/2019, the adjusted net income, the net profit attributable to the company that excludes the 'fair value of intangible assets from the acquisition of GLOW was at Baht 2,383 million, increased by Baht 410 million or 21% from 1H/2018 mainly due to recognition of GLOW's performance following the acquisition of GLOW.



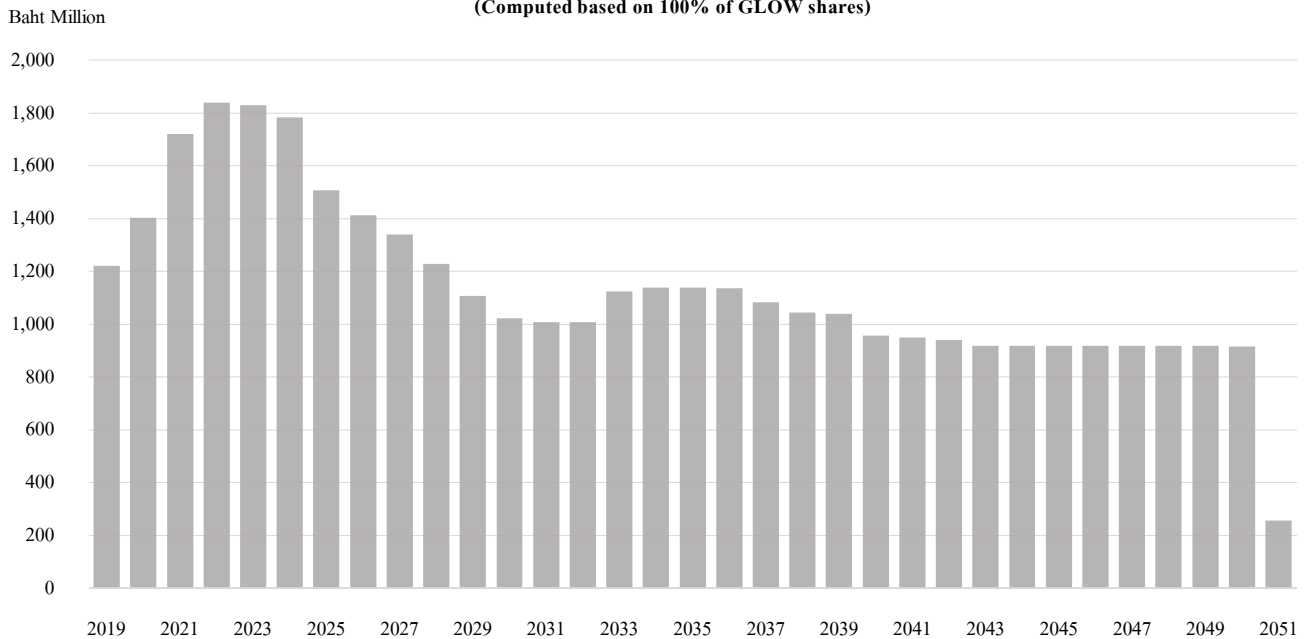
Fair Value Measurement of Net Assets from the Acquisition of GLOW

As accounting standard established that after any business acquisition, the fair value of the company being acquired must be measured by using comparable present market value, GPSC has completed the process. When compared to business acquisition of 69.11% from ENGIE Global Developments B.V. on 14 March 2019 at Baht 93,001 million, the company has measured the fair value of GLOW net assets as follow:

Items	Book Value of GLOW	Fair Value of GLOW	Differential Value
(Unit: Million Baht)			
Assets	107,655	155,500	47,845
Liabilities	(56,246)	(66,497)	(10,251)
Net Assets of GLOW at 14 March 2019	51,409	89,003	37,594
Non-Controlling interests at 30.89%		(32,092)	
Total Net Asset obtained GLOW at 69.11%		56,911	
Goodwill		36,090	
Proportion of acquisition cost 69.11%		93,001	

From the fair value measured in the table, the majority portion is derived from valuing the Power Purchase Agreement (PPA) of Baht 37,594 million. The fair value recognition of net assets acquired from GLOW will be amortized yearly. The amortization of PPA will be completed based on the remaining period of the contract that appeared in intangible assets by using straight-line method with estimated useful life of 5 to 31 years. Meanwhile, goodwill will not be amortized but will be subjected to an impairment test on a yearly basis.

Amortization of Fair Value Measured from Net Assets acquired from GLOW during 2019 - 2051
(Computed based on 100% of GLOW shares)



Note: For 2019, the company has amortized this fair value measured from net assets acquired in proportionate holding on GLOW's shares

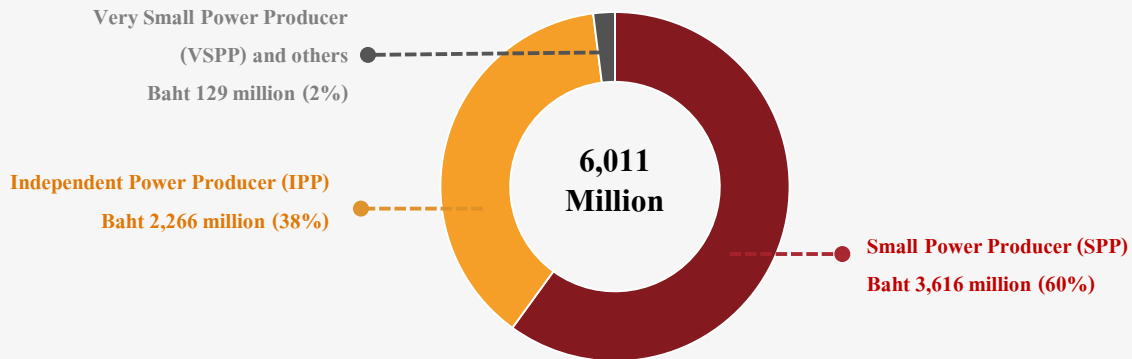


Executive Summary



Operating performance by plant in Q2/2019

The Proportion of Gross Profit in Q2/2019



The company's gross profit was at Baht 6,011 million in Q2/2019 which increased by 3,518 million or 141% from Q1/2019 and increased by Baht 4,175 million or 227% from Q2/2018. This was mainly due to the following reasons:



Comparing Q2/2019 vs Q1/2019

The gross profit of the company increased mainly due to:

- Independent Power Producer (IPP): The gross profit increased by Baht 1,618 million as a result of the first full quarter of recognizing gross profit from 3 of GLOW's IPP of Baht 1,620 million. As for Sriracha Power Plant, the cost has slightly increased corresponding to EGAT's dispatched instruction resulting in the gross profit to slightly decreased by Baht 2 million, together with the decrease in availability payment (AP) due to the appreciation of Thai Baht.
- Small Power Producer (SPP): The gross profit increased by Baht 1,847 million as a result of the first full quarter of recognizing gross profit from GLOW's SPP of Baht 1,943 million. As for the company's SPP plants, gross profit slightly decreased by Baht 96 million due to the fall in electricity sales volume of Rayong Central Utility Plants (CUP) as well as the downward trend of average steam selling price of CUP and IRPC Clean Power (IRPC-CP).
- Very Small Power Producer (VSPP) and other: The gross profit increased by Baht 53 million mainly due to the increased in revenue from selling electricity of Ichinoseki Solar Power 1 GK (ISP1), resulting from lower snowfall compared to Q1/2019, and the increased in revenue from chilled water of Combine Heat and Power Producing Company Limited (CHPP).



Comparing Q2/2019 vs Q2/2018

The gross profit of the company increased mainly due to:

- Independent Power Producer (IPP): The gross profit increased by Baht 2,068 million as a result of the first full quarter of recognizing gross profit from 3 of GLOW's IPP of Baht 2,100 million. As for Sriracha Power Plant, gross profit slightly decreased by Baht 32 million due to corresponding to EGAT's dispatched instruction resulting in higher fuel consumption.
- Small Power Producer (SPP): The gross profit increased by Baht 2,115 million as a result of the first full quarter of recognizing gross profit from GLOW's SPP plants of Baht 2,389 million. As for the company's SPP plants, gross profit decreased by Baht 274 million due to the 10% growth of cost of natural gas that exceed the 4% growth of revenue from electricity sales.
- Very Small Power Producer (VSPP) and other: The gross profit decreased by Baht 8 million mainly due to the decreased in revenue from solar cell implementation service from Combine Heat and Power Producing Company Limited (CHPP) as well as the increase in maintenance cost leading to a fall in gross profit.



Executive Summary

1H

Comparing
1H/2019 vs 1H/2018

The gross profit of the company during 1H/2019 increased by Baht 5,038 million from 1H/2018 mainly due to:

- Independent Power Producer (IPP): The gross profit increased by Baht 2,562 million as a result of the first full half year of recognizing gross profit from 3 of GLOW’s IPP plants of Baht 2,581 million. As for Sriracha Power Plant, the gross profit slightly decreased by Baht 19 million due to higher natural gas consumption corresponding to EGAT’s dispatched instruction.
- Small Power Producer (SPP): The gross profit increased by Baht 2,435 million as a result of the first full half year of recognizing gross profit from GLOW’s SPP plants of Baht 2,744 million. As for the company’s SPP plants, gross profit decreased by Baht 309 million due to the 14% growth of cost of natural gas that exceeded the 6% growth of revenue from electricity and steam sales .
- Very Small Power Producer (VSPP) and other: The gross profit increased by Baht 26 million, mainly because of the growth in revenue from electricity sales of Ichinoseki Solar Power 1 GK (ISP1) as well as the increased in revenue from chilled water of Combine Heat and Power Producing Company Limited (CHPP), despite the increased in overall cost of goods and services.



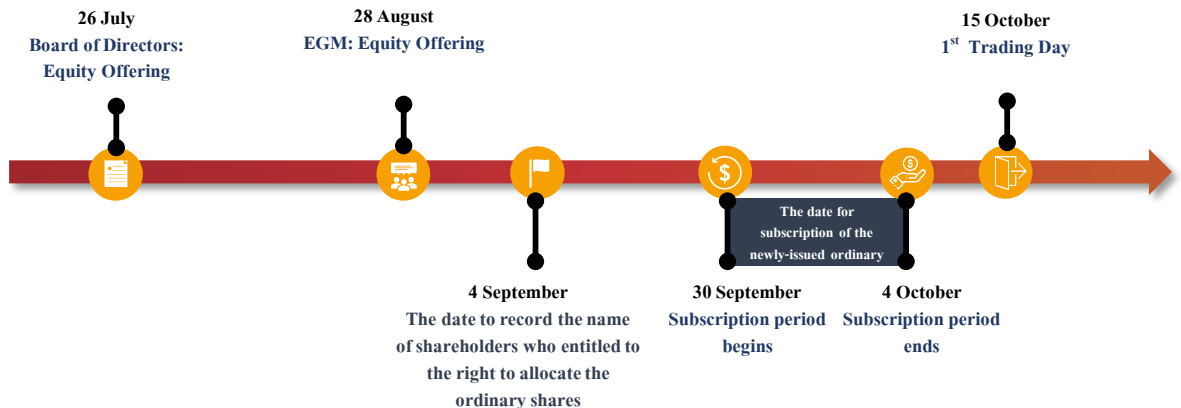
Q2/2019 Significant Events

Source of Fund and Deleveraging Plan for Future Growth

In order to acquire shares of Glow Energy Public Company Limited (“GLOW”), the company had obtained a short-term loan from financial institution and major shareholders to make the payment to ENGIE Global Developments B.V., which was the major shareholders of GLOW, and to obtain remaining shares from minority shareholders through Tender Offer. During Q2/2019, the company used Baht 34,332 million from the short-term loan, resulting in the current D/E ratio of 5.18 times.

Nevertheless, the company has a long-term financial plan for the capital increased as a portion of the fund will be used to repay the bridge loan from financial institution and major shareholders. The long-term plan would also result in an appropriate capital structure and financial ratio that could be fairly compared to peers in the same industry as well as support the investment in current and future projects.

On 26 July 2019, the board of directors have approved the plan to increase capital by allocation of newly-issued ordinary shares to the existing shareholders proportionate to their respective shareholdings (Right Offering: RO). The company expects to receive a total capital of Baht 74,000 million, with an increase in common shares of 1,321,428,571 shares with par value of Baht 10. The subscription price is at Baht 56 per share and the timeline is as follow:





Executive Summary

Progress Report on the last round of GLOW's Delisting Tender Offer

On 19 June 2019, the company has submitted Delisting Tender Offer of the remaining amount of GLOW's shares of 69,530,219 shares, or 4.75% of the total shares, at Baht 90.8136 per share. The company may be able to adjust the price if GLOW (1) Offer dividend payment (2) Change in par value causing the change in amount of share (3) Exercise the right to Equity Offering or Subscription Right. The purpose in submitting Delisting Tender Offered is in line with the plan to delist GLOW shares from Stock Exchange of Thailand (SET) after the process is completed. Delisting Tender Offered must be approved by the shareholders of GLOW and the company expects to be able to proceed with the process during September to December 2019.

Earlier, the company has arranged a tender offer of GLOW shares for the first time during 25 March 2019 to 17 May 2019. There were a total of 382,358,783 shares, or 26.14% of the total shares, purchased by the company through the tender offer process. This results in the company to own a total of 1,393,334,816 shares of GLOW, or 95.25%.



GPSC plans to delist GLOW within 2019.

Received Awards from Well Recognized Magazine and Government Agency

On 30 April 2019, Mrs. Wanida Boonpiraks, Executive Vice President, Corporate Finance and Accounting, received **CFO of the year award (2019)**, in the category of **Treasury, Trade, Supply Chain and Risk Management** from 'The Asset' magazine, which is the leading business and financial magazine in Asia. The award reflects that the company's management, especially in financial aspect, which has been recognized and accepted internationally.

On 24 May 2019, the company received **Asia Responsible Enterprise Award 2019** in the category of Green Leadership Award from 'Enterprise Asia', which is a Non-Government Organization (NGOs) that support businesses all over Asia region. The award is awarded for companies in Asia that have outperformed in terms of the environmentally friendly practice of the business and sustainability practice to the society by focusing on improving the development of products and enhancing the manufacturing process. GPSC received the award from Zero Waste Village, which is an organization focusing on waste management in local village situated around waste sorting plants by focusing on converting waste into Refuse Derived Fuel (RDF) in Rayong Province as a form of Social Enterprise.

On 28th June 2019, the company have received 2 awards at the 9th Asian Excellence Award 2019 for the third consecutive year including **Asia's Best CFO (Investor Relation)** to Mrs. Wanida Boonpiraks, Executive Vice President, Corporate Finance and Accounting, and a corporate-level award as **the Best Investor Relations Company** from Corporate Governance Asia Magazine which is a leading Finance and Investment magazine in Asia. Thus these awards reflect the management capability of the company internationally as well as balancing the needs of all stakeholder groups.

In addition, the company was selected by the Thaipat Institute as an organization that participate in initiating the international sustainability assessment or Global Initiative for Sustainability Ratings (GISR). GPSC is classified as **securities in ESG100 for the year 2019** which the company has been selected for 4 consecutive years as the company that has consistently disclosed information in a transparent and fair practice. This reflects the confidence from government agencies to provide accurate, up-to-date, and sufficient information to investors fairly.



Executive Summary



Q2/2019 Outlook and Business Directions



Synergy from the acquisition of GLOW

- After the acquisition of GLOW, the company has assessed the initial synergy between GPSC and GLOW that would occur during the year 2019-2024 and is expected that the EBITDA will contribute to the total amount of Baht 1,600 million by 2024. The company has planned three main practices to achieve this goal.
- The first synergy are operation and maintenance, which could be assessed as 89% of the total amount of the synergy value. The strategy has a core principle in reliability, availability, and efficiency of electricity plant management in order to minimize manufacturing and maintenance cost.
- The second synergy is increasing efficiency of procurement process and inventory management, which could be assessed as 8% of total synergy value. A digital system will be applied in order to improve the process, resulting in Economy of Scale and lower cost of inventory management.
- The third synergy is related to the corporate finance and technology, which could be assessed as 3% of the total synergy value. The strategy consists of cash management between the group of company to achieve the highest benefit, a consolidating between operation of various projects, and sharing of best practice between both organizations in order to lower cost of management.



New projects in 2019-2020

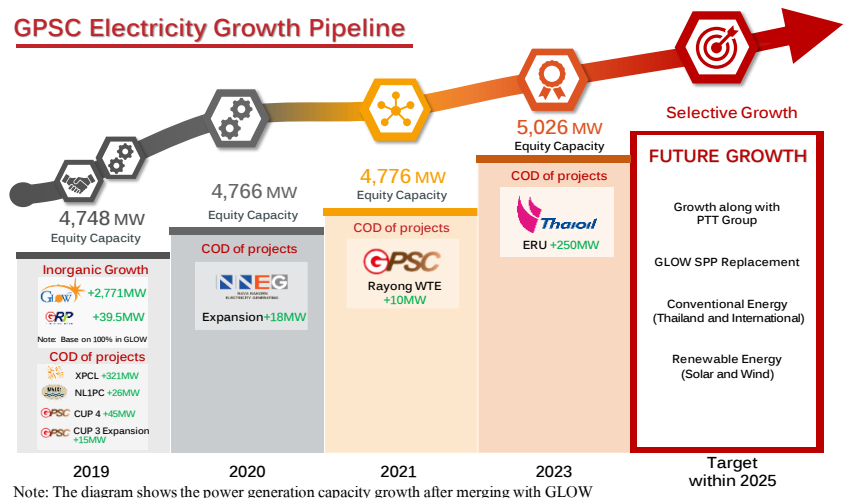
- The project that was Commercial Operation Date during July 2019 is Nam Lik 1 Power Company Limited
- There are currently 4 main projects that are under construction including:
 - Xayaburi Power Company Limited (with 99.4% construction progress)
 - Rayong Central Utility Plants Expansion Phase (CUP-4) (98.2% construction progress)
 - Nava Nakorn Electricity Generating Company Limited (NNEG) (51.7% construction progress)
 - Integrated waste to energy management project or Rayong Waste to Energy (WTE) (3.16% construction progress)
- Energy Recovery Unit (ERU) project: the company jointly operate the project with Thaioil Company Limited by investing in Energy Recovery Unit (ERU) electricity plant, which is a part of clean energy project. The company expects to start the construction process during 2020 – 2023 and expects to COD in Q3/2023.



Demand for electricity in 2019

- The consumption of electricity during the first half of 2019 was at 95,857 GW, increased by 5.2% due to uncertain weather condition as Thailand entered the summer season earlier than previous year at the ending of February until the middle of May 2019. The industrial sector is still the leading electricity user when compared to other business sector at 38%.
- The trend of electricity consumption during the later half of 2019 is expected to grow consistently, especially for clean energy, as the economy is still expanding.
- The trend of natural gas prices has increased significantly during the first half of the year 2019 however is expected to fall during the second half of 2019.

GPSC Electricity Growth Pipeline



Operating Results

Overall Operating Results of the Company and its Subsidiaries ¹	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-
				QoQ	YoY			
(Unit: Million Baht)								
Operating revenue ¹	6,587	9,067	19,990	120%	203%	12,329	29,057	136%
Cost of sales (exclude depreciation and amortization)	(4,751)	(6,574)	(13,979)	113%	194%	(8,846)	(20,553)	132%
Gross profit	1,836	2,493	6,011	141%	227%	3,483	8,504	144%
Selling and administrative expenses	(207)	(367)	(614)	67%	197%	(374)	(981)	162%
Other operating income	2	3	5	67%	150%	3	8	167%
EBITDA	1,631	2,129	5,402	154%	231%	3,112	7,531	142%
Depreciation and amortization	(445)	(707)	(2,229)	215%	401%	(860)	(2,936)	241%
EBIT	1,186	1,422	3,173	123%	168%	2,252	4,595	104%
Finance costs	(135)	(372)	(1,610)	332%	1,093%	(254)	(1,982)	681%
Other non-operating income and expenses	74	168	150	(11%)	103%	139	318	129%
Shares of profit of associates and joint ventures	155	130	106	(19%)	(32%)	306	236	(23%)
Income tax expenses	(112)	(46)	(30)	(35%)	(73%)	(202)	(76)	(62%)
Profit before FX & extraordinary items	1,168	1,302	1,789	37%	53%	2,241	3,091	38%
Net foreign exchange gains (losses)	28	(52)	242	(568%)	763%	6	190	3,065%
Net profit	1,196	1,250	2,031	62%	70%	2,247	3,281	46%
Non-controlling interests	(143)	(308)	(950)	208%	564%	(274)	(1,258)	359%
Net profit for the company	1,053	942	1,081	15%	3%	1,973	2,023	2%
Adjusted Net Income	1,053	942	1,441	53%	37%	1,973	2,383	21%
Normalized net profit margin (%)	16%	12%	6%	(6%)	(10%)	16%	8%	(8%)
Earning per share (Baht/share)	0.70	0.63	0.72	15%	3%	1.32	1.35	3%
Weighted average number of common share (Million)	1,498	1,498	1,498	0%	0%	1,498	1,498	0%

Note: 1. In the second quarter of 2019, the company has changed the classification of operating income and cost of sales resulting in the operating income until the gross profit being reported differently from the previous periods

Adjusted Net Income

Adjusted Net Income, the net profit attribute to the company that excludes the “fair value of intangible asset from the acquisition of GLOW”, the assessment of the fair value of net assets and allocation of business acquisition cost which has been calculated backwards from 14th March 2019 (the first day that GPSC has recognize GLOW’s performance in the consolidated financial statement) according to the consolidated financial statement of the company. In Q2/2019, such amortization expense adds up to Baht 360 million consisting of the amortization of assets acquired from the acquisition of GLOW amounting Baht 641 million, the amortization of liabilities from the acquisition of GLOW amounting Baht 192 million and the non-controlling interest of Baht 89 million. This clearly reflects the company’s true earning from its normal operations. In Q2/2019, the company had the Adjusted Net Income of Baht 1,441 million.



Comparing
Q2/2019 vs Q1/2019

Adjusted Net Income was Baht 1,441 million in Q2/2019 which increased by Baht 499 million or 53% from Q1/2019 as a result of the first full quarter recognition from acquired GLOW. Although, there is the burden of interest expense from short-term loans to acquire GLOW.



Comparing
Q2/2019 vs Q2/2018

Adjusted Net Income was Baht 1,441 million in Q2/2019 which increased by Baht 388 million or 37% from Q2/2018. An increased amount was followed by the earlier statement.



Comparing
1H/2019 vs 1H/2018

Adjusted Net Income was Baht 2,383 million in 1H/2019 which increased by Baht 410 million or 21% from 1H/2018.



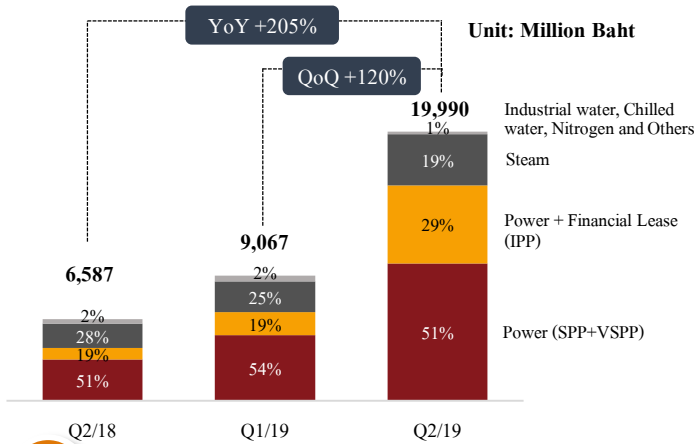
Normalized Net Income

Normalized Net Income is net profit adjusted to remove the effects of accounting standards about the “Determining whether an arrangement contains a lease” (TFRIC 4) and the “Revenue from contracts with customers” (TFRS 15), foreign exchange and deferred tax asset effect. Normalized Net Income clearly reflects the company's true earnings from its normal operations. In Q2/2019, the company had a NNP of Baht 1,217 million.

Normalized Net Income	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-
(Unit: Million Baht)			QoQ		YoY			
Net profit-Owners of the company	1,053	942	1,081	15%	3%	1,973	2,023	2%
TFRIC 4 and TFRS 5 effect	43	75	278	271%	547%	81	353	336%
Foreign exchange and deferred tax asset effect	(26)	36	(142)	(494%)	(446%)	4	(106)	(2750%)
Normalized Net Income	1,070	1,053	1,217	16%	14%	2,058	2,270	10%

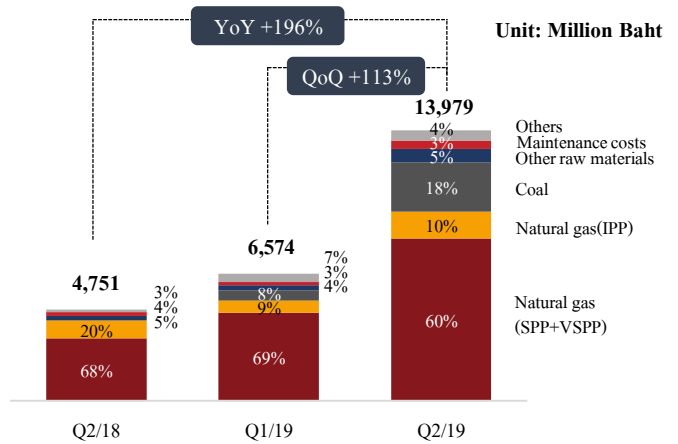
Operating Results

Operating Revenue



Cost of Sales of Goods and Rendering of Services

(Exclude depreciation and amortization)



Analysis of Company Performance

QoQ Comparing Q2/2019 vs Q1/2019

YoY Comparing Q2/2019 vs Q2/2018

Operating Revenue

Operating revenue in Q2/2019 was Baht 19,990 million which increased by Baht 10,923 million or 120% from Q1/2019. The increase was mainly due to the following reasons:

- Revenue of Independent Power Producer (IPP) increased by Baht 3,998 million as a result of the first full quarter of recognizing revenue from GLOW’s IPP of Baht 3,389 million. As for Sriracha Power Plant, revenue increased by Baht 557 as well as the increase in revenue from financial lease agreement of GPSC and GLOW by Baht 52 million.
- Revenue of the company’s Small Power Producers (SPP) increased by Baht 6,881 million due to the first full quarter of recognizing revenue from electricity and steam sales of GLOW’s SPP plants of Baht 6,843 million. As for GPSC’s SPP plants, revenue from electricity and steam sales decreased by Baht 36 million, while revenue from other products increased by Baht 74 million.
- Revenue of the company’s Very Small Power Producers (VSPP) increased by Baht 43 million as a result of the increase in revenue from selling electricity from Ichinoseki Solar Power 1 GK (ISP1) which caused by less snowfall as well as the increase in revenue from selling chilled water from Combine Heat and Power Producing Company Limited (CHPP).

Operating Revenue

Operating revenue in Q2/2019 was Baht 19,990 million which increased by Baht 13,403 million or 203% from Q2/2018. The increase was mainly due to the following reasons:

- Revenue of Independent Power Producer (IPP) increased by Baht 4,457 million as a result of the first full quarter of recognizing revenue from GLOW’s IPP of Baht 4,277 million. As for Sriracha Power Plant, revenue increased by Baht 83 million as well as the increase in revenue from financial lease agreement of GPSC and GLOW by Baht 97 million.
- Revenue of the company’s Small Power Producers (SPP) increased by Baht 8,947 million due to the first full quarter of recognizing revenue from electricity and steam sales of GLOW’s SPP plants of Baht 8,666 million. As for GPSC’s SPP plants, revenue from electricity and steam sales increased by Baht 180 million as well as revenue from other products increased by Baht 127 million.
- Revenue of the company’s Very Small Power Producers (VSPP) was in line with revenue in Q2/2018 mainly due to the revenue of solar cell implementation service from Combine Heat and Power Producing Company Limited (CHPP).



Cost of sales of goods and rendering of services

Cost of sales of goods and rendering services in Q2/2019 was Baht 13,979 million which increased by Baht 7,405 million or 113% from Q1/2019. The details are as follows:

- The total cost of sales of goods and rendering services of Independent Power Producer (IPP) increased by Baht 2,380 million. The higher cost of natural gas is corresponding to EGAT's dispatch instruction from Sriracha Power Plant as well as the increase coal cost that is corresponding to the increased EGAT's dispatch instruction from GLOW GHECO-ONE plant
- The total cost of sales of goods and rendering services of Small Power Producer (SPP) in Q2/2019 increased by Baht 5,034 million due to the first full quarter recognition of natural gas cost from GLOW. The coal cost and maintenance cost was increased by Baht 272 million mainly due to the maintenance and cleaning cost of IRPC-CP in April 2019 as planned.
- The cost of sales of goods and rendering services of Very Small Power Producer (VSPP) and others decreased by Baht 10 million mainly from implementing solar cells from Combine Heat and Power Producing Company Limited (CHPP)

Cost of sales of goods and rendering of services

Cost of sales of goods and rendering services in Q2/2019 was Baht 13,979 million which increased by Baht 9,228 million or 194% from Q2/2018. The details are as follows:

- The total cost of sales of goods and rendering services of Independent Power Producer (IPP) increased by Baht 2,389 million mainly from the increase in average price of natural gas together with EGAT's dispatch instruction of Sriracha Power Plant. The increase in coal cost as a result of first full quarter recognition from GLOW GHECO-ONE plant.
- The total cost of sales of goods and rendering services of Small Power Producer (SPP) in Q2/2019 increased by Baht 6,832 million due to the increase in average selling price per unit which followed the increased in average natural gas price. In addition, the increase in cost was also caused by the first full quarter recognition of natural gas cost, coal cost and maintenance cost from GLOW.
- The cost of sales of goods and rendering services of Very Small Power Producer (VSPP) and others increased mainly from the Baht 6 million increase in the total cost of Combine Heat and Power Producing Company Limited (CHPP) accounted for Baht 9 million due to the increasing generation of chilled water. However, the cost of implementing solar sells was decreased.

1H Comparing 1H/2019 vs 1H/2018

Operating Revenue

Operating revenue in 1H/2019 was Baht 29,057 million which increased by Baht 16,728 million or 136% from 1H/2018. The increase was mainly due to the following reasons:

- Revenue of Independent Power Producer (IPP) increased by Baht 5,432 million due to the recognizing revenue from GLOW's IPP of Baht 5,165 million. As for Sriracha Power Plant, revenue increased by Baht 125 million. Moreover, the revenue from financial lease agreement and other income of GPSC and GLOW increased by Baht 142 million.
- Revenue of the company's Small Power Producers (SPP) increased by Baht 11,296 million as a result of the recognizing revenue from electricity and steam sales of GLOW's SPP plants of Baht 10,489 million. As for GPSC's SPP plants, revenue from electricity and steam sales increased by Baht 629 million as well as the increase in revenue from other products by Baht 178 million.
- Revenue of the company's Very Small Power Producers (VSPP) increased by Baht 49 million, mainly due to the increase in revenue from selling electricity from Ichinoseki Solar Power 1 GK (ISP1) and revenue from selling chilled water from Combine Heat and Power Producing Company Limited (CHPP).

Cost of sales of goods and rendering of services

Cost of sales of goods and rendering services in 1H/2019 was Baht 20,553 million which increased by Baht 11,707 million or 132% from 1H/2018. The details are as follows:

- The total cost of sales of goods and rendering services of Independent Power Producer (IPP) was increased by Baht 2,870 million mainly from the increased in average price of natural gas, together with the increasing EGAT's dispatch instruction from Sriracha Power Plant. In additions, the increased in the total cost of IPP was also caused by the increasing coal cost as a result of first full quarter recognition from GLOW GHECO-ONE plant.
- The total cost of sales of goods and rendering of services of Small Power Producer (SPP) was increased from 1H/2018 by Baht 8,810 million due to the increase in average selling price per unit which followed the increased in average natural gas price. Moreover, it was the first full first-half recognition of natural gas cost, coal cost and maintenance cost from GLOW.
- The cost of sales of goods and rendering services of Very Small Power Producer (VSPP) and others was increased from 1H/2018 by Baht 24 million mainly due to the rising total cost of Combine Heat and Power Producing Company Limited (CHPP) as increasing generation of chilled water and the slight increase in maintenance cost.


Operating Results


1. IPP Operating Performance



Operating Performance	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-
	(Unit: Million Baht)			QoQ	YoY			
Revenue from Selling Electricity								
Revenue from Selling Electricity (GPSC)								
- Availability Payment: AP	166	89	85	(4%)	(49%)	267	174	(35%)
- Energy Payment: EP	969	574	1,132	97%	17%	1,489	1,706	15%
- Received Money to Submit to Power Developments Funds	4	2	5	150%	25%	6	7	17%
Total Revenue from selling electricity (GPSC)	1,139	665	1,222	84%	7%	1,762	1,887	7%
Revenue from Selling Electricity (GLOW ¹)								
- Availability Payment: AP	n/a	409	2,169	430%	n/a	n/a	2,578	n/a
- Energy Payment: EP	n/a	479	2,108	340%	n/a	n/a	2,587	n/a
Total Revenue from Selling Electricity (GLOW¹)	n/a	888	4,277	382%	n/a	n/a	5,165	n/a
Total Revenue from Selling Electricity	1,139	1,553	5,499	254%	383%	1,762	7,052	300%
Other Income								
Revenue from finance lease agreement	138	183	230	26%	67%	279	413	48%
Other Income	4	4	9	125%	125%	5	13	160%
Total Revenue	1,281	1,740	5,738	230%	348%	2,046	7,478	266%
Cost of Raw Materials								
- Natural Gas	954	616	1,344	118%	41%	1,469	1,960	33%
- Coal	n/a	328	1,782	443%	n/a	n/a	2,110	n/a
- Others	19	18	25	39%	32%	36	43	19%
Total Cost of Raw Materials	973	962	3,151	228%	224%	1,505	4,113	173%
Maintenance cost	65	20	53	165%	(18%)	100	73	(27%)
Others (exclude depreciation and amortization)	45	110	268	144%	496%	89	378	325%
Total Cost of Sales of Goods and Rendering of Services	1,083	1,092	3,472	218%	221%	1,694	4,564	169%
Gross Profit	198	648	2,266	250%	1,040%	352	2,914	728%
Gross Profit Margin	15%	37%	39%	2%	24%	17%	39%	22%

Note: 1. In Q1/2019, all GLOW's revenues are 18-days revenue after the company's acquisition of GLOW

Gross Profit

An Independent Power Producer's (IPP) gross profit depends on Availability Payment (AP) of the power plant and having a structure to calculate the costs of selling electricity by the 'Pass Through' concept where the cost can be passed on to the Electricity Generating Authority of Thailand (EGAT). The gross profit of Independent Power Producer (IPP) was Baht 2,266 million in Q2/2019 increased from Q1/2019 by Baht 1,618 million or 250% and increased Baht 2,068 million or 1,040% from Q2/2018 due to the following reasons:



Comparing Q2/2019 vs Q1/2019

The gross profit of Independent Power Producer (IPP) increased mainly due to:

- The first full quarter recognition of gross profit from all 3 of GLOW's IPP plants (only 18 days recognition in Q1/2019) which increased by Baht 1,620 million. Whereas, the gross profit of Sriracha Power Plant decreased slightly by Baht 2 million as a result of the higher producing cost corresponding to EGAT's dispatch instruction while the revenue from Sriracha Power Plant increased by 84%.



Comparing Q2/2019 vs Q2/2018

The gross profit of Independent Power Producer (IPP) increased mainly due to:

- The first full quarter recognition of gross profit from all 3 of GLOW's IPP plants (Q2/2018 did not acquire GLOW yet) which increased by Baht 2,100 million. Whereas, the gross profit of Sriracha Power Plant decreased slightly by Baht 32 million as a result of the higher producing cost corresponding to EGAT's dispatch instruction while the revenue from Sriracha Power Plant increased by 7%.



Operating Results

1H

Comparing
1H/2019 vs 1H/2018

IPP

The gross profit of Independent Power Producer (IPP) increased from 1H/2018 by Baht 2,562 or 728% mainly due to:

- The first half year recognition of gross profit from all 3 of GLOW's IPP plants (1H/2018 did not acquire GLOW yet) which increased by Baht 2,581 million. Whereas, the gross profit of Sriracha Power Plant decreased slightly by Baht 19 million as a result of the higher producing cost corresponding to EGAT's dispatched instruction while the revenue from Sriracha Power Plant increased by 7%.

Key revenue drivers	Q2/18	Q1/19	Q2/19	Change +/(-)		1H/18	1H/19	Change +/(-)
				QoQ	YoY			
Availability Rate								
Availability Rate (%) – Sriracha Power Plant	100%	99%	100%	1%	0%	99%	99%	0%
Availability Rate (%) – GIPP	n/a	100%	100%	0%	n/a	n/a	100%	n/a
Availability Rate (%) – GHECO-One	n/a	100%	100%	0%	n/a	n/a	100%	n/a
Dispatch								
Dispatch (GWh) – Sriracha Power Plant	427	175	466	166%	9%	607	641	6%
Dispatch (GWh) – GIPP, GHECO-One, Houay Ho	n/a	322	1,629	406%	n/a	n/a	1,951	n/a
Average Selling Price								
Average Selling Price (Baht/kWh) - Sriracha Power Plant	2.66	3.79	2.61	(31%)	(2%)	2.09	3.35	60%
Average Selling Price (Baht/kWh) - GIPP, GHECO-One, Houay Ho	n/a	2.75	2.71	(1%)	n/a	n/a	2.72	n/a

Revenue

The revenue of Independent Power Producer (IPP) was at Baht 5,738 million in Q2/2019, which increased by Baht 3,998 million or 230% from Q1/2019 and increased by Baht 4,457 million or 348% from Q2/2018 due to the following reasons:

QoQ

Comparing
Q2/2019 vs Q1/2019

The revenue of Independent Power Producer (IPP) increased mainly due to:

- Energy Payment (EP) revenues from GPSC increased by Baht 558 million as a result of the higher dispatch volume by 291 GWh from Sriracha Power Plant instructed by EGAT
- The recognition of revenue from GLOW's IPP plants which increased by Baht 3,389 million as a result of being the first full quarter recognition of revenue (only 18 days recognition in Q1/2019).
- Revenue from financial lease agreement increased by Baht 47 million (decreased by Baht 4 million from GPSC and increased by Baht 51 million from GLOW) which is the first full quarter recognition of revenue from GLOW (only 18 days recognition in Q1/2019); as well as Other Revenues from Sriracha Power Plant increased by Baht 5 million.

YoY

Comparing
Q2/2019 vs Q2/2018

The revenue of Independent Power Producer (IPP) increased mainly due to:

- Energy Payment (EP) revenues from GPSC increased by Baht 163 million due to the increase in average price of natural gas which increased by 19 Baht/MMBTU or 7%, together with the higher dispatch volume instructed by EGAT by 39 GWh.
- The recognition of revenue from GLOW's IPP plants which increased by Baht 4,277 million as a result of being the first full quarter recognition of revenue (Q2/2018 did not acquire GLOW yet).
- Revenue from financial lease agreement increased by Baht 92 million (decreased by Baht 16 million from GPSC and increased by Baht 108 million from GLOW) which is the first full quarter recognition of revenue from GLOW (Q2/2018 did not acquire GLOW yet); as well as Other Revenues from Sriracha Power Plant increased by Baht 5 million.


Operating Results

1H

Comparing
1H/2019 vs 1H/2018

IPP

The revenue of Independent Power Producer (IPP) increased by Baht 5,432 million or 265% from 1H/2018 mainly due to:

- Energy Payment (EP) revenues from GPSC increased by Baht 217 million due to the increase in average price of natural gas which increased by 25 Baht/MMBTU or 8%, together with the higher dispatch volume instructed by EGAT by 34 GWh.
- The recognition of revenue from GLOW's IPP plants which increased by Baht 5,165 million as a result from the acquisition of GLOW in 1H/2019
- Revenue from financial lease agreement increased by Baht 134 million (decreased by Baht 27 million from GPSC and increased by Baht 161 million from GLOW) as the company has not acquire GLOW in 1H/2018 and Other Revenues from Sriracha Power Plant increased by Baht 8 million.

Key revenue drivers	Q2/18	Q1/19	Q2/19	Change +/(-)		1H/18	1H/19	Change +/(-)
				QoQ	YoY			
Natural Gas								
Natural Gas Consumption								
Natural Gas Consumption ('000 MMBTU) – Sriracha Power Plant	3,336	1,381	3,670	166%	10%	4,756	5,051	6%
Natural Gas Consumption ('000 MMBTU) – GIPP	n/a	2	0	(100%)	n/a	n/a	2	n/a
Average Price of Natural Gas								
Average Price of Natural Gas (Baht/MMBTU) - Sriracha Power Plant	286	413	305	(26%)	7%	309	334	8%
Average Price of Natural Gas (Baht/MMBTU) – GIPP	n/a	252	n/a	n/a	n/a	n/a	252	n/a
Coal								
Coal Consumption								
Coal Consumption (Ton JPU) - GHECO-One	n/a	99,754	509,948	411%	n/a	n/a	609,702	n/a
Average Coal Cost (exclude transportation cost)								
Average Coal Cost (exclude transportation cost) (USD/Ton JPU) – GHECO-One	n/a	93.78	101	8%	n/a	n/a	97	n/a

Total Cost of Sales of Goods and Rendering of Services (exclude depreciation and amortization)

The total cost of sales of goods and rendering services of Independent Power Producer (IPP) in Q2/2019 was Baht 3,472 million, which increased by Baht 2,380 million or 218% from Q1/2019 and increased by Baht 2,389 million or 221% from Q2/2018 due to the following reasons:

QoQ

Comparing
Q2/2019 vs Q1/2019

- The cost of natural gas increased by Baht 728 million (increased by Baht 547 million from GPSC and increased Baht 181 million from GLOW) corresponding to EGAT's dispatch instruction from Sriracha Power Plant that increased by 291 GWh and the recognition of cost of natural gas from GLOW for the first full quarter (only 18 days recognition in Q1/2019).
- The cost of coal increased by Baht 1,454 million as a result of EGAT's dispatch instruction from GLOW GHECO-ONE plant which increased by 681 GWh from Q1/2019.

YoY

Comparing
Q2/2019 vs Q2/2018

- The cost of natural gas increased by Baht 390 million (increased by Baht 164 million from GPSC and increased Baht 226 million from GLOW) mainly from the increase in average price of natural gas of Sriracha Power Plant by 19 Baht/MMBTU or 7%, together with EGAT's dispatch instruction from Sriracha Power Plant that increased by 39 GWh and the recognition of natural gas cost from GLOW for the first full quarter (Q2/2018 did not acquire GLOW yet).
- The cost of coal increased by Baht 1,782 million as a result of first full quarter recognition from GLOW GHECO-ONE plant (Q2/2018 did not acquire GLOW yet).

1H

Comparing
1H/2019 vs 1H/2018

The total cost of sales of goods and rendering services of Independent Power Producer (IPP) increased by Baht 2,870 million or 169% from 1H/2018 mainly due to:

- The cost of natural gas increased Baht 491 million (increased by Baht 220 million from GPSC and increased by Baht 271 million from GLOW) mainly from the increased in average price of natural gas by 25 Baht/MMBTU or 8%, together with EGAT's dispatch instruction from Sriracha Power Plant that increased by 34 GWh
- The cost of coal increased by Baht 2,110 million as a result of first full quarter recognition from GLOW GHECO-ONE plant (1H/2018 did not acquire GLOW yet).


Operating Results


2. SPP Operating Performance



Operating Performance	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-
	(Unit: Million Baht)			QoQ	YoY			
Revenue from Selling Electricity								
Revenue from Selling Electricity (GPSC)	3,217	3,319	3,285	(1%)	2%	6,225	6,604	6%
Revenue from Selling Electricity (GLOW ¹)	n/a	1,457	6,794	366%	n/a	n/a	8,251	n/a
Total Revenue from Selling Electricity	3,217	4,776	10,079	111%	213%	6,225	14,855	139%
Revenue from Selling Steam								
Revenue from Selling Steam (GPSC)	1,806	1,920	1,918	(0.1%)	6%	3,588	3,838	7%
Revenue from Selling Steam (GLOW ¹)	n/a	366	1,872	411%	n/a	n/a	2,238	n/a
Total Revenue from Selling Steam	1,806	2,286	3,790	66%	110%	3,588	6,076	69%
Other Income								
Other Income	100	127	201	58%	101%	201	328	63%
Total Revenue	5,123	7,189	14,070	96%	175%	10,014	21,259	112%
Cost of Raw Materials								
Natural Gas	3,219	4,562	8,314	82%	158%	6,251	12,876	106%
Coal	n/a	190	762	301%	n/a	n/a	952	n/a
Others	204	202	212	5%	4%	419	414	(1%)
Total Cost of Raw Materials	3,423	4,954	9,288	87%	171%	6,670	14,242	114%
Maintenance cost ¹	98	145	417	188%	326%	192	562	193%
Others ¹ (exclude depreciation and amortization)	101	321	749	133%	642%	202	1,070	430%
Total Cost of Sales of Goods and Rendering of Services	3,622	5,420	10,454	93%	189%	7,064	15,874	125%
Gross Profit	1,501	1,769	3,616	104%	141%	2,950	5,385	83%
Gross Profit Margin	29%	25%	26%	1%	(3%)	29%	25%	(5%)

Note: 1. In Q1/2019, all GLOW's revenues are 18-days revenue after the company's acquisition of GLOW. GLOW SPP consists of GLOW Energy Phase 1,2,4,5, GLOW SPP 2-3, GLOW Energy CFP3 and GLOW SPP11 Phase 1-3.

Gross Profit

Gross profit of Small Power Producer (SPP) in Q2/2019 is Baht 3,616 million, which increased from Q1/2019 by Baht 1,847 million or 104%, and increased from Q2/2018 by Baht 2,115 million or 141% due to the following reasons:



Comparing Q2/2019 vs Q1/2019

Gross profit of Small Power Producer (SPP) increased mainly from the following reasons:

- The first full quarter recognition of gross profit from GLOW's SPP plants (only 18 days recognition in Q1/2019) which caused gross profit to increase by Baht 1,943 million.
- However, the gross profit from GPSC's SPP plants decreased by Baht 96 million due to the decrease in electricity sales volume of Rayong Central Utility Plant by 15 GWh, whereas electricity average selling price has not changed. Moreover, the average selling price of steam for Rayong Central Utility Plants (CUP) and IRPC-CP decreased, although steam sales volume increased by 41 thousand tons.



Comparing Q2/2019 vs Q2/2018

Gross profit of Small Power Producer (SPP) increased mainly from the following reasons:

- The first full quarter recognition of gross profit from GLOW's SPP plants (Q2/2018 did not acquire GLOW yet) which caused gross profit to increase by Baht 2,389 million.
- The gross profit from GPSC's SPP plants decreased by Baht 274 million as a result of the increase in natural gas cost by 10% which higher than the increase in revenue from selling electricity at 4%.



Operating Results

1H

Comparing
1H/2019 vs 1H/2018

SPP

The gross profit of Small Power Producer (SPP) increased from 1H/2018 by Baht 2,435 million or 83% mainly due to:

- The first half year recognition of gross profit from GLOW's SPP plants (1H/2018 did not acquire GLOW yet) which increased by Baht 2,744 million. Whereas, the gross profit of GPSC decreased by Baht 309 million as a result of the increase in natural gas cost by 14% which higher than the increase in revenue from selling electricity and steam at 6%.

Key revenue drivers	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-
				QoQ	YoY			
Power Sales Volume								
Sales Volume - GPSC (GWh)	1,072	1,056	1,041	(1%)	(3%)	2,050	2,097	2%
Sales Volume - GLOW (GWh)	n/a	479	2,204	360%	n/a	n/a	2,683	n/a
Power Average Selling Price								
Weighted Average Selling Price (Baht/kWh)	3.00	3.11	3.11	0%	4%	3.04	3.11	2%
Steam Sales Volume								
Sales Volume - GPSC (Thousand tons)	1,659	1,587	1,628	3%	(2%)	3,351	3,215	(4%)
Sales Volume - GLOW (Thousand tons)	n/a	374	1,903	409%	n/a	n/a	2,277	n/a
Steam Average Selling Price								
Weighted Average Selling Price (Baht/ton)	1,088	1,166	1,073	(8%)	(1%)	1,071	1,106	3%

Revenue

Revenue from Small Power Producer (SPP) in Q2/2019 is Baht 14,070 million, which increased from Q1/2019 by Baht 6,881 million or 96%, from Q2/2018 by Baht 8,974 million or 175% due to the following reasons:

QoQ

Comparing
Q2/2019 vs Q1/2019

Total revenue of Small Power Producer (SPP) of the company increased mainly due to:

- The recognition of revenue from electricity and steam sales of GLOW's SPP plants increased by Baht 5,337 million and Baht 1,506 million, respectively, and other income increased by Baht 74 million, as a result of being the first full quarter recognition of revenue (only 18 days recognition in Q1/2019).
- However, the revenue from electricity and steam sales of GPSC's SPP plants decreased by Baht 34 million and Baht 2 million respectively, due to the decrease in electricity sales volume of 15 GWh, and the decrease in steam average selling price, although steam sales volume increased by 41 thousand tons, together with the decrease in other income from industrial water of Baht 11 million.

YoY

Comparing
Q2/2019 vs Q2/2018

Total revenue of Small Power Producer (SPP) of the company increased mainly due to:

- The recognition of revenue from electricity and steam sales of GLOW's SPP plants increased by Baht 6,794 million and Baht 1,872 million respectively, and other income increased by Baht 101 million, as a result of being the first full quarter recognition of revenue (Q2/2018 did not acquire GLOW yet).
- The revenue from electricity and steam sales of GPSC's SPP plants increased by Baht 68 million and Baht 112 million, respectively, due to the increase in average price of natural gas of 27 Baht/MMBTU or 10%, while the average selling price of steam decrease slightly and other income from industrial water fell by Baht 11 million.


Operating Results

1H

Comparing
1H/2019 vs 1H/2018

SPP

Total revenue of Small Power Producer (SPP) of the company increased from 1H/2018 by Baht 11,245 million or 112% mainly due to:

- The recognition of revenue from electricity and steam sales of GLOW's SPP plants increased by Baht 8,251 million and Baht 2,238 million, respectively, and other income increased by Baht 127 million (Q2/2018 did not acquire GLOW yet).
- The revenue from electricity and steam sales of GPSC's SPP plants increased by Baht 379 million and Baht 250 million, respectively, due to the increase in average price of natural gas of 36 Baht/MMBTU or 14%, together with the decrease in other income from industrial water of Baht 3 million.

Key cost drivers	Q2/18	Q1/19	Q2/19	Change +/(-)		1H/18	1H/19	Change +/(-)
				QoQ	YoY			
Natural Gas								
Natural Gas Consumption								
Natural Gas Consumption ('000 MMBTU) – GPSC	12,431	12,183	12,318	1%	(1%)	24,609	24,501	(0.4%)
Natural Gas Consumption ('000 MMBTU) – GLOW	n/a	3,501	5,581	59%	n/a	n/a	9,082	n/a
Average Price of Natural Gas								
Average Price of Natural Gas (Baht/MMBTU) - GPSC	259	294	286	(3%)	10%	254	290	14%
Average Price of Natural Gas (Baht/MMBTU) - GLOW	n/a	282	280	(1%)	n/a	n/a	281	n/a
Coal								
Coal Consumption								
Coal Consumption (Ton JPU) - GLOW	n/a	58,843	246,819	319%	n/a	n/a	305,662	n/a
Average Coal Cost (exclude transportation cost)								
Average Coal Cost (exclude transportation cost) (USD/Ton JPU) - GLOW	n/a	92.42	89.66	(3%)	n/a	n/a	91.04	n/a

Total Cost of Sales of Goods and Rendering of Services (exclude depreciation and amortization)

Total cost of sales of goods and rendering of services (exclude depreciation and amortization) of Small Power Producer (SPP) in Q2/2019 was Baht 10,454 million in which increased from Q1/2019 by Baht 5,034 million or 93% and from Q2/2018 by Baht 6,832 million or 189% due to the following reasons:

QoQ

Comparing
Q2/2019 vs Q1/2019

Total cost of sales of goods and rendering of services of Small Power Producer (SPP) increased mainly due to:

- Natural gas cost increased by Baht 3,752 million (decreased by Baht 50 million from GPSC and increased by Baht 3,802 million from GLOW) due to the first full quarter recognition of natural gas cost from GLOW (only 18 days recognition in Q1/2019). However, natural gas price of Cogeneration and SPP of GPSC slightly decreased which effected on the decrease in natural gas cost of GPSC.
- Coal cost increased by Baht 572 million due to the first full quarter recognition of coal cost from GLOW (only 18 days recognition in Q1/2019).
- Maintenance cost increased by Baht 272 million (increase by Baht 6 million from GPSC and by Baht 266 million from GLOW). As the increase of GPSC, it mainly due to the maintenance and cleaning cost of IRPC-CP in April 2019 as planned.

YoY

Comparing
Q2/2019 vs Q2/2018

Total cost of sales of goods and rendering of services of Small Power Producer (SPP) increased mainly due to:

- Natural gas cost increased by Baht 5,095 million (increased by Baht 544 million from GPSC and by Baht 4,551 million from GLOW) due to the increase in average selling price per unit which followed the increased in average natural gas price by Baht 27 per MMBTU or 10%. In addition, Q2/2019 was the first full quarter recognition of natural gas cost from GLOW (Q2/2018 did not acquire GLOW yet).
- Coal cost increased by Baht 762 million due to the first full quarter recognition of coal cost from GLOW (Q2/2018 did not acquire GLOW yet).
- Maintenance cost increased by Baht 319 million (increase by Baht 2 million from GPSC and by Baht 317 million from GLOW due to the first full quarter recognition of maintenance cost from GLOW (Q2/2018 did not acquire GLOW yet).

Operating Results

1H

Comparing
1H/2019 vs 1H/2018

SPP

Total cost of sales of goods and rendering of services of Small Power Producer (SPP) increased from 1H/2018 by Baht 8,810 million or 125% mainly due to:

- Natural gas cost increased by Baht 6,625 million (increased by Baht 852 million from GPSC and increased by Baht 5,773 million from GLOW) due to the increase in average selling price per unit which followed the increase in average natural gas price by Baht 36 per MMBTU or 14%. In addition, 1H/2019 was the first full first half recognition of natural gas cost from GLOW (1H/2018 did not acquire GLOW yet).
- Coal cost increased by Baht 952 million due to the first full quarter recognition of coal cost from GLOW (1H/2018 did not acquire GLOW yet).
- Maintenance cost increased by Baht 370 million (increased by Baht 3 million from GPSC and increased by Baht 367 million from GLOW due to the first full first half recognition of natural gas cost from GLOW (1H/2018 did not acquire GLOW yet).



3. VSPP and Others Operating Performance

VSPP

Operating Performance	Q2/18	Q1/19	Q2/19	Change +/(-)		1H/18	1H/19	Change +/(-)
				QoQ	YoY			
(Unit: Million Baht)								
Revenue								
Revenue from Selling Electricity	116	65	124	91%	7%	160	189	18%
Revenue from Selling Chilled Water	43	49	55	12%	28%	85	104	22%
Other income	24	24	2	(92%)	(91%)	24	26	8%
Total Revenue	183	138	181	31%	(1%)	269	319	19%
Cost of Raw Materials								
Natural gas and Others	36	40	26	(35%)	(26%)	54	66	22%
Total Cost of Raw Materials	36	40	26	(35%)	(26%)	54	66	22%
Maintenance cost	7	7	9	29%	125%	15	16	7%
Others (exclude depreciation and amortization)	3	15	17	13%	183%	21	32	52%
Total Cost of Sales of Goods and Rendering of Services	46	62	52	(16%)	16%	90	114	27%
Gross Profit	137	76	129	70%	(6%)	179	205	15%
Gross Profit Margin	75%	55%	71%	16%	(4%)	67%	64%	(3%)

Note: VSPP and others include Combine Heat and Power Producing Company Limited (CHPP), Ichinoseki Solar Power 1 GK (ISP1) and Refuse Derived Fuel Plant (RDF)

Gross Profit

The gross profit of Very Small Power Producer (VSPP) and others was Baht 129 million in Q2/2019, which increased by Baht 53 million or 70% from Q1/2019. However, gross profit decreased Baht 8 million or 6% from Q2/2018 due to the following reasons:

QoQ

Comparing
Q2/2019 vs Q1/2019

The gross profit of Very Small Power Producer (VSPP) and others increased mainly due to:

- The revenue from selling electricity of Ichinoseki Solar Power 1 GK (ISP1) increased due to lower snowfall compared to Q1/2019 which led to higher power generation, together with the increasing revenue from chilled water of Combine Heat and Power Producing Company Limited (CHPP). The cost of sales of goods and rendering of services decreased causing gross profit to rise.

YoY

Comparing
Q2/2019 vs Q2/2018

The gross profit of Very Small Power Producer (VSPP) and others decreased mainly due to:

- Revenue decreased mainly from the lower revenue of solar cell implementation service from Combine Heat and Power Producing Company Limited (CHPP) as well as the increase in maintenance cost leading to a fall in gross profit.



Operating Results

1H

Comparing
1H/2019 vs 1H/2018

VSPP

The gross profit of Very Small Power Producer (VSPP) and others increased by Baht 26 million or 15% from 1H/2018, mainly due to:

- The revenue from selling electricity from Ichinoseki Solar Power 1 GK (ISP1) and revenue from chilled water of Combine Heat and Power Producing Company Limited (CHPP) increased. Although the cost of goods sold and rendering of services have increased, it has increased at a lower rate than the revenue since Ichinoseki Solar Power 1 GK (ISP1) has only fixed cost, the overall gross profit has increased.

Key revenue drivers	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-
				QoQ	YoY			
Power								
Sales volume (GWh)	11	7	12	71%	9%	15	19	27%
Average selling price (Baht/kWh)	10.75	9.78	10.63	9%	(1%)	10.31	10.32	0%
Chilled water								
Sales volume (Thousand RT)	6,283	6,900	8,231	19%	31%	12,477	15,131	21%
Average selling price (Baht/RT)	6.84	7.09	6.66	(6%)	(3%)	6.81	6.86	1%

Revenue

The revenue of Very Small Power Producer (VSPP) and others was at Baht 181 million in Q2/2019, which increased by Baht 43 million or 31% from Q1/2019. However, the revenue decreased by Baht 2 million or 1% by Q2/2018 due to the following reason:

QoQ

Comparing
Q2/2019 vs Q1/2019

The revenue of Very Small Power Producer (VSPP) and others increased mainly due to:

- The revenue from selling electricity from Ichinoseki Solar Power 1 GK (ISP1) increased by Baht 59 million as Q1/2019 is in the transition of seasons resulting in higher snowfall resulting in lower generation of electricity compared to Q2/2019.
- The revenue from selling chilled water from Combine Heat and Power Producing Company Limited (CHPP) increased by Baht 6 million; however, the revenue from implementing solar cells has decreased by Baht 22 million as the revenue will be recognized based on the stage of completion of the project, whilst there was no deliverables of work during this quarter.

YoY

Comparing
Q2/2019 vs Q2/2018

The revenue of Very Small Power Producer (VSPP) and others decreased mainly due to :

- Revenue from the solar cell implementation service from Combine Heat and Power Producing Company Limited (CHPP) decreased Baht 22 million as the revenue will be recognized based on the stage of completion of the project, whilst there was no deliverables of work during this quarter.
- However, the revenue from selling chilled water from Combine Heat and Power Producing Company Limited (CHPP) increased by Baht 12 million, together with the revenue from selling electricity from Ichinoseki Solar Power 1 GK (ISP1) that increased by Baht 8 million, resulting in a lesser impact to the overall revenue.

1H

Comparing
1H/2019 vs 1H/2018

The revenue of Very Small Power Producer (VSPP) and others increased by Baht 50 million or 19% from 1H/2018 mainly due to:

- The revenue from selling electricity from Ichinoseki Solar Power 1 GK (ISP1) increased by Baht 29 million as in 1H/2018, the amount of snowfall is larger than the other years causing the generation of electricity to be limited
- The revenue from selling chilled water from Combine Heat and Power Producing Company Limited (CHPP) increased by Baht 19 million, together with the increase in selling electricity revenue and revenue from implementing solar cells increased by 2 million.



Total Cost of Sales of Goods and Rendering of Services (exclude depreciation and amortization)

The cost of sales of goods and rendering of services of Very Small Power Producer (VSPP) and others was Baht 52 million, which decreased by Baht 10 million or 16% from Q1/2019 and increased by Baht 7 million or 16% from Q2/2018 due to the following reasons:



Comparing Q2/2019 vs Q1/2019

The total cost of sales of goods and rendering of services of Very Small Power Producer (VSPP) and others decreased mainly due to:

- The total cost of implementing solar cells from Combine Heat and Power Producing Company Limited (CHPP) decreased by Baht 17 million as the cost will be recognized based on the stage of completion of the project, whilst there was no deliverables of work during this quarter. However, the cost of maintenance increased by Baht 2 million.



Comparing Q2/2019 vs Q2/2018

The total cost of sales of goods and rendering of services of Very Small Power Producer (VSPP) and others increased mainly due to:

- The cost of raw materials and other costs of Combine Heat and Power Producing Company Limited (CHPP) increased by Baht 9 million due to the increasing generation of chilled water. However, the cost of implementing solar sells decreased by Baht 17 million as the cost will be recognized based on the stage of completion of the project, whilst there was no deliverables of work during this quarter.
- The maintenance cost from Ichinoseki Solar Power 1 GK (ISP1) increased by Baht 7 million



Comparing 1H/2019 vs 1H/2018

The total cost of sales of goods and rendering of services of Very Small Power Producer (VSPP) and others increased by Baht 24 million or 27% from 1H/2018 mainly due to:

- The cost of raw materials and other costs of Combine Heat and Power Producing Company Limited (CHPP) increased by Baht 13 million due to the increasing generation of chilled water and the slight increase in maintenance cost by Baht 1 million.



Operating Results



4. Other Expenses

Other Expenses	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-
				QoQ	YoY			
(Unit: Million Baht)								
Selling and Administrative Expenses	207	367	614	67%	197%	374	981	162%
Depreciation and Amortization	445	707	2,229	215%	401%	860	2,936	241%
Finance Costs	135	372	1,610	333%	1093%	254	1,982	680%
Income Tax Expense	112	46	30	(35%)	(73%)	202	76	(62%)
Net Foreign Exchange Losses (Gain)	(27)	52	(242)	(565%)	(796%)	(6)	(190)	3067%
Total Other Expenses	872	1,544	4,241	175%	387%	1,684	5,785	244%

Other expenses in Q2/2019 was at Baht 4,241 million, which increased by Baht 2,697 million or 175% from Q1/2019 and increased by Baht 3,369 million or 387% from Q2/2018 mainly due to the recognition of other expenses from the acquisition of GLOW for the full quarter (only 18 days recognition in Q1/2019) as well as in Q2/2018 GPSC has not yet acquired GLOW. Details are as follows:



Comparing Q2/2019 vs Q1/2019

- **Selling and Administrative Expenses:** Selling and Administrative expenses was Baht 614 million in Q2/2019, which increased by Baht 247 million or 67% from Q1/2019. This increase was mainly due to the administrative expenses of the company, excluding GLOW, increased by Baht 158 million mainly due to the expenses that was used to support business employee benefits according to the change in Labor Protection Act (enacted on 5 April 2019) and expenses used to support business expansion.
- **Depreciation and Amortization:** Depreciation and Amortization costs was Baht 2,229 million in Q2/2019, which increased by 1,522 million or 215% from Q1/2018. The increase in depreciation and amortization costs of the company, excluding GLOW, accounted for Baht 594 million, mainly due to the amortization of intangible assets arising from the acquisition of GLOW in Q2/2019 under Purchase Price Allocation (PPA) method, as well as the increase in assets to support business expansion.
- **Finance Costs:** Finance costs was Baht 1,610 million in Q2/2019, which increased by Baht 1,238 million or 333% from Q1/2019 mainly due to finance cost of the company, excluding GLOW, increased by Baht 808 million mainly from the increase in short term loan interest, intercompany loan interest and financing fee on loan used to acquire GLOW.



Comparing Q2/2019 vs Q2/2018

- **Selling and Administrative Expenses:** Selling and Administrative expenses was Baht 614 million in Q2/2019, which increased Baht 407 million or 197% from Q2/2018. This increase was mainly due to the administrative expenses of the company, excluding GLOW, increased by Baht 184 million mainly due to the expenses that was used to support business employee benefits according to the change in Labor Protection Act (enacted on 5 April 2019) and expenses used to support business expansion.
- **Depreciation and Amortization:** Depreciation and Amortization costs was at Baht 2,229 million in Q2/2019, which increased by 1,784 million or 401% from Q2/2018. The increase in depreciation and amortization costs of the company, excluding GLOW, accounted for Baht 865 million mainly due to the amortization of intangible assets arising from the acquisition of GLOW in Q2/2019 under Purchase Price Allocation (PPA) method, as well as the increase in assets to support business expansion.
- **Finance Costs:** Finance costs was at Baht 1,610 million in Q2/2019, which increased by Baht 1,475 million or 1,093% from Q2/2018. The rise in finance costs of the company, excluding GLOW, accounted for Baht 958 million, mainly from the increase in short term loan interest, intercompany loan interest and financing fee on loan used to acquire GLOW.



- **Income Tax Expenses:** Income tax expenses was at Baht 30 million in Q2/2019, which decreased by Baht 16 million or 35% from Q1/2019 mainly due to the discounts from amortization of deferred tax liabilities following DTL in the amount of Baht 87 million as a result of the completion of Purchase Price Allocation (PPA) after the acquisition of GLOW.
- **Net Foreign Exchange Gain:** Net foreign exchange gain was at Baht 242 million in Q2/2019 which increased by Baht 294 million or 565% from Q1/2019 mainly due to the following reasons:
 - The full quarter recognition of net foreign exchange gains from GLOW (only 18 days recognition in Q1/2019) amounting Baht 247 million, increased by Baht 278 million from Q2/2019 mainly from the appreciation of Thai Baht.
 - Net Foreign exchange losses of the company, excluding GLOW, amounted to Baht 5 million where losses has deepened by Baht 16 million from Q1/2019.

- **Income Tax Expenses:** Income tax expenses was Baht 30 million in Q2/2019, which decreased by Baht 82 million or 73% from Q2/2018, resulting from a decrease in earnings before tax expenses mainly from the increase in short term loan interest, intercompany loan interest, and financing fee on loan used to acquire GLOW.
- **Net Foreign Exchange Gain:** Net foreign exchange gain was at Baht 242 million in Q2/2019 which increased by Baht 215 million or 796% from Q2/2018 mainly due to the following reasons:
 - The full quarter recognition of net foreign exchange gains from GLOW (1H/2018 did not acquire GLOW yet) amounting to Baht 247 million mainly from appreciation of Thai Baht.
 - Net Foreign exchange losses of the company, excluding GLOW, amounted to Baht 5 million where losses has deepened by Baht 33 million from Q2/2018.

1H Comparing 1H/2019 vs 1H/2018

Other expenses increased by Baht 4,101 million or 244% from 1H/2018 mainly due to the recognition of other expenses from the acquisition of GLOW for the first time (acquired glow during 1H/2019). Details are as follows:

- **Selling and Administrative Expenses:** Selling and Administrative expenses was Baht 981 million in 1H/2019, which increased by Baht 607 million or 162% from 1H/2018. This increase was mainly due to the administrative expenses of the company, excluding GLOW, that increased by Baht 184 million as a result of the expenses that was used to support business employee benefits according to the change in Labor Protection Act (enacted on 5 April 2019) and expenses used to support business expansion.
- **Depreciation and Amortization:** Depreciation and Amortization costs was at Baht 2,936 million in 1H/2019, which increased by 2,076 million or 241% from 1H/2018. The increase in depreciation and amortization costs of the company, excluding GLOW, accounted for Baht 688 million, mainly due to the amortization of intangible assets arising from the acquisition of GLOW in Q2/2019 under Purchase Price Allocation (PPA) method, as well as the increase in assets to support business expansion.
- **Finance Costs:** Finance costs was at Baht 1,982 million in 1H/2019, which increased by Baht 1,728 million or 680% from 1H/2018 mainly due to finance cost of the company, excluding GLOW increased by Baht 1,118 million, mainly from the increase in short term loan interest, intercompany loan interest and financing fee on loan used to acquire GLOW.
- **Income Tax Expenses:** Income tax expenses was Baht 76 million in 1H/2019, which decreased by Baht 126 million or 62% from 1H/2018 resulting from a decrease in earnings before tax expenses mainly from the increase in short term loan interest, intercompany loan interest, and financing fee on loan used to acquire GLOW.
- **Net Foreign Exchange Gain:** Net foreign exchange gain was Baht 190 million in 1H/2019 which increased by Baht 184 million or 3,067% from 1H/2018 mainly due to the follow reasons:
 - Recognition of net foreign exchange gains from GLOW (6 months in 2018 excludes GLOW) amounted to Baht 215 million mainly from the appreciation of Thai Baht.
 - Net Foreign exchange losses of the company, excluding GLOW, amounted to Baht 25 million where losses has deepened by Baht 31 million from 1H/2018.


Operating Results


Shares of Profit of Associates and Joint Ventures

Shares of Profit of Associates and Joint Ventures (Million Baht)	% of shareholding	Q2/18	Q1/19	Q2/19	Change +/-		1H/18	1H/19	Change +/-	
					QoQ	YoY				
Independent Power Producer (IPP)										
Xayaburi Power Company Limited (XPCL)	25%	(6)	(8)	(7)	13%	(17%)	(13)	(15)	(15%)	
Small Power Producer (SPP)										
Bangpa-in Cogeneration Company Limited (BIC)	25%	39	32	22	(31%)	(44%)	74	54	(27%)	
Nava Nakorn Electricity Generating Company Limited (NNEG)	30%	29	7	(15)	(314%)	(152%)	64	(8)	(113%)	
Nam Lik 1 Power Company Limited (NL1PC)	40%	11	15	16	7%	45%	21	31	48%	
Total Small Power Producer		79	54	23	(57%)	(71%)	159	77	(52%)	
Very Small Power Plant (VSPP)										
Thai Solar Renewable Company Limited (TSR)	40%	82	84	92	10%	12%	160	176	10%	
Eastern Seaboard Clean Energy Company Limited	33%	0	0	(2)	n/a	n/a	0	(2)	n/a	
Total shares of profit of associates and joint ventures		155	130	106	(18%)	(32%)	306	236	(23%)	

Shares of profit of associates and joint ventures in Q2/2019 was at Baht 106 million, which decreased by Baht 24 million or 18% from Q1/2019 and decreased by Baht 49 million or 32% from Q2/2018. In addition, the shares of profit of associates and joint ventures fell by Baht 70 million or 23% from 1H/2018 due to the following reasons:


XAYABURI POWER

YOUR SENSE OF ENERGY

Xayaburi Power Company Limited

(XPCL): Shares of profit from XPCL decreased slightly by Baht 1 million from Q1/2019 and when comparing to Q2/2018, shares of profit also decreased slightly by Baht 1 million.


Bangpa-In Cogeneration Company Limited (BIC):

Shares of profit from BIC dropped by Baht 10 million from Q1/2019 and decreased by Baht 17 million when compare to Q2/2018 due to the major overhaul as planned during June 2019.


 NAVA NAKORN
ELECTRICITY GENERATING

Nava Nakorn Electricity Generating Company

Limited (NNEG): Shares of profit from NNEG decreased by Baht 22 million from Q1/2019 and dropped by Baht 44 million Q2/2018 due to an unplanned maintenance shutdown during June 2019.


 NAM LIK 1
POWER COMPANY LIMITED

Nam Lik 1 Power Company Limited (NL1PC):

Shares of profit from Nam Lik 1 (NL1PC) increased slightly by Baht 1 million from Q1/2019 and increased slightly by Baht 5 million from Q2/2018.



Thai Solar Renewable Co. Ltd.

Thai Solar Renewable Company Limited (TSR): Shares of profit from Thai Solar Renewable Company Limited (TSR) rose by

Baht 8 million from Q1/2019 and increased by Baht 10 million when compared to Q2/2018 due to a more effective production capability resulting from engine improvement.

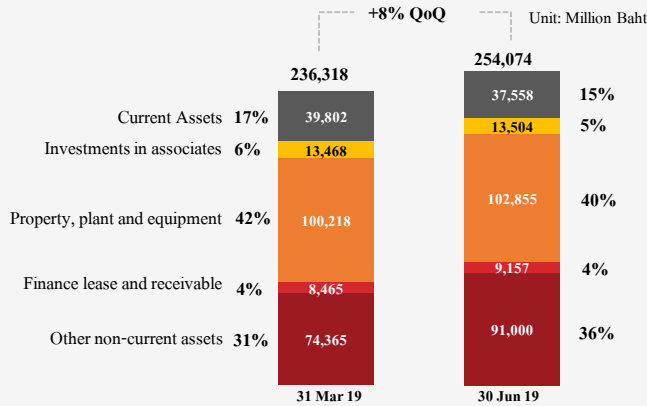


Operating Results



Summary of Financial Position of the Company and its Subsidiaries

Total Assets

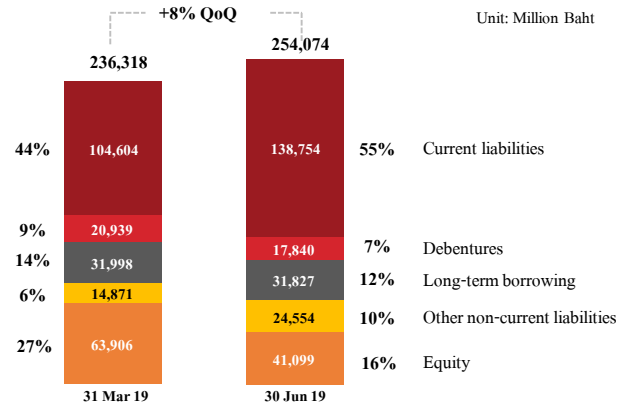


Total Assets

As of 30 June 2019, the total assets of the company and its subsidiaries were at Baht 254,074 million, increased by Baht 17,756 million or 8% from 31 March 2019. The gain resulted mainly from the acquisition of GLOW. The details of significant changes are as follows:

- **Other non-current assets** increased by Baht 16,635 or 22% million due to the recording of the fair value of net asset from the acquisition of GLOW
- **Property, plant and equipment:** increased by Baht 2,637 million or 3% after recording the fair value of net asset from the acquisition of GLOW
- **Finance lease and receivable - net:** increased by Baht 692 million or 8% after recording the fair value of net asset from the acquisition of GLOW

Total Liabilities and Equity



Total Liabilities

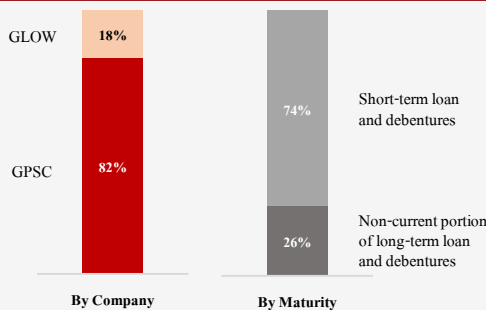
As of 30 June 2019, total liabilities of the company and its subsidiaries were Baht 212,975 million, increased by Baht 40,563 million or 24% from 31 March 2019. This significant changes are as follows:

- **Current liabilities** increased by Baht 34,150 million or 33% mainly resulted from an increase in short-term loan from financial institution for the acquisition of GLOW
- **Other non-current liabilities** increased by Baht 9,683 million or 65% mainly due to the increase in deferred tax liabilities of Baht 8,932 million from recording the fair value of net asset from the acquisition of GLOW
- **Long-term borrowing and debtures** decreased by Baht 3,270 million or 6% from the repayment of loans to financial institution and debture

Total Equity

As of 30 June 2019, the total shareholders' equity of the company and its subsidiaries was at Baht 41,099 million, which decreased by Baht 22,807 million or 36% from 31 March 2019. This was mainly due to the change in non-controlling interest and the difference from the change of investment proportion in subsidiaries resulted from the tender offer for acquisition of GLOW

Total Interest-Bearing Debt



Debt Profile

- As of 30 June 2019, the company and its subsidiaries has total interest-bearing debt of Baht 177,222 million which comprised of current liabilities amounting to Baht 131,186 million or 74% and non-current liabilities amounting to Baht 46,036 million or 26%.



Operating Results



Cash Flow Analysis

Cash Flow	Q2/ 2019
(Unit: Million Baht)	
Net cash flow from operating activities	6,561
Net cash used in investing activities	(80,308)
Net cash flow from financing activities	84,818
Net cash and cash equivalent (before exchange rate effect)	11,071
Effect of exchange rate to cash and cash equivalent	(43)
Net increase in cash and cash equivalents (after taken into account exchange rate)	11,028
Cash and cash equivalents at the beginning of the period*	6,494
Cash and cash equivalents at the end of the period*	17,522

*Included restricted cash and temporary investment

For Q2/2019, the company and its subsidiaries has a net increase in cash and cash equivalents increased by Baht 11,028 million from Q1/2019, primarily resulting from the increase in financing activities.



Cash Flow from Operating Activities

In Q2/2019, the company and its subsidiaries had net cash inflow from operating activities of Baht 6,561 million, which increased from cash received from operating activities for Baht 6,996 million net with the corporate income tax payments of Baht 435 million.



Cash Flow from Financing Activities

In Q2/2019, the company and its subsidiaries had net cash received from financing activities of Baht 84,818 million, which cash received is mainly from the additional drawdown of short-term loans from financial institutions and related parties of Baht 126,211 million and also the cash to pay interest and fees to financial institutions of Baht 2,650 million, cash to pay dividend Baht 1,791 million, cash to repay loans to financial institution and debenture of Baht 36,952 million.



Cash Flow from Investing Activities

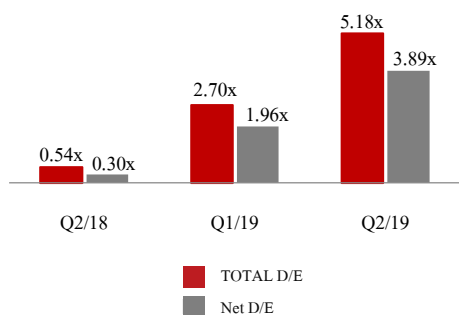
Investment	Q2/ 2562
(Unit: Million Baht)	
CAPEX and Fixed Assets	(1,437)
Cash Paid for Investments in Associates and Subsidiaries	(79,072)
Dividend and Others	201

In Q2/2019, the company and its subsidiaries has total net cash to be used in investing activities of Baht 80,308 million due to construction payment made by the company and its subsidiaries of Baht 1,437 million. In addition, the company also paid Baht 79,072 million to invests in its associates and subsidiaries. On the other hand, the company had received dividend and others of Baht 201 million.

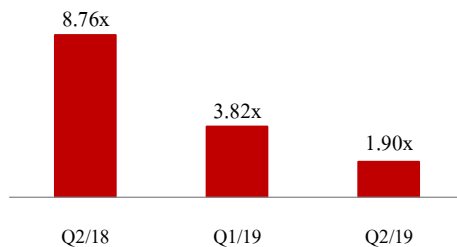


Key Financial Ratios

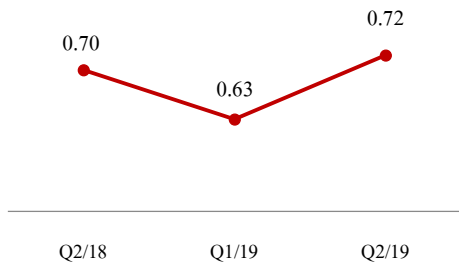
Total D/E and Net D/E Ratios (Times)



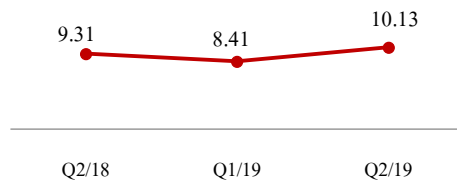
Interest Coverage Ratio (Times)



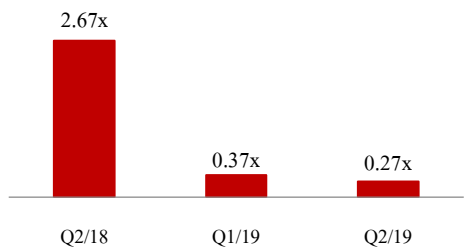
Earning per share (EPS) (Baht/share)



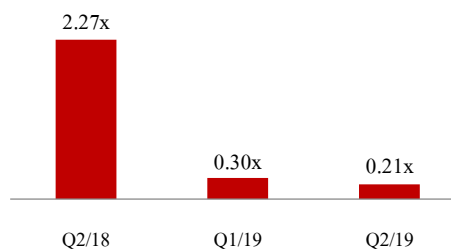
ROE (%)



Current Ratio (Times)



Quick Ratio (Times)



Update of Projects Under Construction



Xayaburi Power Company Limited (XPCL)



2Q19
99.4%

SCOD: Q4/2019

Xayaburi Power Company Limited (XPCL) is a Run-of-River Hydropower Plant located on Khong River, in Lao PDR

Project summary

- **Capacity:** Electricity 1,285 Megawatts
- **Customers:** Power Purchase Agreement (PPA) with EGAT 1,220 Megawatts and Electricite Du Laos (EDL) 60 Megawatts (The total contract period is 31 years from the year of COD)
- **GPSC holding:** 25% of total shares
- **Project updates:** At the end of June 2019, the construction progress of XPCL was at 99.41%. The main construction tasks, such as power house, intermediate block, fish ladder and 500 kV transmission line were mostly completed. The commissioning test of each unit has been in progress in order to sell electricity to EGAT during the Unit Operation Period (UOP).



Rayong Central Utility Plant 4 (CUP-4)



2Q19
98.2%

SCOD: Q3/2019

Rayong Central Utility Plant 4 (CUP-4) is a gas-fired cogeneration power plant located in Asia Industrial Estate, Rayong Province

Project summary

- **Capacity:** Electricity 45 Megawatts
Stream 70 Tons per hour
- **Customers:** Industrial users in Asia Industrial Estate and neighboring industrial estate
- **GPSC holding:** 100% of total shares
- **Project updates:** At the end of June 2019, the progress was around 98.2%. Main installations and erections have been completed, to prepare for the following unit test and commissioning. The progress of the inter-connection of power and steam pipeline has been achieved over 90%. Next activity will be integration test and commissioning. The commercial operation is targeted to be in Q3/2019.



Update of Projects Under Construction



Nava Nakorn Electricity Generating Company Limited (NNEG) is a gas-fired SPP cogeneration located in Nava Nakorn Industrial Promotion Zone, Pathumthani Province. NNEG is expanding its capacity further by 60 Megawatts and 10 Tons per hour of steam to serve the increasing demand from industrial users

Project summary

- **Total Capacity of NNEG:** Electricity 185 Megawatts
Steam 40 Tons per hour
- **Customers:** EGAT (SPP Firm for 90 Megawatts for 25 years) and industrial users in Nava Nakorn Industrial Promotion Zone
- **GPSC holding:** 30% of total shares
- **Project updates:** At the end of June 2019, the project progress has reached 51.7%. Piling work was completed while main tasks such as engineering, foundation and procurement work for machines and equipment were executed as planned.

Nava Nakorn Electricity Generating (NNEG) Expansion Phase



2Q19
51.7%

SCOD: Q3/2020



Rayong Waste to Energy (WTE) project consists of two main sub-projects including the RDF Project (construction completed) and RDF Power Plant Project (which is in the construction process) – where both projects are situated in the Rayong Province.

Project summary

- **Total Capacity of WTE:** Electricity 8 Megawatts
RDF 300 Tons per day
- **Customers:** Provincial Electricity Authority (PEA)
- **GPSC holding:** 100% of total shares
- **Project updates:** The RDF Project construction has been completed since 2018 while the RDF Power Plant Project construction began on April 2019. Presently, the progress of the project has reached 3.16% and is expected to COD in Q2/2021.

Rayong Waste to Energy (WTE)



2Q19
3.16%

SCOD: Q2/2021



Appendix



Plan of the company, its subsidiaries, associates and joint venture

Power plant	Fuel Type	Location	Installed Power capacity (MW)	Equity Power capacity (MW)	Equity in operation (MW)	Steam equity capacity (t/h)	Customers	Direct shareholding	Commercial Operation Date (COD)
Independent Power Producer (IPP)									
Houay Ho	Hydro	Attapeu Province, Lao PDR.	152	102	102	-	EGAT/EDL	GLOW (67%)	1999
Sriracha	Natural gas	Sriracha	700	700	700	-	EGAT	GPSC (100%)	2000
GIPP	Natural gas	WHA Chonburi Industrial Estate 1	713	677	677	-	EGAT	GLOW (95%)	2003
RPCL	Natural gas	Ratchaburi	1,400	210	210	-	EGAT	GPSC (15%)	2008
GHECO-One	Coal	Map Ta Phut Industrial Estate	660	429	429	-	EGAT	GLOW (65%)	2012
Total capacity of IPP			3,625	2,118	2,118	-			
Small Power Producer (SPP)									
GLOW Energy Phase 1	Natural gas	Map ta phut Industrial Estate	-	-	-	250	IU	GLOW (100%)	1994
GLOW Energy Phase 2	Natural gas	Map ta phut Industrial Estate	281	281	281	300	EGAT/IU	GLOW (100%)	1996
GLOW Energy Phase 4	Natural gas	Map ta phut Industrial Estate	77	77	77	137	EGAT/IU	GLOW (100%)	2005
GLOW Energy Phase 5	Natural gas	Map ta phut Industrial Estate	328	328	328	160	EGAT/IU	GLOW (100%)	2011
GLOW SPP 2 / GLOW SPP 3	Coal and natural gas	Map ta phut Industrial Estate	513	513	513	190	EGAT/IU	GLOW (100%)	1999
GLOW SPP 11 Phase 1	Natural gas	Siam Eastern Industrial Park	120	120	120	-	EGAT/IU	GLOW (100%)	2000
GLOW SPP 11 Phase 3	Natural gas	Siam Eastern Industrial Park	42	42	42	-	EGAT/IU	GLOW (100%)	2006
GLOW SPP 11 Phase 2	Natural gas	Siam Eastern Industrial Park	110	110	110	-	EGAT/IU	GLOW (100%)	2012
CUP-1	Natural gas	Hemaraj eastern industrial estate	226	226	226	890	EGAT/IU	GPSC (100%)	2006
CUP-2	Natural gas	Rayong industrial land	113	113	113	170	EGAT/IU	GPSC (100%)	2008
CUP-3	Natural gas	Hemaraj eastern industrial estate	-	-	-	280	IU	GPSC (100%)	2009
GLOW Energy CFB 3	Coal	Map ta phut Industrial Estate	85	85	85	79	IU	GLOW (100%)	2010
BIC-1	Natural gas	Bangpa-in industrial estate	117	29.25	29.25	5	EGAT/IU	GPSC (25%)	2013
BIC-2	Natural gas	Bangpa-in industrial estate	117	29.25	29.25	5	EGAT/IU	GPSC (25%)	2017
IRPC-CP Phase 1	Natural gas	IRPC industrial Zone	45	23	23	86.7	EGAT/IU	GPSC (51%)	2015



Appendix

Power plant	Fuel Type	Location	Installed Power capacity (MW)	Equity Power capacity (MW)	Equity in operation (MW)	Steam equity capacity (t/h)	Customers	Company	Commercial Operation Date (COD)
IRPC-CP Phase 2	Natural gas	IRPC industrial Zone	195	99.4	99.4	66.3	EGAT/ IU	GPSC (51%)	2017
NNEG	Natural gas	Nava Nakorn industrial promotion Zone	125	38	38	9	EGAT/ IU	GPSC (30%)	2016/ 2020
NNEG Expansion	Natural gas	Nava Nakorn industrial promotion Zone	60	18	-	3	IU	GPSC (30%)	2020
Rayong Expansion (CUP-3)	Natural gas	Hemaraj eastern industrial estate	15	15	-	-	IU	GPSC (100%)	2019
Rayong Expansion (CUP-4)	Natural gas	Hemaraj eastern industrial estate	45	45	-	70	IU	GPSC (100%)	2019
Total capacity of SPP			2,614	2,191.90	2,113.90	2,701			
Very Small Power Producer (VSPP)									
CHPP	Natural gas	Government complex	5	5	5	-	MEA/ Government complex	GPSC (100%)	2008
CHPP (Solar)	Solar	Chanthaburi	5	5	5	-	PEA	GPSC (100%)	2016
Glow Energy Solar Plant	Solar	Asia Industrial Estate	1.55	1.55	1.55	-	EGAT	GLOW (100%)	2012
TSR (SSE1)	Solar	Suphanburi and Kanjanaburi	80	32	32	-	PEA	GPSC (40%)	2013
GLOW Energy Solar PV Rooftop	Solar	Hemaraj Saraburi Industrial Estate	0.87	0.87	0.87	-	IU	GLOW (100%)	2018
GLOW Energy Solar PV Rooftop	Solar	Amata Rayong Industrial Estate	1.00	1.00	1.00	-	IU	GLOW (100%)	2019
Chonburi Clean Energy (CCE)	Industrial waste	Hemaraj Chonburi Industrial Estate	8.6	2.87	-	-	PEA/ IU	GLOW (33%)	2019
Rayong WTE	RDF	Rayong	9.8	9.8	-	-	PEA	GPSC (100%)	2021
Total capacity of VSPP			111.82	58.09	45.42	-			
Others									
ISP1	Solar	Japan	20.8	20.59	20.59	-	IU	GPSC (99%)	2017
NLIPC	Hydro	Loas	65	26	-	-	EDL	GPSC (40%)	2019
XPCL	Hydro	Loas	1,285	321	-	-	EGAT/ EDL	GPSC (25%)	2019
ERU	Petroleum Pitch	Chonburi	250	250	-	175	Thai Oil PLC	GPSC (100%)	2023
Total capacity of Others			1,620.90	617.59	20.59	175			
Total			7,971.62	4,985.58	4,297.91	2,876			

Note:

IU : Industrial User

EGAT : Electricity Generating Authority of Thailand

MEA : Metropolitan Electricity Authority

PEA : Provincial Electricity Authority

EDL : Electricite du Laos