

**RELATIVE VALUATION OF  
GLOBAL POWER SYNERGY PUBLIC COMPANY LIMITED**



**A THEMATIC PAPER SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR  
THE DEGREE OF MASTER OF MANAGEMENT  
COLLEGE OF MANAGEMENT  
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2018**

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GLOBAL POWER SYNERGY PUBLIC COMPANY LIMITED**

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**RELATIVE VALUATION OF GLOBAL POWER SYNERGY PUBLIC COMPANY LIMITED**

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**ABSTRACT**

This thematic paper demonstrated how to value the stock price of The Global Power Synergy Public Company Limited (GPSC) which applied the concept of the relative valuation model. I applied relative valuation method to express the value of the company's stock comparing a company's value to that of its competitors or industry peers to assess the firm's financial worth. the study can still provide guidance regarding intrinsic valuation for investors and interested person in power plant business.

As a result the GPSC target price from relative valuation method with one-year target price is 46.06 THB, comparing to the current price of 55.25 THB, therefore we recommend HOLD.

**KEY WORDS:** GPSC / Valuation / Discounted Cash Flow Valuation / Power Plant

71 pages

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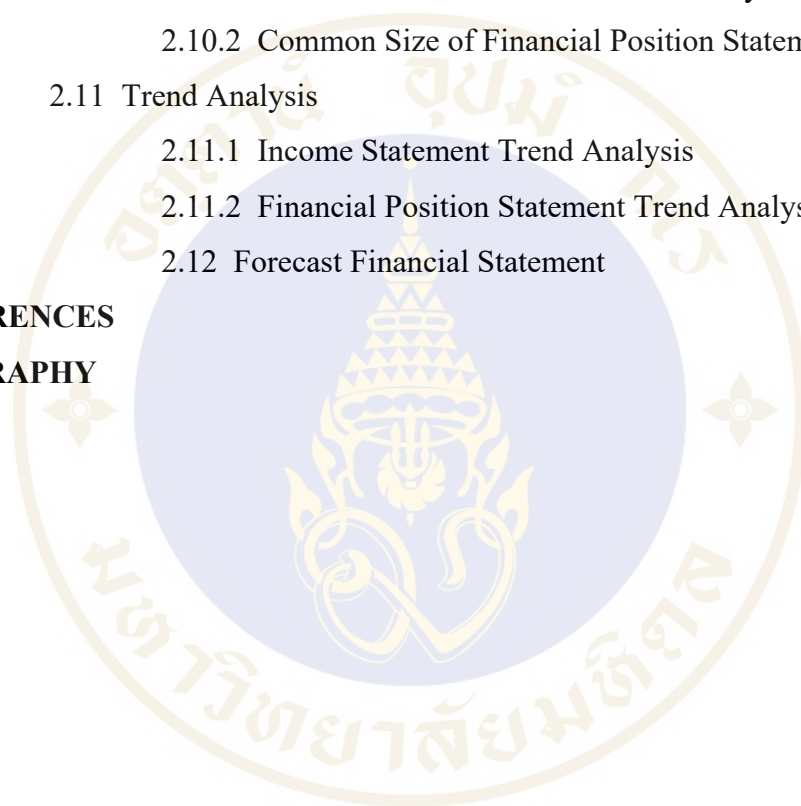
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## LIST OF ABBREVIATIONS

AEDP	Alternative Energy Development Plan
AP	Availability Payment
b	Beta
BOT	Bank of Thailand
BOI	Board of Investment of Thailand
BV	Book Value
CAGR	Compound Annual Growth Rate
CAPM	Capital Asset Pricing Model
CAPEX	Capital Expenditure
COGS	Cost of Goods Sold
DCF	Discounted Cash Flow
D/E	Debt/Equity
EGAT	Electricity Generating Authority of Thailand
EP	Energy Payment
EPPO	Energy Policy and Planning Office, Ministry of Energy, Thailand
EPS	Earnings per Share
EPC	Energy Regulatory Commission
EBIT	Earnings before Interest and Taxes
EBITDA	Earnings before Interest, Taxes and Depreciation
EPS	Earnings per share
FCFF	Free Cash Flow to Firm
FED	Federal Fund Board
GDP	Gross Domestic Production
GSP	Gas Separate Plant
IPO	Initial Public Offering
IPP	Independent Power Producer
IU	Industrial Customer

## LIST OF ABBREVIATIONS (cont.)

JV	Joint Venture
Kd	Cost of Debt
Ke	Cost of Equity
LNG	Liquid Natural Gas
LPG	Liquefied Petroleum Gas
MEA	Metropolitan Electricity Authority
MRP	Market Risk Premium
MW	Mega Watts
NGV	Natural Gas Vehicle
NPV	Net Present Value
NOPAT	Net Operating Profit after Taxes
PEA	Provincial Electricity Authority
PV	Present Value
P/E	Price/ Earnings per Share
P/BV	Price/ Book Value
Rf	Risk free
ROA	Return on Assets
ROE	Return on Equity
SPP	Small Power Producer
SEC	Security and Exchange Commission
SET	Stock Exchange of Thailand
SG&A	Selling, General and Administrative Expense
VSPP	Very Small Power Producer
WACC	Weighted Average Cost of Capital
Wd	Weight of Debt
We	Weight of Equity

## CHAPTER I VALUATION

### 1.1 Highlights

We issue a Hold recommendation on Global Power Synergy Public Company Limited with December 31, 2018 target price THB 46.06. Since the price within the holding bound from current market price THB 55.00 per share. This price lies in the lower bound of target price, estimated from its existing plant and solid projects investment. Recently, Thailand electricity industry has the excess capacity where all plants may not operate at maximum capacity available. Sales volume is expected average capacity usage from the historical. Key cost driver of company is natural gas pool price which has CAGR of 0.18%. From the price structure, the electricity selling price is change in response to change in cost of natural gas. In short term, company expected to grow along with its parent company, PTT group, business growth. In long term, company expected to grow as Thailand Power Development Plan to serve power, needed to support Thailand economic growth. The condition support sustainability growth of company with low risk of performance deterioration from current operation. Besides, company has possibility of upside performance with its diversified investment.

**Table 1.1 GPSC market profile**

<b>Closing Price</b>	THB 55.25	<b>Trailing P/E</b>	23.03
<b>52-Week Price Range</b>	THB 87.50 / 52.75	<b>P/BV</b>	2.09
<b>Average Daily Volume</b>	THB 23.8 M.	<b>ROE</b>	9.29%
<b>Share Outstanding</b>	1,498.3 M	<b>EPS</b>	THB 1.92
<b>Market Cap.</b>	THB 82,781.1 M.	<b>Dividend per share</b>	THB 0.45
<b>Dividend Yield</b>	2.26%	<b>Book Value per share</b>	THB 26.39

Source: Setsmart



**Figure 1.1 GPSC Daily Price History**

### **1.1.1 New capacity to drive revenue growth**

Majority of GPSC revenue come from Rayong Central Utilities Plant and IRPC clean power with revenue share of 57% and 25% respectively. Both plant currently operate over 90% of its capacity, supporting strong and stable revenue. Sriracha Power Plant is subsidized by EGAT for availability payment. The idle capacity, by average used of 30%, there are potential rise in sales improvement from economy recovery. Moreover, the company invests in plant expansion in Rayong Province, to support economy expansion from Eastern Economic Corridor (EEC) and also to support PTT Group business growth.

### **1.1.2 Opportunity from investment in associate and joint-venture**

Company diversified its investment to 3 countries, USA, Laos and Japan. The investment is not only to go in overseas market but the business is also diversified. The investment in plants in Japan (Solar Power) and Laos (Hydro Power) are to shift the electricity generating driver to renewable energy. While 24M Technologies, USA JV, is to develop industry power storage which could be the advantage to the competitor.

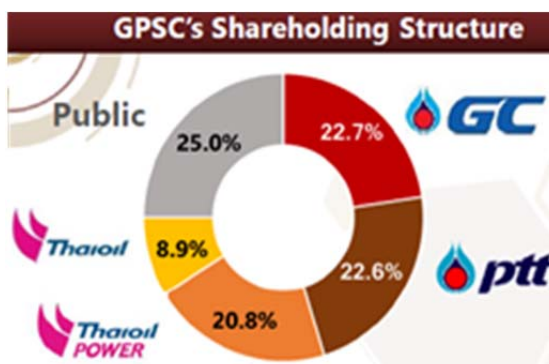
### **1.1.3 Economic growth creates growing opportunity**

Electricity power generating has an opportunity to grow from demand growth from economic expansion. With expected Thailand GDP in 2018 and 2019 at 4.4% and 4.2%, the energy consumption is expected to growth at 1.5 times higher than GDP, from correlation between GDP and energy demand consumption in Thailand. Moreover, government policy supports more growth in demand in many project; Electricity Vehicle, High Speed Train and Eastern Economic Corridor (EEC).

## **1.2 Business Description**

Global Power Synergy Public Company Limited (GPSC) is one the Thailand power company listed in SET since 2015. GPSC is PTT power business unit engaged in producing power to public via EGAT's power transmission and to industrial customers in industrial estate where its power flagship exists. The company established in 2013 from merging of PTT's two main business unit of PTT Utility Company Limited (PTTUT) and Independent Power (Thailand) Limited then turned to be public company in November 2014. After that, IPO in SET was on May 2015 with number of share registered of 1,498,300,800 common share by par 10 Baht per share. As of February 28, 2018, major shareholders are PTTGC 22.7%, PTT 22.6%, Thairoil 20.8%, Thairoil 8.9% and 25 % held by other shareholders with restriction of foreign investors holding not more than 49% of total share. The major shareholder of the GPSC is PTT PLC Group with 75% in total by the major shareholder delegated to ministry of finance (51%), Vayupak fund (12%), Thai NVDR Co., Ltd (7.7%), Other major shareholder (7.7%) and public 21.4%.





**Figure 1.2 GPSC Shareholding Structure**

Source: GPSC Annual Report 2017

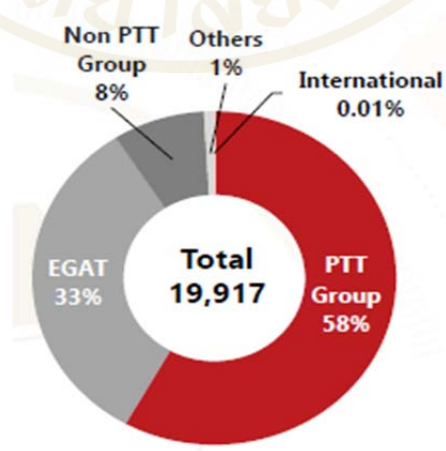
### 1.2.1 Subsidiaries and Capacity

GPSC has investment in 11 companies in 4 countries, Thailand, Japan, USA and Laos. Covering 4 types of electric and power supply type which are IPP, SPP, VSPP and Renewable energy. Revenue of group comes from 69% electricity, 29% steam and 2% from industrial water and chilled water. As of December 2017, total capacity by product is 1,509 MW of Electricity, 1,512 tons/hour of Steam, 12,000 Refrigeration tons of Chilled Water and 2,080 cubic meters/hour of industrial water. By 2020, 4 more plants (Rayong Power Plant CUP4, Navanakorn Electricity Generation expansion phrase, Xayaburi Power and Nam Lak 1 Power) will be fully operate. The committed capacity will be 1,940 Equity MW Electricity and 1,585 tons/hour Steam. As of 2017, PTT Group is major customer, followed by EGAT and other industrial customers.





**Figure 1.3 GPSC Subsidiary and Investment Structure**  
 Source: GPSC Annual Report 2017



**Figure 1.4 GPSC Sales by customers**  
 Source: GPSC Annual Report 2017

### **1.2.2 Investment Opportunity**

GPSC invested in 24M Technologies, start-up battery business in USA, is the company diversification investment for battery cell, newly designed for factory which will reduce cost of energy storage by 50% and improve continuity and security of electricity system. R&D is still in progress but at the commercial production start GPSC will gain the opportunity advanced battery with lower cost and gain in Thailand competitive advantage.

### **1.2.3 Merger & Acquisition**

In 2018, PTT signed share purchase contract of Glow Energy Plc, second rank in term of assets size in Thailand power industry, the company listed in SET with major share hold by Engie SA, giant French electricity utility company operating in multination. The deal is to purchase all 69.11% share from Engie SA and purchasing rest share by tender offering. Post-merger, GPSC power generating capacity will be third rank in industry with increasing about triple times from committed Electricity from 1,940 MW to 4,835 MW also with higher steam capacity from 1,585 tons/hour to 2,791 tons/hour. Moreover, the acquisition has potential of high synergy benefit of resource, efficiency, capacity, cost saving and diversification of both power source and customer profile. However, the deal is under Energy Regulatory Commission consideration, the concern is on impact of merger, where GPSC may become monopoly electricity producer in Rayong province.

## **1.3 Macro-Economic Analysis**

### **1.3.1 Macro outlook support industry growth**

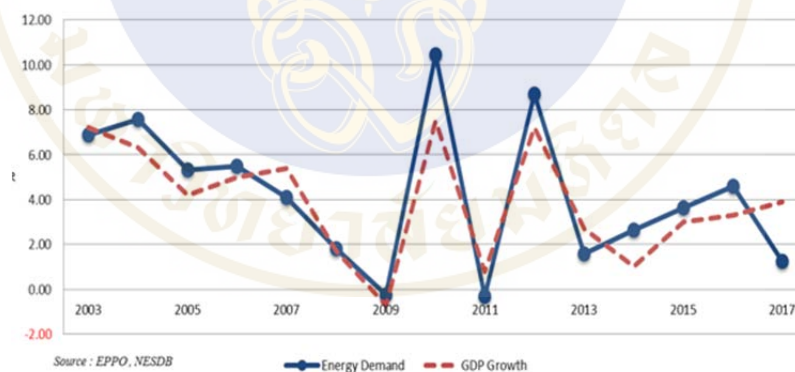
Thailand's gross domestic product (GDP) published from the Bank of Thailand measure the performance of Thailand's economy. The growth percentage from 2018 to 2019 forecast 4.4% and 4.2%. The inflation rate forecast from Monetary Policy Report 2018 target increase from 1.1% to 1.2% respectively. Thai consumer price will slightly increase in next two consecutive year.

**Table 1.2 Thailand's Economic Information**

%	2018	2019
GDP Growth	4.4	4.2
Inflation	1.1	1.2

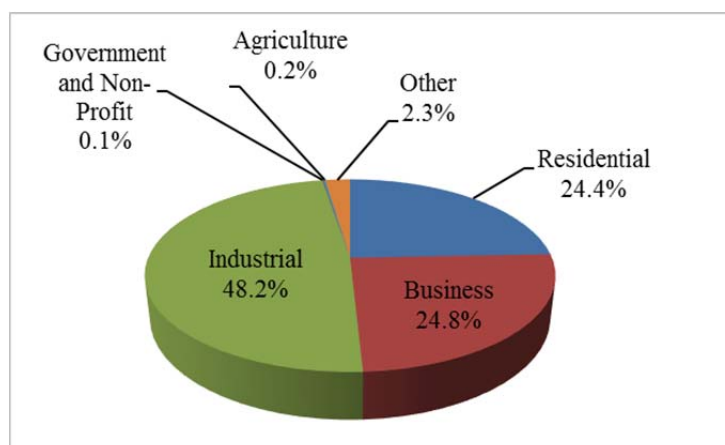
Source: BOT

The correlation between economic growth (GDP) and Energy demand consumption in Thailand (Figure 1.5 Correlation between Economic Growth and Energy Demand) shown the energy consumption over the year 2003 to 2017 trends along with the GDP growth rate, on average the energy consumption growth rate is higher than GDP around 1-1.5 times. In 2017 Energy consumption is lower than the GDP growth rate illustrate from power generated by own household and the technology of machine can work more efficiently consequently to less power consumption from year 2016 to 2017. The GDP growth are the factor are driven the growth of energy demand in Thailand. From the GDP growth target 4.4% in the year 2018, the energy demand tends to increase along with upturn along with economic growth.

**Figure 1.5 Correlation between Economic Growth and Energy Demand**

Source: EPPO, NESDB

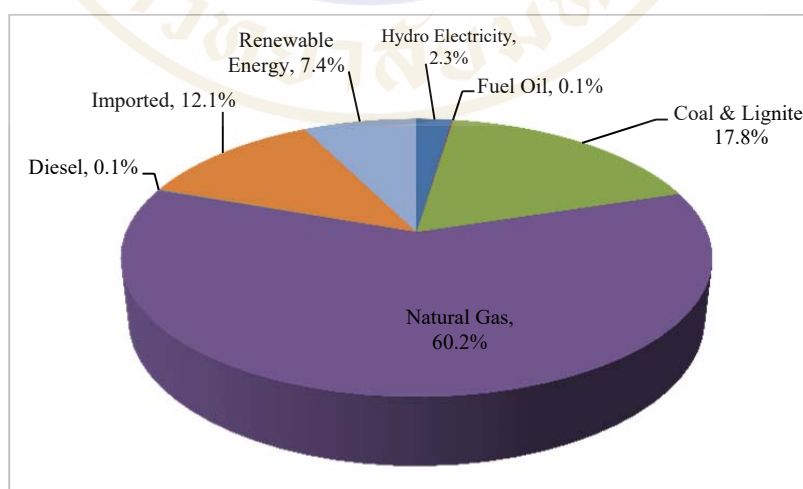
From the energy consumption by sector from the year 2017 (Figure 1.6 The Electricity consumption by Sector, 2017), the most power consumption from the industrial sector in 48%, the second is business sector 25% and the residential sector 24% in total.



**Figure 1.6 The Electricity consumption by Sector, 2017**

Source: EPPO

Thailand power generation classified by fuel type Natural gas is the most power source used in the country for 60% (Figure 1.7 Power Consumption Classified by Fuel Type) from gas fired power plant from natural gas came from gulf of Thailand. In the short term the natural gas from gulf of Thailand will out of order in next 4-5 years. The import natural gas supply from Myanmar will be used to compensate for power generated. The second is power generated by the coal fired from thermal power plant. The third one is renewable energy 7.43% outlook to be increased from the expansion of solar, biomass and wind energy.

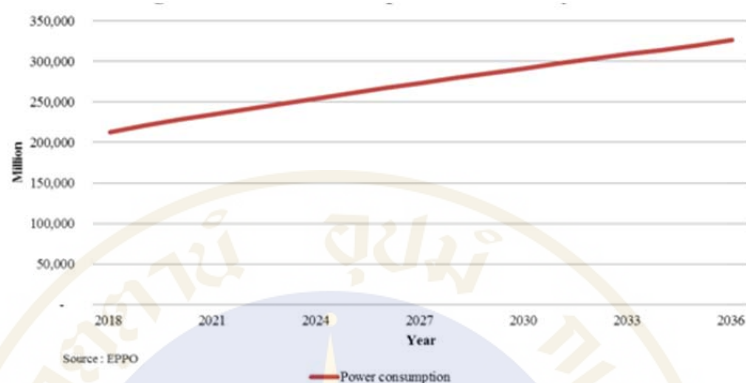


**Figure 1.7 Power Consumption Classified by Fuel Type**

Source: EPPO

### 1.3.2 Forecast of power consumption growth

From 2018 to 2036 the power consumption tends to increasing linearly on average 2.67% with 326,000 million unit (Figure 1.8 Power Consumption Forecast by Unit). The government policy supports the demand as per following,



**Figure 1.8 Power Consumption Forecast by Unit**

Source: EPPO

#### 1.3.2.1 Electric vehicle (EV)

The increase of electric vehicles in Thailand caused more the power consumption. The more power reserved and transmission system project will initiate to support the electrical used.

#### 1.3.2.2 High Speed Train

High speed train projects from Bangkok to Nakornrachasima, Pitsanulok, Hua-hin and Rayong. Once projects on an operated the power consumption will use from the high speed train station over the country.

#### 1.3.2.3 EEC (Eastern Economic Corridor)

The projects initiate in eastern of Thailand, the power consumption used for the base properties such as sea port, double track railway, high speed train and high way. Other from the industrial unit from the new manufacturer of electric vehicles, electronic manufacturer, petrochemical and refinery. Also, the research and development (R&D) projects from Digital park and EECi projects (Eastern Economic Corridor of Innovation).

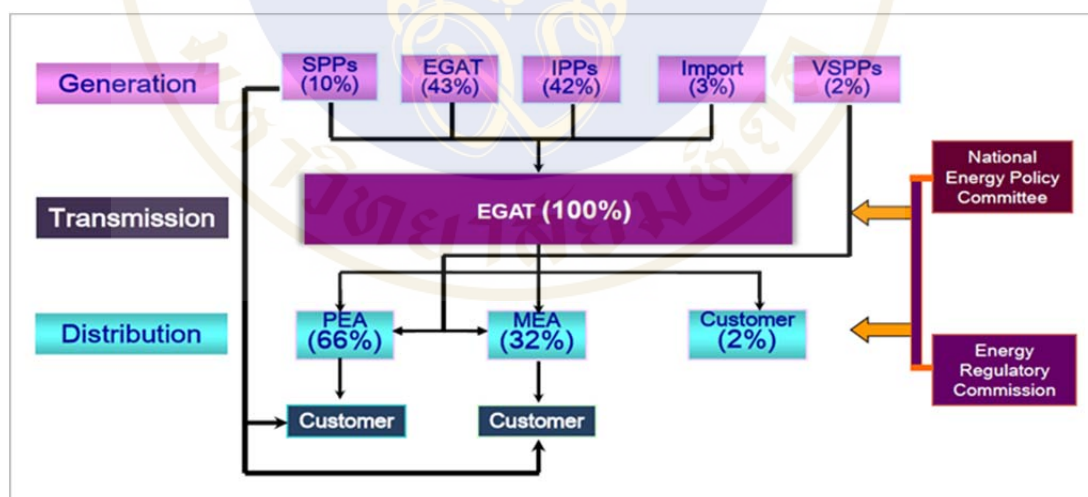


## 1.4 Industry Analysis

### 1.4.1 Thailand Power Industry

The Thailand power business is owned by Ministry of Energy and manages via the National Energy policy Council (NEPC). The NEPC responsible for purpose the energy policy, energy management and development plan and approve by the government cabinet. Along with establish the tariff structure for energy sales in Thailand. Once the Energy Industry Act, B.E.2550 (2007) established; the independent organization, Energy Regulatory Commission (ERC) has initiated and responsible in issue the regulation, procedure and condition to control and regulated the energy industry via the government.

The power generation is owned by Electricity Generating Authority of Thailand (EGAT) which operate by Enhanced Single-Buyer Model (ESB). The power generates then produce via transmission line and distribute thorough the Metropolitan Electricity Authority (MEA) 32% for Bangkok, Nonthaburi and Samutprakarn province and other provinces in Thailand distribute by Provincial Electricity Authority (PEA) 66% and Household customer generated and sell to PEA (2%).



**Figure 1.9 Power Industry Structure in Thailand**

Source: EGAT

#### 1.4.1.1 Thailand Power Supplies Type

- **Small Power Producer (SPP):** A smaller power producer has the generated maximum capacity more than 10 MW and less than or equal to 90 MW. SPP sell electricity to EGAT with firm and non-firm agreement contract (Power Purchasing Agreement; PPA). Furthermore, sell electricity, steam and utility water to industrial customer (IU). SPP use natural gas as fire sources.

- **Power generated by EGAT:** EGAT owned the generation fleets consisted of Thermal power plan, Combined cycle power plant, hydropower plant, renewable power plant and diesel power plant.

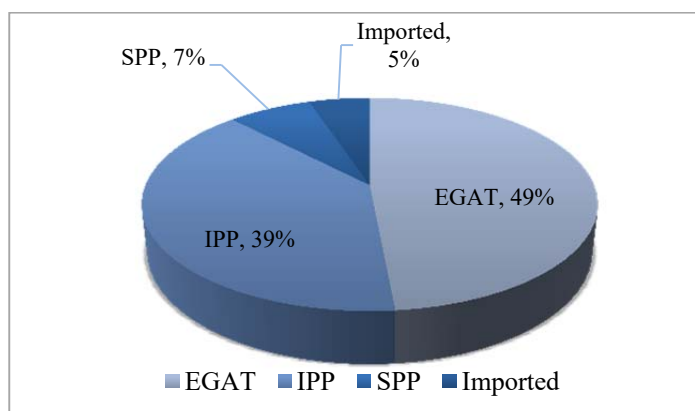
- **Independent Power Producers (IPP):** A large power producer has the generated maximum capacity more than 90 MW. They obliged to sell the electricity to EGAT. Power Purchase Agreement (PPA) for their entire output. IPPs use natural gas or coal as fire sources.

- **Power import:** Import power from neighboring country, Lao and Malaysia via transmission line.

- **Very Small Power Producer (VSPP):** A very small power producer has the generated maximum capacity less than 10MW. From the small capacity, VSPP generated electricity for own use and sell excess to EGAT. VSPP usually use renewable energy or waste material as their source.

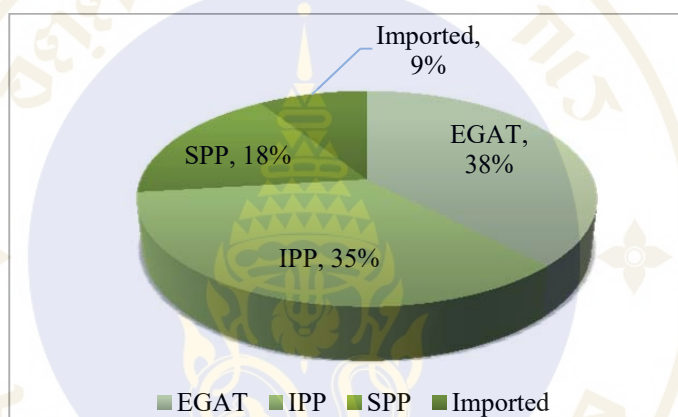
#### 1.4.1.2 Thailand Installed Power Capacity

In 2017, Total 84,867 MW power mainly consisted of EGAT (38%), IPPs (35%) and IPP (18%). The comparison between year 2017 and 2010 shown the ratio of SPP increased significantly from 10% to 18% from the EGAT strategy increase the target of buying the electricity from private firms.



**Figure 1.10 Installed Generating Capacity by Plant Type 2010**

Source: EPPO



**Figure 1.11 Installed Generating Capacity by Plant Type 2017**

Source: EPPO

## 1.4.2 Natural gas outlook

### 1.4.2.1 Natural gas consumption and production

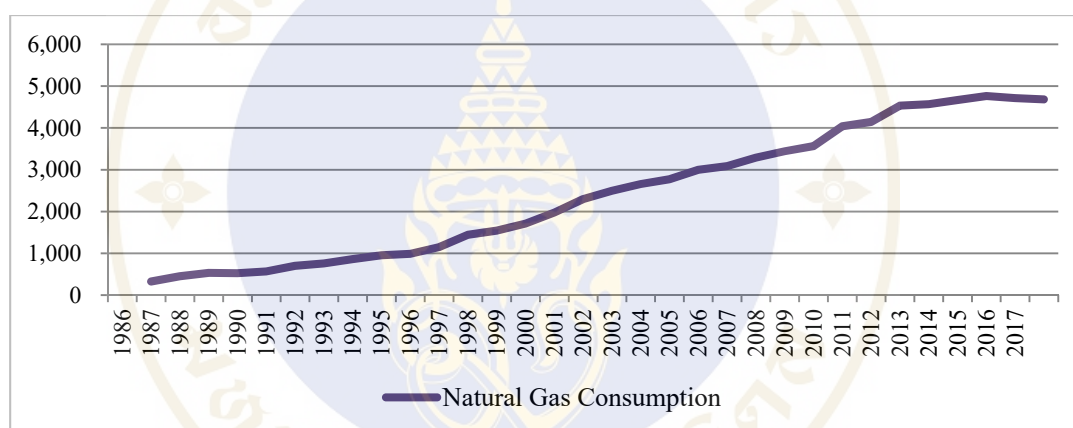
Major power generation of GPSC's is relied on fueled by natural gas both domestic and overseas. The domestic was distributed from the pipelines system and overseas was transported then storage in form of the liquid natural gas (LNG). Since year 1984 Thailand started production natural gas from "Erawan field" in gulf of Thailand, natural gas consumption in Thailand increased from 326 to 4,682 MMsCFD. The increment came from the escalating global petroleum prices and government subsidies to use the natural gas vehicle (NGV) also include the use of household in form of liquid natural gas (LNG).



The natural gas consumption brought from the electricity generation in total 58%. The second consume is gas separation plant (GSP) 21% which are predecessor of the petrochemical industry and liquefied petroleum gas (LPG) or cooking gas. The third one consumes for industry use 15% and NGV use for vehicle 5%.

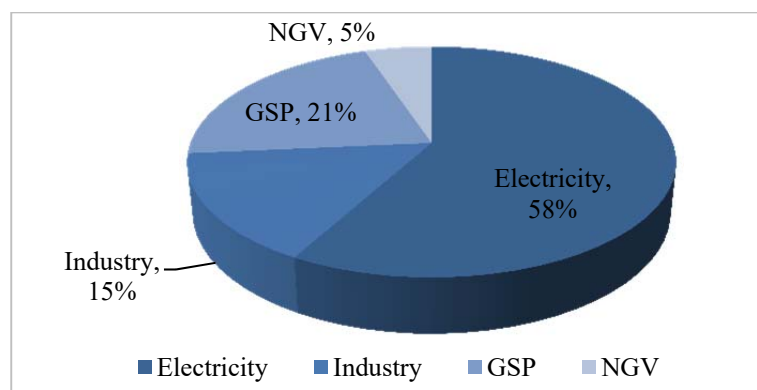
The source of natural gas separated between domestic supply from the production in gulf of Thailand (73%) and Andaman Sea. The import (27%) is from the neighborhood country Myanmar from the pipelines and import in form of Liquid Natural Gas (LNG) oversea.

GPSC use the natural gas approximately 98% of their power capacity as fueled product from the purchase both domestic through the pipelines system and the import oversea of LNG.



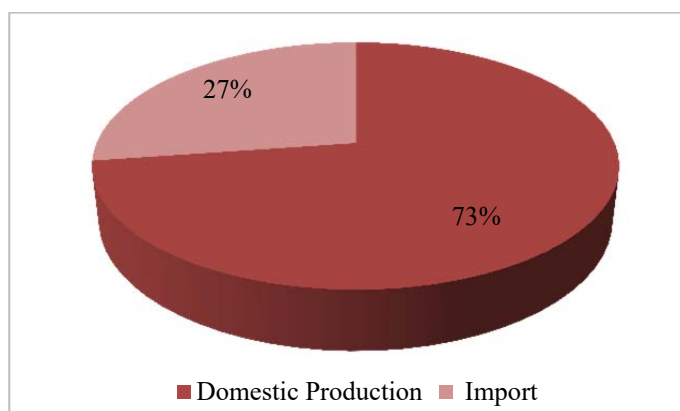
**Figure 1.12 Natural Gas Consumption: MMCFD**

Source: EPPO



**Figure 1.13 Natural Gas Consumption by Sector year 2017**

Source: EPPO



**Figure 1.14 Natural gas Production and import year 2017**

Source: EPPO

#### 1.4.2.2 Natural gas price structure

Refer from Electricity Policy and Planning Officer (EPPO), the natural gas price structure is regulated by the Energy Industry Act 2007 under the EPPO in the Ministry of Energy. The law structure the rules of the transmission, distribution, wholesale and retail sale of natural gas. The wholesale gas price use as raw material procurement of GPSC used following formula,

$$P = WH + S + T$$

Where

P = Natural gas price in Thai baht per million of BTU.

WH = Wellhead gas price from contract agreement between the producer and PTT by using the pool gas price that is the weighted average of wellhead price of the gas source from the Thai gulf production (Unocal, Bongkot, Chevron, Pailin, Arthit and JDA) and the second is the price of Myanmar (Yadana, Yetagun, Zawtika) and the third is the LNG imported plus terminal tariff price.

S = the marketing margin from the EPPO. The current rate is 1.75% and not higher than 2.1525 THB / mBTU for sales to IPPs firm and EGAT and 9.33% and not higher than 11.4749 THB / mBTU for SPPs. firm.

T = the transmission tariff from the EPPO. The tariff structure calculated from - Commodity Charge; Tc (component to cover variable cost.) + Demand Charge; Td (component to cover fixed cost by separate into zone1 to zone5 from the distribution pipeline use.)

From historical natural gas pool price, from 2008 – 2018, price growth at CAGR 0.18%.

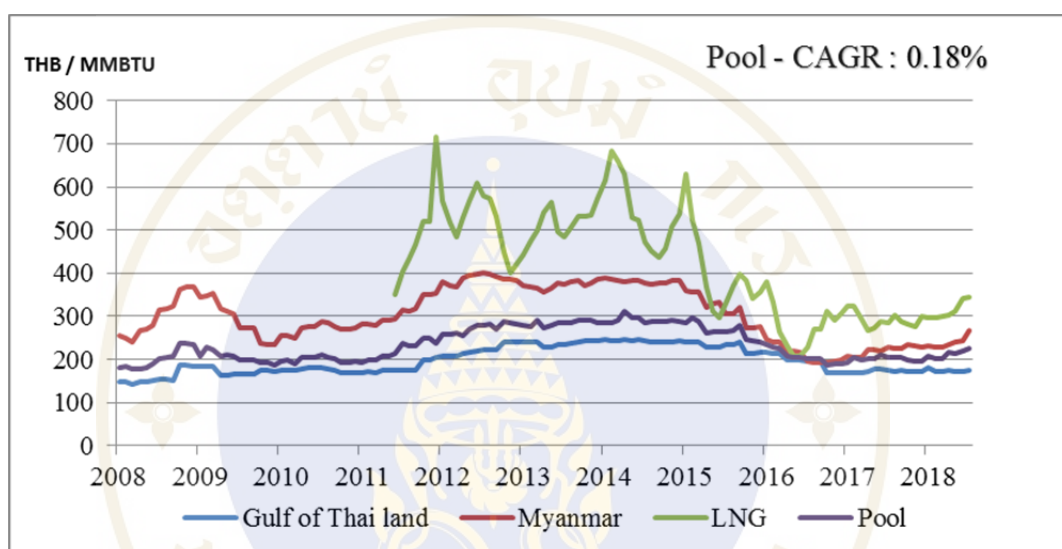


Figure 1.15 Natural Gas: Price Pool

Source: EPPO

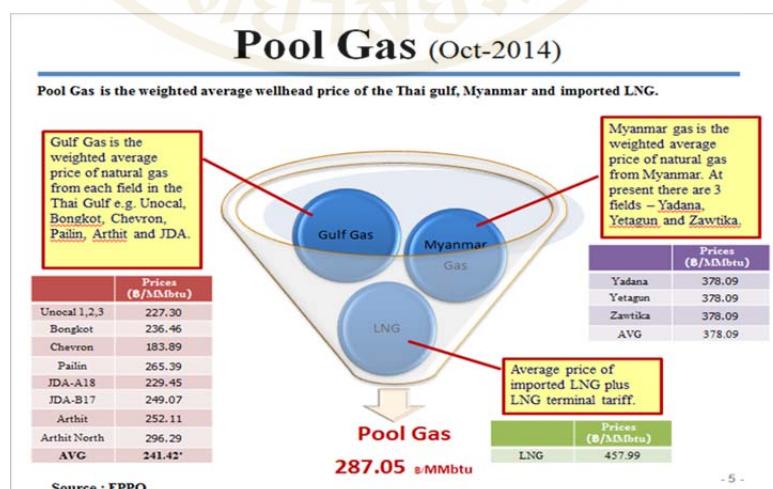
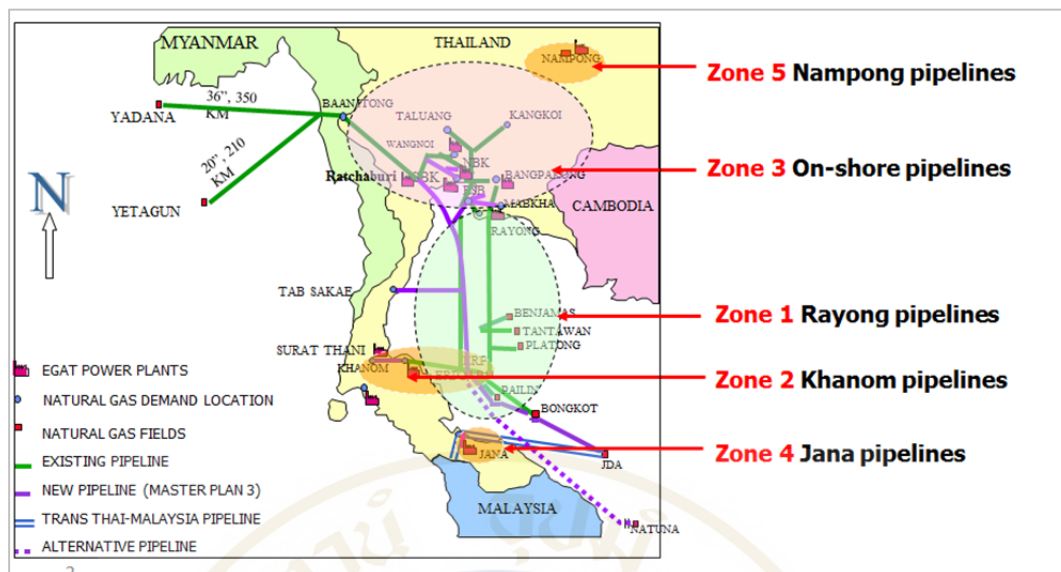


Figure 1.16 Pool Gas Structure

Source: EPPO

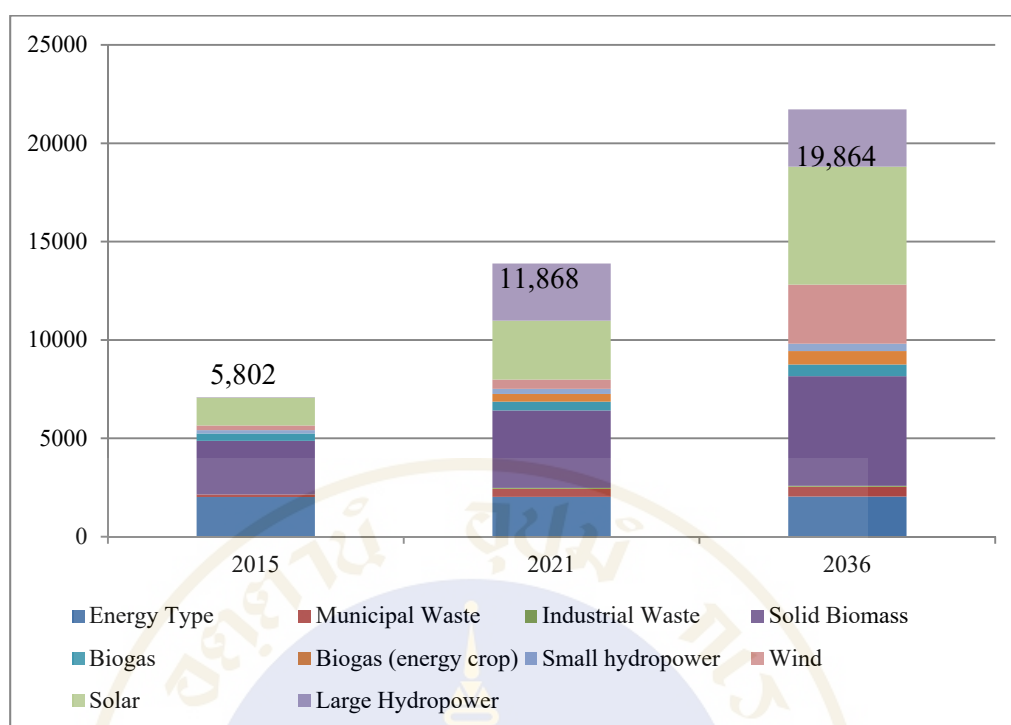


**Figure 1.17** The Transmission tariff: Demand charge ( $T_d$ ) separate by Zone 1 to Zone 5

Source: EPPO

### 1.4.3 Renewable situation outlook

The electricity generate by renewable energy are the important capacity of renewable energy. From Alternative Energy Development Plan (AEDP 2015) target to increase in capacity of power generated from renewable energy. In figure 7 shown actual in the year 2015 total capacity 5,802 MW and target to increase to 11,868 MW and 19,864 MW in the year 2036 respectively. The majority increase in Solid Biomass, Solar and Wind power. This energy policies are enhanced the country secured and sustained by diversifying against the natural gas and coal that can adverse impact on production and depend on consumable fossil product.



**Figure 1.18 Renewable energy use and AEDP Target (Capacity MW)**

Source: AEDP 2015

#### 1.4.4 Tariff Structure

The energy industry's tariff structure specific for power plant are regulated by the independent organization; Energy Regulatory Commission (ERC) through the EGAT, MEA and PEA. The Power Purchase Agreement award and the agreed rates based on power producer type as per following;

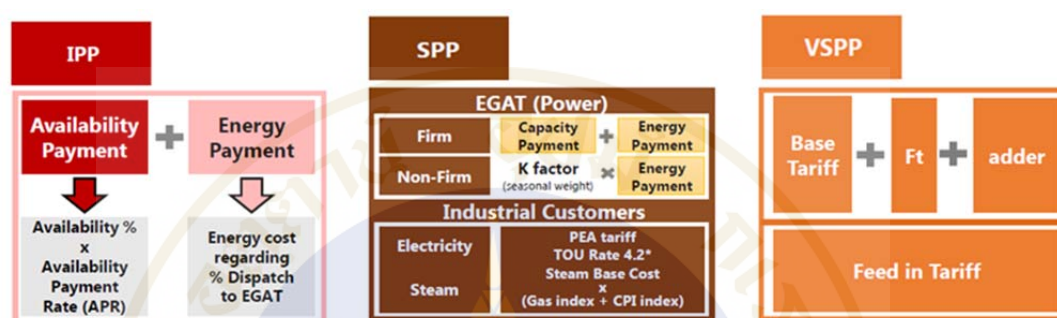
Independent Power Producers (IPP) Rates and pricing comprised of Availability Payment and Energy Payment. Availability payment (AP) is the price paid for the power plant maintains their production with no disruption. The price compensates paid for cost for plant construction called "APR1" and cost for expense in operation and maintenance (called "APR2"). The second portion is Energy Payment (EP) paid for the power plant production from their variable cost.

Small Power Producer (SPP) Prices can breakdown into firm and non-firm agreement pricing. The firm agreement contract is agreed fix production capacity with EGAT with the specific of time (5 years or more). The cost structure same as IPP with Availability Payment (AP) and Energy Payment (EP). The second type is Non-Firm agreement pricing determined for fix production volume but the cost only Energy payment



usually specific for renewable energy power plant which not maintain the operation. For SPP sell the electricity to Industrial customer (IU), the pricing rate based on the PEA prices refer to Ft rate. For other utilities (chilled water steam, etc.) the price based on actual cost of production difference between agreement with each customer.

Very Small Power Producer (VSPP) Prices agreement based on base Tariff from EGAT plus with the Ft rate and plus adder for renewable energy production.



**Figure 1.19 Tariff Structure**

Source: PEA, GPSC Annual Report 2017

## 1.5 Competitors Analysis

### 1.5.1 Capacity

In 2017, GPSC electricity capacity is 1,509 MW which benchmark with other company in the power industry sorting by electricity capacity, GPSC ranking is on 8th. The highest power capacity in the segment is GULF which has 11,126 MW in gross capacity. The natural gas is used as the main source of power for GPSC, EGCO and GLOW. The other company fueled by the gas, coal and renewable energy. GPSC's capacity considered to about to increase in total 1,922 MW by 2020. The capacity breakdown by type of license is IPP 48%, SPP 31%, Renewable and Hydro 21%. Subsequently to ranking of capacity of GPSC compared with other company will be increase from 8th to 5th of 10 companies. The disadvantage of less capacity of GPSC, is compensating with it's by products (steam, industrial water and chill water) sold to industrial customers, getting back in equals battle by increasing revenue and switching cost.

**Table 1.3 Capacity by Power industry**

Company	Electricity (MW)	Steam (Tons / Hour)	Industrial Water (Cu.m/Hour)	Chill Water (RT)	Source of power	Investment Country
GULF	11,126* (by 2017) 4,773* (by 2024)	317	-	7,800	Gas Renewable *Gross capacity	Thailand
RATCH	7,577	-	-	-	Gas 83% Coal 11% Renewable 6%	Thailand, Lao, Australia, China, Indonesia
EGCO	4,574	-	-	-	Natural Gas 49% Coal 32% Renewable 19%	Thailand, Lao, Philippine, Indonesia, Australia
GLOW	3,207	1,206	5,482	3,400	Natural gas 47% Coal 35% Water 9% Renewable 9%	Thailand, Lao
BGRIM	2,518	-	-	-	Gas 88% Renewable 12%	Thailand, Lao, Vietnam, Cambodia
CKP	2,160*	-	-	-	Hydro 88% Gas 11% Renewable (Solar) 1% *Gross Capacity	Thailand, Laos
BPP	2,068 MW by 2017 2,789 MW by 2025	-	-	-	Coal 96% Solar Renewable 4%	Thailand, Lao PDR, China and Japan
GPSC	1,509 by 2017 1,922 MW by 2020	1,585	2,080	12,000	Natural Gas 96% Solar Renewable 4%	Thailand, Laos, Japan and USA
BCPG	1400	-	-	-	Renewable 100% Solar, Wind, Geothermal, Hydro, Biomass	Thailand, Japan, Philippine, Indonesia
GUNKUL	546.1*	-	-	-	Solar 59%, Gas 2% Renewable Wind Farm 31% Solar 8% *Gross Capacity	Thailand, Laos, Myanmar, Japan

Source: Thomson, SET

### 1.5.2 Diversify Asset portfolio (Source of power, Renewable Power Plant)

GPSC invested overseas to diversify assets portfolio. GPSC major operation is in Thailand with Natural Gas resource from PTT (its parent company). Two plants in Lao are both Hydro plants. For renewable power, which is expected for high growth in the future, GPSC currently invested in 3 Plants in Thailand and 1 in Japan. US investment is for the other business as R&D for battery, expecting for better efficiency and advantage over other in the industry. Similar to GPSC, Other company in the segment are invested in overseas country (Lao, Japan, Vietnam, Cambodia, PDR, Philippine, Indonesia and Myanmar) except Gulf only based in Thailand. Their portfolio also contained other source power to diversify their company such as the renewable energy from wind, solar and biomass.

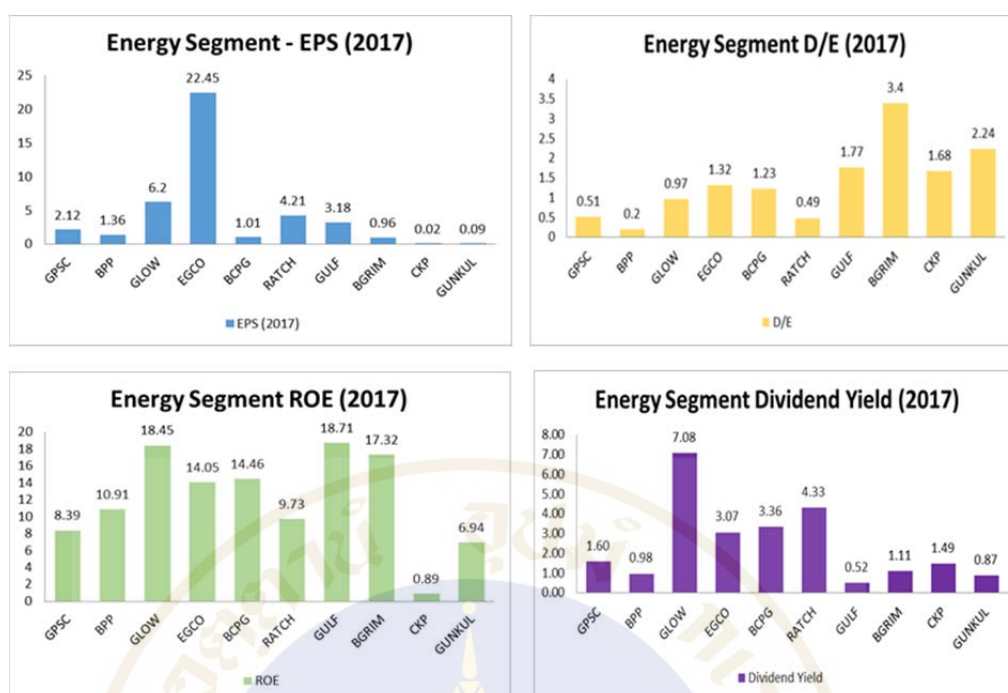
### 1.5.3 Strength in Supply Chain

GPSC supply chain is strong from its parent company. More than domestic gas supply, PTT strengthen its natural gas supply chain by long-term gas purchasing contract from Myanmar, Malaysia and Qatar. PTT get big benefit of being the only one company get the right of import from Qatar, who is the world largest gas exporter. GPSC as the purchaser can reduce risk of raw material shortage along with lower cost advantage. In contrast, the power plant use coal as source of power will be facing the risk of undeliverable coal from long-term contact supplier. Moreover, coal-fired power plant is facing with environment issue in Thailand, protest by surrounding resident in Krabi province. The effect is not just about the operation and revenue but big issue is reputation risk, the problem is hard to solve and even hard to bring back its credit.

### 1.5.4 Profit & Return on Investment

Figure 1.20 Financial performance comparable company, shown the benchmark between the energy companies in stock market. BCPG company is highest the net profit margin than other firm with 45.93% from their use of renewable energy 100% as the source of power. Glow Company is the paid highest dividend yield in the industry for 7.08%. From the financial performance the highest earning per share is EGCO 22.45 compare to other company in the industry are in range between 0.09 and 0.62. The return on equity (ROE), Glow, Gulf and BGRIMM have the highest range in the segment with the average ROE 12, GPSC located in the lower bound compare from the ratio 8.9 below the average ROE. For the debt per equity ratio, BPP has lowest in the peers and GPSC and RATCH have the low D/E from their less financial leverage.





**Figure 1.20 Financial performance comparable company**

Source: Thomson Reuter

## 1.6 Relative Valuation

### 1.6.1 Investment Summary

We issue a Hold recommendation on Global Power Synergy Public Company Limited with December 31, 2018 target price THB 49.64. Since the price within the holding bound from current market price THB 55.00 per share. From the relative valuation method by assuming the peer company with similar business and market value. We selected Forward P/E multiples to determine target price and earning per share projected in next 12 months. From the P/E compared the peer analysis ratio with difference of each company revenue structure, capital structure, future performance. Furthermore, the revenue forecast in the year 2019 slightly increase from 4,995 to 5,072 million THB relative to steadily EPS and subsequently to lower value than the current price.

### 1.6.2 Market Comparable Approach

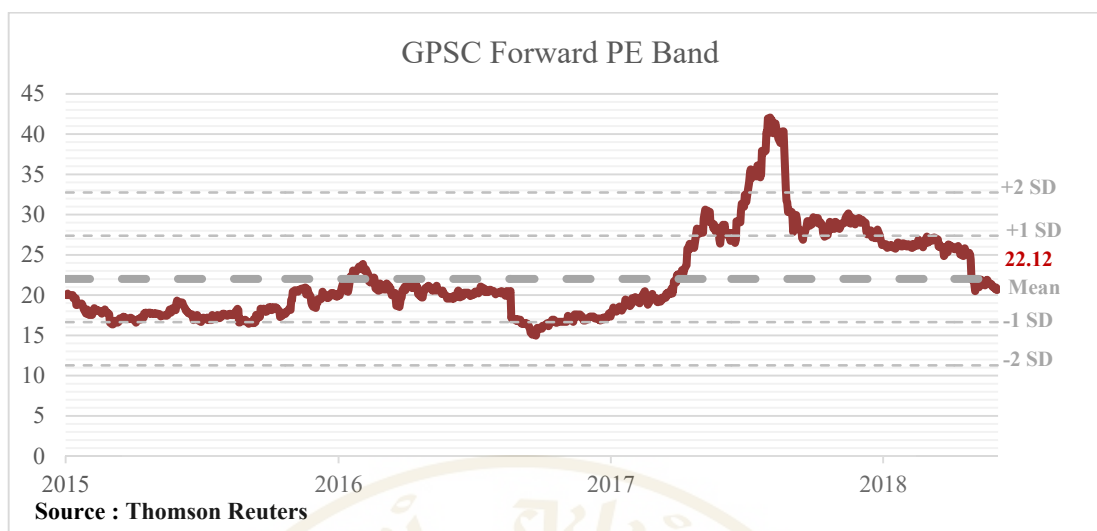
The relative valuation method we selected the multiples of price-to-earnings ratio (P/E), Forward price-to-earning ratio (forward P/E), price-to-book value (P/BV) and enterprise value-to-earnings before interest, tax, depreciation and amortization. (EV/EBITDA). These relatives use to calculate back into the target company stock price with. the benchmark values from these four selection multiples and selected the forward P/E multiple as the based case.

### 1.6.3 Trailing P/E and Forward P/E Band

Trailing P/E and forward P/E bands of GPSC shown the historical patterns in Figure.16. The daily and forward P/E date range between 18May2015 to 23 Nov 2018. The trailing P/E equal to 22.92 and means 24.11 which lower band between at -1 and upper band at higher than +2 standard deviations. Forward P/E equal to 22.12 and means 22.10 which lower band and upper band positioned at -1 and upper band at higher than +2 standard deviation.



**Figure 1.21 GPSC Trailing and Forward PE Band**



**Figure 1.21 GPSC Trailing and Forward PE Band (cont.)**

#### 1.6.4 Peer Analysis

Peer analysis: Before selected peer (9 companies)

We Select the peers from Stock Exchange of Thailand (SET) in power energy sector group. The 9 comparable companies have different in investment policy, revenue structure, market capitalization and accounting policy. The company performance and ratio use to benchmark the equivalent of business sizing to use as the benchmark P/E. Then calculated the standard deviation of market capitalization with lower bound -1 and upper bound +1 standard deviation. The company within the range of lower bound and upper bound determine use as the benchmark P/E where remains 6 companies. After that the value selected based on the Peer Median

Table 1.4 Peer Analysis before selected peer

Identifier	Company Market Cap (Millions, THB)	Net Debt Incl. Pref.Stock & Min.Interest (F10, THB, Millions)	Price Close (THB)	Enterprise Value (Daily Time Series) (Millions, THB)	Net Debt / Equity, LTM	ROE (%)	ROA (%)	LT Growth, Avg.	Net Profit Margin (%)	Dividend Yield (%)
GPSC.BK	82,656.49	15,453.79	55.00	97,860.33	0.23	8.39	5.38	70.00	15.94	2.3
CKP.BK	36,961.77	39,195.77	5.00	76,045.77	1.17	0.90	0.27		2.31	0.4
GULF.BK	162,087.61	52,630.75	75.75	214,228.22	1.16	18.71	4.30	21.00	79.33	0.5
BGRIM.BK	67,331.28	54,252.89	25.75	121,380.56	2.28	17.32	2.57	17.72	6.76	1.1
BCPG.BK	34,848.82	12,750.55	17.40	47,493.99	0.59	14.46	7.00	1.19	60.68	3.6
GUNKUL.BK	23,067.48	22,190.42	3.10	45,188.15	1.10	6.88	2.25		13.33	1.4
GLOW.BK	128,755.75	38,907.91	87.75	167,274.31	0.46	18.45	8.40	-2.60	17.84	5.4
BPP.BK	72,222.50	6,204.12	23.60	78,208.23	-0.01	10.91	9.17	9.45	64.72	2.6
RATCH.BK	70,538.30	16,802.12	48.50	87,127.12	0.11	9.73	6.41		14.54	4.8
EGCO.BK	124,094.52	56,199.31	235.00	179,918.59	0.52	14.05	5.95	3.00	39.37	4.0
STD	45,349.22	18,973.50	68.57	57,813.91	0.69	5.72	2.83	24.88	27.52	1.77
STD+I	128,005.71	34,427.29	123.57	155,674.24	0.91	14.11	8.21	94.88	43.46	4.03
STD-I	37,307.27	-3,519.71	-13.57	40,046.42	-0.46	2.67	2.55	45.12	-11.58	0.50

**Table 1.5 Peer analysis: Selected peers (5 companies)**

Identifier	Company Name	Trailing PE	Forward PE	Trailing P/BV	Forward P/BV	Forward EV/EBITDA
GPSC.BK	Global Power Synergy PCL	22.92	21.13	2.08	2.01	14.94
BGRIM.BK	BGrimm Power PCL	30.62	29.44	3.51	3.34	12.10
GLOW.BK	Glow Energy PCL	15.17	15.39	2.71	2.55	9.97
BPP.BK	Banpu Power PCL	19.30	13.94	1.81	1.69	36.40
RATCH.BK	Ratchaburi Electricity Generating Holding PCL	12.50	10.98	1.18	1.06	11.80
EGCO.BK	Electricity Generating PCL	5.25	5.71	1.23	1.16	17.61
	PEER AVERAGE	16.57	15.09	2.09	1.96	17.57
	PEER MEDIAN	15.17	13.94	1.81	1.69	12.10

### 1.6.5 Forecast EPS and EBITDA

We calculated the forecast EPS of current fiscal year (2018), forecast EPS of next fiscal year (2019) and EBITDA from the projected income statement use for determine stock price as of December 31th, 2018.

**Table 1.6 Forecast EPS and EBITDA**

	2013 (F)	2014 (F)	2015 (F)	2016 (F)	2016 (F)	2018 (F)	2019 (F)
<b>NI (million, THB)</b>	1,144	1,578	1,889	2,872	3,340	4,863	4,950
<b>Shares (million)</b>	1,498	1,498	1,498	1,498	1,498	1,498	1,498
<b>EPS</b>	0.76	1.05	1.26	1.92	2.23	3.25	3.30
<b>EBITDA (million)</b>	1,746	2,076	2,373	4,621	5,300	7,588	7,747

### 1.6.6 Rating Criteria

The rating recommendation on target stock is based on upside and downside of 10% from current market price. On November 23, 2018 price is at THB 55.00 per share. If the target price is more than 10% higher of current market price, BUY will be recommended. If target price is within bound of +10% or -10% of current market price,

HOLD will be recommended. If target price is less than -10% of current market price, SELL would be recommended.

### **1.6.7 Target price with forward P/E**

We selected forward P/E multiples and multiplied with forecast earning in next 12 months. The median of comparable P/E ratio is 15.17 and earning per share (EPS) forecast year 2019 is 3.30. In result the target price of December 31th is 46.06 THB.

Based on the rating criteria, the recommendation is SELL. The rationale of value of target price slightly declined from the close price 55 THB due to the peer median of forward P/E ratio use 13.94 less than the forward P/E ratio of GPSC 21.13, it is overvalue compared to the peer and the projected income statement.

This following target share value does not take the differences of each comparable company such as revenue structure, capital structure, future performance and future capacity into consideration, thus this valuation might not recommend as the accurate target value.

### **1.6.8 Target price with other multiples**

Trailing Price per Book Value Ratio (P/BV); the share valuation by the median of trailing P/BV from the comparable company equal to 1.81 multiplied with book value per share as of November 23th, 2018 which equal to 47.77 THB per share.

Forward EV / EBITDA; The share valuation by the median of forward EV/EBITDA from the comparable company equal to 12.10 multiplied with forecast EBITDA in year 2019 equal to 7,747 million THB then minus the debt 17,975 million and divided by the total of shares 1,498 million shares. In result equal to 50.57 THB per share

These following target share value does not take the differences of each comparable company such as revenue structure, capital structure, future performance and future capacity into consideration, thus this valuation might not recommend as the accurate target value.



**Table 1.7 Target price with other multiples**

Description	
Trailing P/E	15.17
Forward P/E	13.94
Trailing P/BV	1.81
Forward EV/EBITDA	12.10
Shares (Million)	1,498
Book value / share	26.39
Book value (Million)	39,540
Debt	17,975

Relative valuation	31 Dec 2018
Trailing P/E	THB 49.24
Forward P/E	THB 46.06
Trailing P/BV	THB 47.77
Forward EV/EBITDA	THB 50.57

	2018	2019
EPS	3.25	3.30
EBITDA	7,588	7,747

### 1.6.9 Sensitivity Analysis

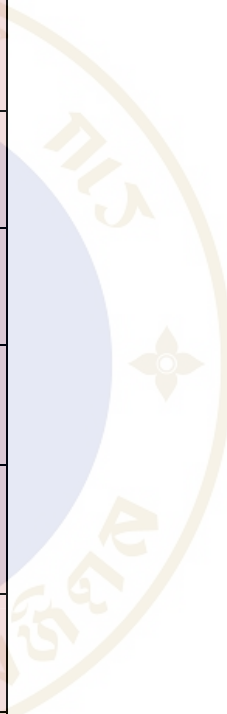
#### 1.6.9.1 Discount Rate and Terminal Growth

Sensitivity analysis were performed between 2 factors 1) Natural Gas Price Growth changing from pool gas price CAGR 0.18% 2) Revenue Growth of free cash flow from 2045 onward. The range is by the increase and decrease of 50% from current assumption, factors are very important effecting in share valuation. The share value sensitivity analysis is as below;

Table 1.8 Discount Rate and Terminal Growth Sensitivity

		Revenue Growth												
		0.18%	0.11%	0.09%	-50%	-40%	-30%	-20%	-10%	0%	10%	20%	30%	40%
Natural Gas price Growth	0.18%	฿46.06	0.00%	฿46.11	฿46.14	฿46.17	฿46.20	฿46.23	฿46.27	฿46.30	฿46.33	฿46.36	฿46.39	฿46.43
	-50%	0.09%	฿45.95	฿46.07	฿46.10	฿46.13	฿46.16	฿46.19	฿46.22	฿46.26	฿46.29	฿46.32	฿46.35	฿46.38
	-40%	0.11%	฿45.91	฿46.02	฿46.06	฿46.09	฿46.12	฿46.15	฿46.18	฿46.22	฿46.25	฿46.28	฿46.31	฿46.34
	-30%	0.13%	฿45.86	฿46.01	฿46.05	฿46.08	฿46.11	฿46.14	฿46.17	฿46.21	฿46.24	฿46.27	฿46.30	฿46.33
	-20%	0.15%	฿45.82	฿45.98	฿45.99	฿46.00	฿46.04	฿46.07	฿46.10	฿46.13	฿46.16	฿46.20	฿46.23	฿46.26
	-10%	0.16%	฿45.78	฿45.94	฿45.96	฿45.99	฿46.03	฿46.06	฿46.09	฿46.12	฿46.15	฿46.19	฿46.22	฿46.25
	0%	0.18%	฿45.74	฿45.90	฿45.92	฿45.95	฿45.98	฿46.02	฿46.05	฿46.08	฿46.11	฿46.14	฿46.17	฿46.20
	10%	0.20%	฿45.70	฿45.86	฿45.88	฿45.91	฿45.94	฿45.98	฿46.01	฿46.04	฿46.07	฿46.10	฿46.13	฿46.16
	20%	0.22%	฿45.66	฿45.82	฿45.84	฿45.87	฿45.90	฿45.93	฿45.96	฿45.99	฿46.02	฿46.05	฿46.08	฿46.11
	30%	0.24%	฿45.62	฿45.77	฿45.79	฿45.82	฿45.85	฿45.88	฿45.91	฿45.94	฿45.97	฿46.00	฿46.03	฿46.06
40%	0.25%	฿45.57	฿45.73	฿45.75	฿45.78	฿45.80	฿45.83	฿45.86	฿45.89	฿45.92	฿45.96	฿45.99	฿46.02	

Source: Calculation





### 1.6.9.2 P/E Ratio and Earning Per Share (EPS)

Sensitivity analysis were performed between 2 factors 1) P/E Ratio 2) Earning Per Share (EPS). The range is by the increase and decrease of 50% from current assumption, factors are very important effecting in value per share. The share value sensitivity analysis is as below;



Table 1.9 Natural Gas Price and Revenue Growth Sensitivity

	P/E	EPS										
		-5%	-4%	-3%	-2%	-1%	0%	1%	2%	3%	4%	5%
0.00%	46.06	3.22	3.25	3.28	3.32	3.35	3.39	3.42	3.45	3.49	3.52	3.55
-50%	7.33	23.58	23.83	24.07	24.32	24.57	24.82	25.07	25.31	25.56	25.81	26.06
-40%	8.80	28.29	28.59	28.89	29.19	29.48	29.78	30.08	30.38	30.68	30.97	31.27
-30%	10.26	33.01	33.36	33.70	34.05	34.40	34.75	35.09	35.44	35.79	36.14	36.48
-20%	11.73	37.72	38.12	38.52	38.92	39.31	39.71	40.11	40.50	40.90	41.30	41.70
-10%	13.20	42.44	42.89	43.33	43.78	44.23	44.67	45.12	45.57	46.01	46.46	46.91
0%	14.66	47.16	47.65	48.15	48.64	49.14	49.64	50.13	50.63	51.13	51.62	52.12
10%	16.13	51.87	52.42	52.96	53.51	54.05	54.60	55.15	55.69	56.24	56.78	57.33
20%	17.60	56.59	57.18	57.78	58.37	58.97	59.56	60.16	60.76	61.35	61.95	62.54
30%	19.06	61.30	61.95	62.59	63.24	63.88	64.53	65.17	65.82	66.46	67.11	67.75
40%	20.53	66.02	66.71	67.41	68.10	68.80	69.49	70.19	70.88	71.58	72.27	72.97
50%	21.99	70.73	71.48	72.22	72.97	73.71	74.46	75.20	75.94	76.69	77.43	78.18

Source: Calculation

## 1.7 Financial Analysis

The financial analysis shown the information of income statement, financial position, common size analysis, trend analysis and financial ratio between GPSC and Banpu Power Public Company limited (BPP). The power sector competitors which have equivalent business sizing. All information refer to chapter II.

**Income Statement.** The income statement benchmark between GPSC and BPP,. In the year 2017 total revenue from sale and rendering of serving and profit share of profit, GPSC is 19 billion higher than BPP 10 billion respectively. The total expense GPSC made higher cost of sale and rendering service 16 billion compare with BPP is 4 billion, subsequently to net profit of BPP is 4.2 billion higher than GPSC 3.3 billion.

**Statement of financial position,** In the year 2017, GPSC has larger in term of total asset, the current asset has 9.9 billion , non-current asset 50 billion and total asset 59.9 billion. BPP has current assets 4.3 Billion, non-current assets 43.3 billion and total assets 47.7 billion. In term of liabilities GPSC has larger total liabilities, the current liabilities 4 billion, non-current liabilities 15.5 billion and total liabilities has 19.5 billion. The large liabilities of GPSC came from the long term borrowing from financial 9.8 billion. BPP has current liabilities 5.2billion, non-current liabilities 2.7 billion and total liabilities 7.9 billion. The large liabilities came from short term and long term borrowing. In term of equity, GPSC has larger equity at 40 billion compare to BPP 39 billion respectively.

**Common size analysis.** In the year 2017 GPSC income statement comparing the gross profit BPP has higher gross profit 24% and GPSC has 18%. GPSC has higher the cost of sale and rendering service equal to 85% compare with BPP 76%. The net profit for the year BPP has higher, equal to 65% and GPSC has 17%. In term of common size of financial position, the current asset of GPSC is 17% major from cash and trade account receivable. The non-current asset is 83% the significant common size from property, plant and equipment. BPP has current assets equal to 9.1% significant items from cash, trade account receivable. The BPP total non-current assets equal to 90.9% from investment in joint ventures 38.6% and PPE 25.1%. In term of liabilities and equity. The current liabilities equal to 7% and non-current liabilities 26%, the significant common size from long term borrowing 16% and debentures 8%. Compare with BPP, the current liabilities equal to 10.9% significant from short term borrowing 4.9%. Non-current liabilities 5.7% from the long term borrowing. In term of equity GPSC equal to 67%

significant from share capital 50% and retained earnings 24%. Compare to BPP equity common size equal to 83.4% majority from Share capital 65.1% and Retained Earnings 11.6%.

Trend Analysis , The income statement of GPSC has revenue from sales increase grew 78% lower than the competitor BPP grew at 114% in the year 2017, but the Net Profit GPSC has higher growth at 292%% compare to BPP at 145% due BPP has high in proportion of Cost of Goods Sold and SG&A. In term of the CAGR, GPSC has 31% higher than BPP has only at 20.5%. The trend analysis of statement of financial position, the asset side, GPSC has increase in cash and cash equivalents to 62% and Trade account receivable increase to 73%. BPP has increase in cash and cash equivalent to 97,377% from long term liabilities and trade account receivable to 103%. The non-current asset GPSC has increased the property, plant and equipment to 150% and investment in associates to 354% from their new power plant and the investment in Associates Company respectively. The BPP also has increase the property, plant and equipment to 203% and the investment in associates and Joint ventures company increase to 209%.

The liabilities trends, GPSC has increase the trade account payable to 52% and the long-term loan decrease to 44%. The BPP has increase in Short-term loan to 517% and other current liabilities increase to 105%. The equity of GPSC, the share capital increase to 133% and Unappropriated retained earnings increase to 142%. The BPP also has increase in the Authorized Share Capital to 156% and Equity Attributable to equity holder increase to 360%.

Financial Return Ratio, in the year 2017 BPP gross profit margin equal to 55% higher than GPSC equal to 18%. GPSC has gross profit margin increase from 9% in 2014 to 18% in 2017. In result Return on Asset increase to 7%. BPP gross profit margin in 2015 slightly dropped from 56% to 55%, in result to Return on Asset dropped from 12% to 9%. Return on Equity of GPSC also increase from 6% to 8% and Return on Equity of BPP stable at 18% in 2017 from company maintain earning leverage and capital structure.

**Table 1.10 Financial Return Ratio**

<b>Global Power Synergy Public Company Limited</b>				
<b>Return on Asset</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Profit margin = (EBIT(1-Tb))/R	7%	8%	14%	17%
Gross Profit Margin = Gross Profit/R	9%	10%	16%	18%
Tax change =(1-Ts)/(1-Tb)	1.00	1.00	1.00	1.00
Tax management = (1-Ta)/(1-Ts)	1.23	1.19	1.19	1.16
TATO	0.55	0.45	0.36	0.34
<b>DuPont 's ROA</b>	4%	5%	6%	7%
<b>Return on Equity</b>	-			
Earning leverage (EL) (times) = NI/NOPAT	4%	5%	6%	7%
Capital structure lev. (CSL) = Avg.TA/ Avg.E	0.75	0.76	0.80	0.78
<b>Dupant's ROE</b>	6%	5%	7%	8%

<b>Banpu Power Public Company</b>			
<b>Return on Asset</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Profit margin = (EBIT(1-Tb))/R	34%	38%	34%
Gross Profit Margin = Gross Profit/R	56%	63%	55%
Tax change =(1-Ts)/(1-Tb)	1.00	1.00	1.00
Tax management = (1-Ta)/(1-Ts)	1.05	1.14	1.15
TATO		0.27	0.24
<b>DuPont 's ROA</b>		12%	9%
<b>Return on Equity</b>			
Earning leverage (EL) (times) =	0.77	0.83	0.77
Capital structure lev. (CSL) =	1.50	1.19	1.50
<b>Dupant's ROE</b>	18%	11%	18%

Source: Calculation

For financial Risk Ratio , GPSC has higher liquidity from the current ratio equal to 2.43 times compare with BPP equal to 0.84 times. In term of Cash Conversion Cycle (CCC), GPSC has 34.94 days which slightly lower than BPP 37.46 days. In term of solvency risk, the Debt to Equity ratio BPP has lower debt to equity equal to 0.20 times compare with GPSC has 0.39 times respectively from portion of long term borrowing. However its improvement from year 0.49 times in year 2015 to 0.39 in the year 2017.

**Table 1.11 Financial Risk Ratio**

<b>Global Power Synergy Public Company Limited</b>				
<b>SHORT TERM RISK</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Current Ratio</b>	1.57	3.58	2.78	2.43
<b>Quick Ratio</b>	0.69	2.51	1.86	1.04
RCP (Receivables Conversion Period)	63.79	49.17	45.80	55.18
ICP (Inventory Conversion Period)	6.33	6.92	9.08	10.50
PDP (Available Deferral Period)		38.22	32.48	30.74
CCC (Cash Conversion Cycle)	70.12	17.87	22.40	34.94
<b>SOLVENCY RISK</b>				
Debt to Equity Ratio	0.49	0.40	0.42	0.39
Debt to Total Assets Ratio	0.30	0.27	0.28	0.26
Interest Coverage Ratio	4.42	6.02	8.21	10.96

<b>Banpu Power Public Company</b>			
<b>SHORT TERM RISK</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Current Ratio</b>	0.36	1.20	0.84
<b>Quick Ratio</b>	1.67	8.89	9.19
RCP (Receivables Conversion Period)	-	40.88	37.68
ICP (Inventory Conversion Period)	-	45.34	36.52
PDP (Available Deferral Period)	-	29.59	36.75
CCC (Cash Conversion Cycle)	-	56.63	37.45
<b>SOLVENCY RISK</b>			
Debt to Equity Ratio	1.55	0.13	0.20
Debt to Total Assets Ratio	0.61	0.12	0.17
Interest Coverage Ratio	16.73	12.11	44.60

Source: Calculation



## **1.8 Investment Risks and Downside Possibilities**

### **1.8.1 Strategic and Business Risk**

#### **1.8.1.1 Investment Risk**

Investment in any project has its risk of not receiving its expected return. For electricity generator, single flagship investment with sole resource type is in risk. When unexpected event occurred, there will be no way out. To mitigate them, portfolio investment to diversify risk can be applied. GPSC invested in multi-location plants which reduce risk could be occurred within are, like flood. Resources can be diversified by mix of generating system such as solar, coal, hydro power, renewable energy, etc.

#### **1.8.1.2 Operational Risk**

Transmission and Distribution Network Failure GPSC's customers, EGAT and industrials, are highly relied on power generating from plants. The transmission and generating system are the critical point impact not only one GPSC cost and revenue but also effect on customers production. System and equipment are regularly scheduled for maintenance with cooperation of customers to avoid unfortunate deterioration. The efficiency with security can be ensured by applied international standard such as ISO, TPM, etc. The standard adaptation gives the minimum action to be taken care together with best practice guideline for GPSC.

#### **1.8.1.3 Safety Environment**

Power generating business has risk concerning on health, safety and environment of all stakeholders especially employees and neighboring community. The operating has risk in process while by product or waste have to be systematically managed. It is company responsibilities to recognize factors, possibilities and pay attention in conducting business.

#### **1.8.1.4 Construction and Project Management Risk**

GPSC investing in few projects which is constructing. Projects have risk in unable to achieve construction target as planned. Failure can happen from delay of materials delivery, construction operation, over-run of cost and etc. The miss-schedule may impact on expected revenue, expected funding to serve longer period and expected return from investors that consider higher risk.

#### 1.8.1.5 Single Supplier

Currently, GPSC domestic main resource is natural gas, receiving through Thailand distribution pipeline. GPSC has risk if gas delivery system fails. All domestic production will be in suspension condition. The recovery depends on central authority more than GPSC own authority. GPSC reduced risk by investing in alternative-fuel flagship which produced from other raw material like solar, water, or hybrid.

#### 1.8.1.6 Customer Concentration Risk

GPSC major customers are PTT group petrochemical and EGAT with share of 58% and 33%, respectively, industry customer (IU) considered to be just 8%. The concentration of customer has it risk that any downturn event like lower need of electricity because of lower petrochemical demand, or incident occurred in PTT petrochemical company located in same area, will significantly impact to GPSC revenue. In the same way, if EGAT capacity requirement decreased or EGAT transmission had any shutdown event, GPSC will lose its sales revenue. For IU, customers have long-term purchasing agreement but at the expiration there is risk of not renew. However, the possibilities of IU not renew is considered low from high switching cost including equipment, distribution system development, staff technical knowledge and waste time opportunity cost until overall operation is in condition.

#### 1.8.1.7 Climate Uncertainty

Resources of GPSC renewable-energy came from nature like solar farm and hydropower. Change of solar intensity and water volumes affect electric generation and sales income. Prior to investment, company could conduct research on potential site area to get appropriate statistic result supporting decision making.

### **1.8.2 Market and Financial Risk**

1.8.2.1 Resource price fluctuation: GPSC main fuel source for power generation is 96% on natural gas. The price fluctuation during time that will impact on profit margin from operation since sales price, Ft rate, is adjusted by Energy Regulatory Commission (ERC) every four month. Ft rate charged from customer not reflect to real cost. In time of fuel upward trend, there are chance of GPSC decrease in profit.

1.8.2.2 Foreign Currency Exchange Rate Risk: Currently, major transaction currency of GPSC is in Thai Baht because of all main flagships are operating in the country. So, the foreign exchange rate risk is low. The only foreign currency operating transaction is only Sriracha Power Plant. By the way, both revenue and expense of plant is in USD, so the risk is mitigated by natural currency matching. In few years, construction blueprint shows that there will be dividend income from investment in affiliate in Laos, Japan and USA that GPSC have to be aware and keep closely monitor on market. The risk can be hedge by financial instrument to mitigate or lowest the risk.

1.8.2.3 Interest Rate Risk: Global market interest rate is in upward trend from economic recovery where we can see signal from FED announcement to increase. In Thailand too, with in 2018, Monetary Policy Committee maintained policy rate at 1.5% but the opinion to raise more 0.25% coming more from members that increasing is foreseeable. Part of GPSC funds is from long-term financial institution loan. Where the interest rate can be fluctuated in the same way with market. Interest expense increasing impact on less profit. In 2017, the company managed this risk by issued debenture to investors in order to fix interest rate and repay part of floating rate loan. However, M&A deals on merging GLOW requires more fund. GPSC plans to raise from both capital from PTT group and by borrowing from money market which could be loan or offering new bond. The money market borrowing tends to be short-term repay back within 12 months. So, interest rate risk may not be high depends on GPSC efficient capital structure management.

### **1.8.3 Regulatory Compliance Risk**

GPSC operate under many regulators supervision such as Electric Generating Authority (EGAT), Energy Regulation Commission (ERC), Security and Exchange Commission (SEC), Revenue Department, and Local Law & Regulation of country invested. Under many regulations to be comply, non-complied actions will be suspected as law illegitimizing. The consequences are not only fine but could harm on company's reputation. Mitigating this risk is by set up compliance units. The unit specific function is to oversight all functions in the group to be strictly comply with applicable rules and regulation.

#### 1.8.4 Reputation Risk

GPSC business is relating to many stakeholders including resident around location, environment and NGOs. Quality of living and environment is sensitive for national. Company reputation has to be carefully supervise. In addition, it has Sustainability Alignment Committee (SAC) and Corporate Governance Committee to ensure work environment and manner are in good circumstances.



## CHAPTER II

### DATA

#### 2.1 GPSC Shareholding Structure

Global Power Synergy Public Company Limited (GPSC) is a listed company on the Stock Exchange of Thailand with a total registered capital of THB 14,983,008,000 as at December 31, 2017, fully paid up and divided into a total of 1,498,300,800 ordinary shares with a par value of THB 10 per share. The first ten major shareholders as of the share registration closing date for the 2017 interim dividend (August 30, 2017) are as Figure 2.1 Shareholder and Paid-up capital

**Table 2.1 GPSC Shareholder**

No.	Major shareholder	Number of Shares	Shareholding percentage
1	PTT Global Chemical Public Company Limited	340,565,223	22.73
2	PTT Public Company Limited	338,266,861	22.58
3	Thaioil Power Company Limited	311,425,457	20.79
4	Thai Oil Public Company Limited	133,468,059	8.91
5	Bualuang Long-Term Equity Fund	26,220,100	1.75
6	Social Security Office	24,899,300	1.66
7	Bualuang Top Ten Open-end Fund	21,569,600	1.44
8	Thai NVDR Company Limited	18,075,235	1.21
9	Bualuang Long-Term Equity Fund 75/25	10,557,500	0.71
10	Bualuang Flexible RMF	8,148,900	0.54

Source: GPSC Annual Report 2017



## 2.2 GPSC Organization Chart

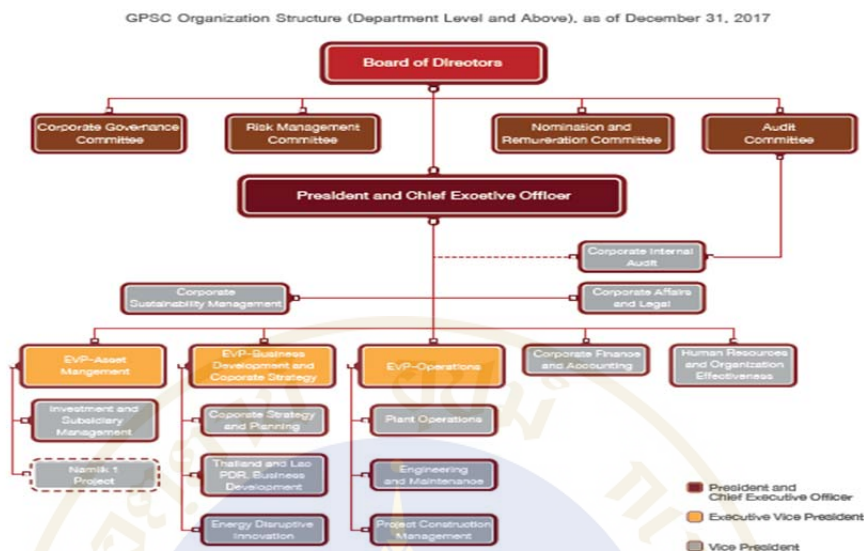


Figure 2.1 GPSC Organization Chart

Source: GPSC Annual Report 2017

## 2.3 GPSC Business Portfolio

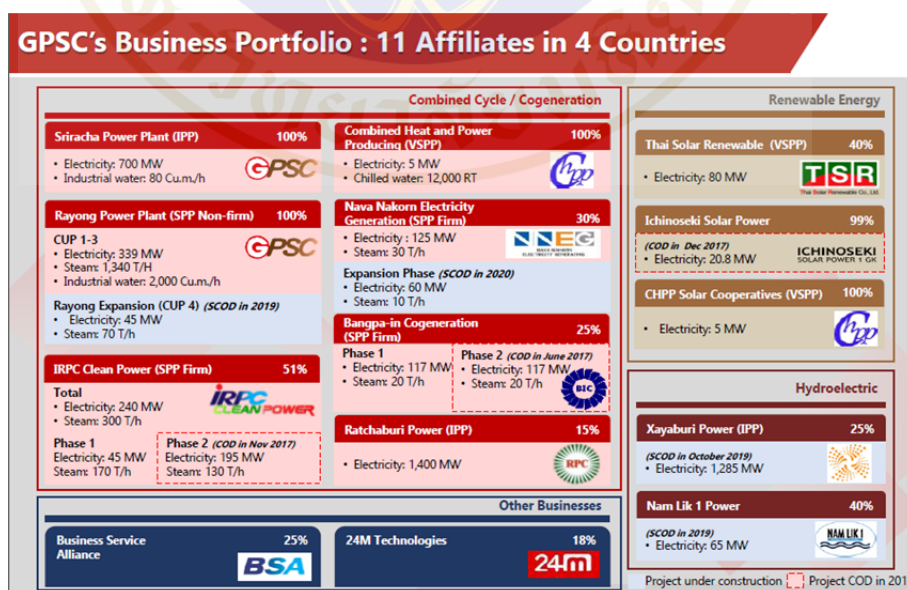
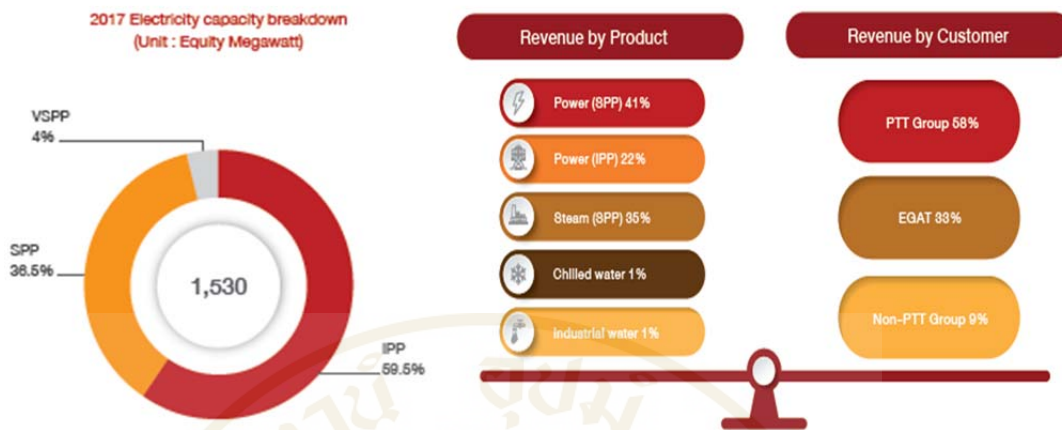


Figure 2.2 GPSC Business Portfolio as at 2017

Source: GPSC Annual Report 2017



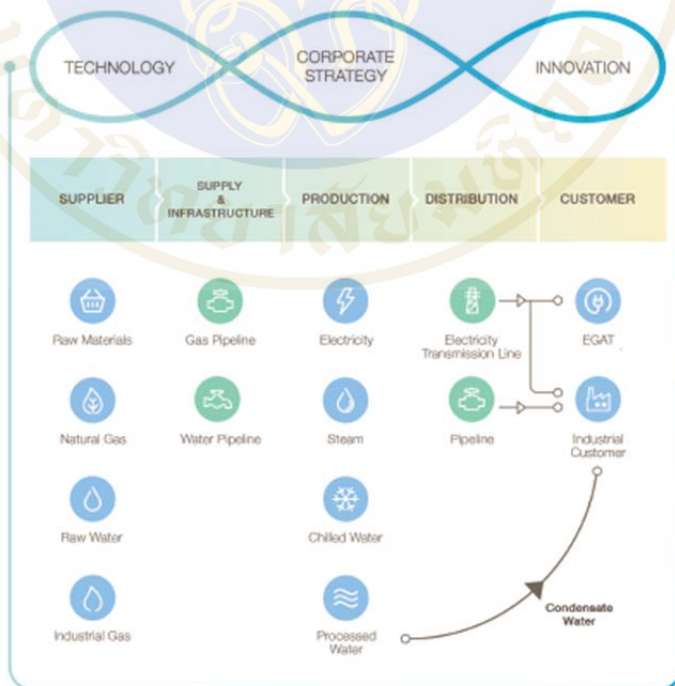
## 2.4 Capacity and Revenue Breakdown



**Figure 2.3 Capacity and Revenue Breakdown as at 2017**

Source: GPSC Annual Report 2017

## 2.5 GPSC Value Chain

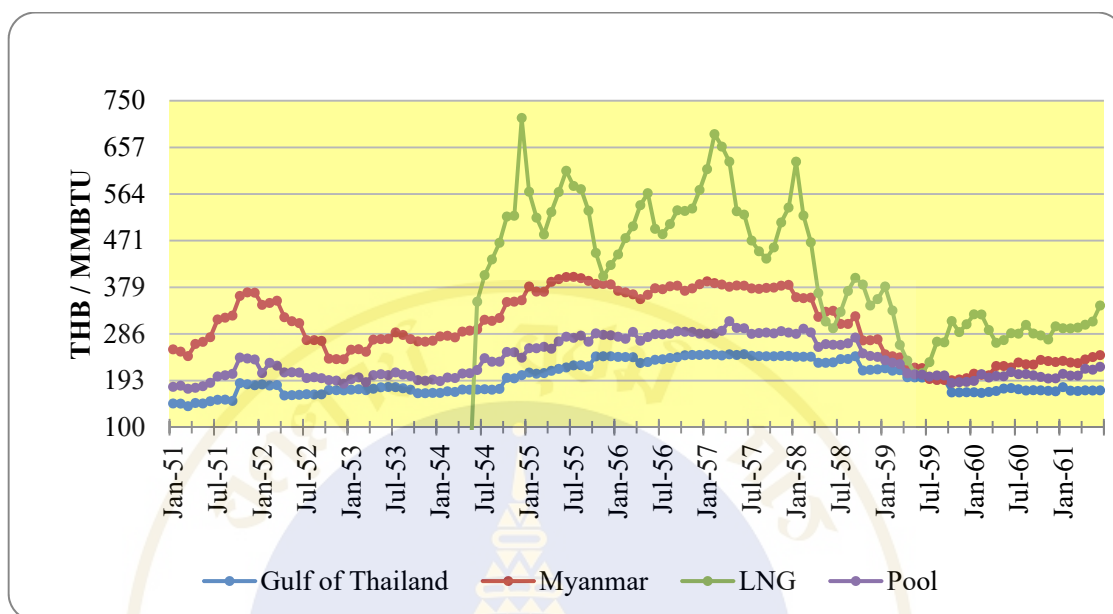


**Figure 2.4 GPSC Value Chain**

Source: GPSC Sustainable Growth 2017

## 2.6 History Natural Gas Pool Price

The history gas pool price has the CAGR of 0.18%.



**Figure 2.5 History Natural Gas Pool Price Graph 2008 – 2018**

Source: EPPO

## 2.7 GPSC Revenue Share

The history revenue share by plants from 2015 to 2017 and forecast revenue share from 2018 to 2022.

**Table 2.2 GPSC Revenue Share**

	2015	2016	2017	2018 (F)	2019 (F)	2020 (F)	2021 (F)	2022 (F)
Revenue from sale and rendering of services	100%	100%	100%	100%	100%	100%	100%	100%
Sri Racha Power Plant	18%	9%	16%	17%	17%	16%	16%	16%
Rayong Central Utilities Plant	61%	35%	54%	56%	57%	58%	58%	58%
IRPC Clean Power	10%	15%	24%	26%	25%	25%	24%	24%
CHPP	1%	1%	1%	1%	1%	1%	1%	1%
Rayong and IRPC	70%	50%	78%	82%	82%	83%	83%	83%

Source: Management Discussion Report and calculation

## 2.8 Debenture

As at December 31, 2017, GPSC has outstanding debenture as below

**Table 2.3 Outstanding Debenture as at December 31, 2017**

	<b>Total offering amount (million Baht)</b>	<b>Face value per unit (Baht)</b>	<b>Period (Year)</b>	<b>Interest rate (% p.a)</b>	<b>Maturity date</b>
Unsubordinated and unsecured debenture	3,500	1,000	4	2.21	29-Sep-21
Unsubordinated and unsecured debenture	1,500	1,000	7	2.82	29-Sep-24

Source: GPSC Financial Statement 2017

## 2.9 Financial Analysis

### 2.9.1 Income Statement

**Table 2.4 GPSC Income Statement**

<b>Statement of income (in million THB)</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Revenue from sale and rendering of services	24,841	22,924	21,758	20,037	19,325
Revenue from finance lease	755	730	686	638	592
Cost of sale and rendering of services	(23,649)	(21,571)	(20,177)	(17,365)	(16,376)
<b>Gross profit</b>	1,947	2,083	2,267	3,310	3,541
Revenue from sale of Nitrogen	107	101	100	96	108
Cost of sale of Nitrogen	(101)	(94)	(93)	(90)	(103)
Net foreign exchange gain (loss)	(23)	(8)	(46)	4	(3)
Dividend income	-	0	288	420	270
Other income	185	135	190	244	478
Selling and distribution expenses	(5)	(9)	(8)	(8)	(11)
Administrative expenses	(276)	(401)	(663)	(892)	(840)
Loss from lawsuit	(90)	-	-	-	-
Share of profit of associates and joint ventures	2	268	339	346	517

**Table 2.4 GPSC Income Statement (cont.)**

Statement of income (in million THB)	2013	2014	2015	2016	2017
<b>Profit before finance cost and tax expense</b>	1,746	2,076	2,373	3,430	3,958
Finance costs	(601)	(470)	(394)	(418)	(361)
<b>Statement of income (in million THB)</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Profit before tax expense</b>	1,145	1,606	1,979	3,012	3,597
Tax expense	(2)	(27)	(90)	(140)	(257)
<b>Profit for the year</b>	1,144	1,578	1,889	2,872	3,340
Revenue from sale and rendering of services	24,841	22,924	21,758	20,037	19,325

**Table 2.5 Banpu Income Statement**

Statement of income (in million THB)	2015	2016	2017
Revenues from Sale of Goods and Rendering of Services	5,653	5,542	6,419
<b>Revenues from Sales</b>	<b>5,653</b>	<b>5,542</b>	<b>6,419</b>
Other Income	564	759	741
Interest Income	55	94	49
Dividend Income	4	16	21
Other Incomes - Others	504	649	672
Shares of Profits from Investments Accounted for Using The Equity Method	1,895	3,513	3,682
<b>Total Revenues</b>	<b>8,112</b>	<b>9,814</b>	<b>10,843</b>
Cost of Sale of Goods and Rendering of Services	3,586	3,605	4,879
Cost of Goods Sold	3,586	3,605	4,879
Selling and Administrative Expenses	826	1,101	1,169
Administrative Expenses	826	1,101	1,169
Other Expenses	1	21	85
Loss on Foreign Currency Exchange	1	21	85
Total Expenses	4,413	4,727	6,133
<b>Profit (Loss) Before Finance Costs and Income Tax Expenses</b>	<b>3,699</b>	<b>5,087</b>	<b>4,710</b>
Finance Costs	221	420	106
Income Tax Expenses	555	395	362
<b>Net Profit (Loss)</b>	<b>2,923</b>	<b>4,273</b>	<b>4,242</b>

## 2.9.2 Statement of Financial Position

**Table 2.6 Statement of Financial Position**

In million THB	2013	2014	2015	2016	2017
<b>Assets</b>					
Current assets					
Cash and cash equivalents	6,390	3,421	2,865	5,422	3,965
Restricted accounts	81	182	235	359	286
Current investments	825	-	8,321	2,032	6
Trade accounts receivable	4,999	3,013	2,849	2,180	3,663
Current portion of finance lease receivable	429	460	533	437	605
Other receivables	1,074	467	912	628	688
Inventories	389	359	406	458	485
Other current assets	305	243	196	149	220
<b>Total current assets</b>	<b>14,493</b>	<b>8,146</b>	<b>16,316</b>	<b>11,665</b>	<b>9,918</b>
<b>Non-current assets</b>					
Investments in associates	1,735	2,639	3,414	4,461	6,148
Investments in joint ventures	1,149	2,016	2,177	2,477	2,626
Other long-term investments	1	2,687	2,687	2,923	2,923
Long-term loans to and interest receivables from related parties	-	-	-	2,530	2,965
Finance lease receivable	7,390	6,929	6,396	5,959	5,354
Property, plant and equipment	18,178	20,048	23,467	26,129	27,246
Goodwill	-	-	15	16	15
Intangible assets	27	73	497	527	510
Assets not used in operation	138	138	143	61	73
Deferred tax assets	-	-	3	6	-
Right of use of natural gas distribution pipeline	-	-	563	563	559
Right of use of asset	-	-	-	380	1,043
Other non-current assets	235	257	304	332	587
<b>Total non-current assets</b>	<b>28,851</b>	<b>34,786</b>	<b>39,667</b>	<b>46,363</b>	<b>50,050</b>
<b>Total assets</b>	<b>43,344</b>	<b>42,932</b>	<b>55,983</b>	<b>58,028</b>	<b>59,968</b>

**Table 2.6 Statement of Financial Position (cont.)**

<b>In million THB</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Current liabilities</b>					
Short-term borrowing from					
financial institution	360	-	-	-	-
Trade accounts payable	3,112	2,276	1,960	1,140	1,623
Other payables	1,165	999	786	748	608
Payable for assets under construction	-	-	77	308	577
Payable for Utility Project	464	194	-	-	-
Accrued interest expenses	28	14	-	-	-
Debenture matured within a year	-	-	-	-	-
Current portion of long-term borrowings from financial institutions	2,254	1,595	1,595	1,913	991
Provision	-	-	-	-	101
Other current liabilities	673	127	135	86	189
<b>Total current liabilities</b>	<b>8,056</b>	<b>5,203</b>	<b>4,553</b>	<b>4,195</b>	<b>4,088</b>
<b>Non-current liabilities</b>					
Long-term borrowings from financial institutions	10,384	11,197	13,394	14,295	9,824
Debentures	-	-	-	-	4,993
Deferred tax liabilities	443	406	490	464	508
Non-current provisions for employee benefits	23	27	57	67	77
Other non-current liabilities	77	80	362	254	105
<b>Total non-current liabilities</b>	<b>10,927</b>	<b>11,711</b>	<b>14,302</b>	<b>15,079</b>	<b>15,507</b>
<b>Total liabilities</b>	<b>18,983</b>	<b>16,914</b>	<b>18,855</b>	<b>19,274</b>	<b>19,595</b>
<b>Equity</b>					
<b>Share capital</b>					
Authorised share capital	11,237	14,983	14,983	14,983	14,983
Issued and paid-up share capital	11,237	11,237	14,983	14,983	14,983



**Table 2.6 Statement of Financial Position (cont.)**

In million THB	2013	2014	2015	2016	2017
Premium on ordinary shares	3,393	3,393	9,485	9,485	9,485
Other surpluses (deficits)	(1,086)	(1,197)	(1,118)	(1,118)	(1,118)
<b>Retained earnings</b>	-	-	-	-	-
Appropriated	-	-	-	-	-
Legal reserve	197	344	439	566	708
Unappropriated	10,187	11,508	12,187	13,186	14,496
Other components of equity	-	-	30	48	(7)
Non-controlling interests	434	733	1,122	1,604	1,827
<b>Total equity</b>	<b>24,361</b>	<b>26,018</b>	<b>37,128</b>	<b>38,754</b>	<b>40,374</b>
<b>Total liabilities and equity</b>	<b>43,344</b>	<b>42,932</b>	<b>55,983</b>	<b>58,028</b>	<b>59,968</b>

**Table 2.7 Banpu Statement of Financial Position**

In million THB	2015	2016	2017
Cash and Cash Equivalents	1	1	1,129
Short-Term Investments	1,776	330	181
Short-Term Investments Restricted or Pledged	0	10	22
Trade Accounts and Other Receivable	1,170	1,028	1,211
Advances and Short-Term Loans	212	924	274
Other Parties	0	670	258
Related Parties	212	255	16
Inventories	408	487	489
Raw Material and Factory Supplies	408	487	489
Other Short-Term Account Receivables - Net	7	13	13
Related Parties	7	13	13
Other Current Assets	1,582	1,861	1,027
Dividend Receivables	1,446	1,451	714
Other Current Assets - Others	135	410	312
<b>Total Current Assets</b>	<b>6,315</b>	<b>5,806</b>	<b>4,345</b>
Cash Restricted or Pledged	18	0	0
Investment in Associates Joint Ventures And/Or Jointly-Control Entities, Equity Method	8,824	17,268	18,400
Investment Accounted for Using Cost Method	221	1,078	2,765
Net of Current Portion of Long-Term Loans	0	824	0

**Table 2.7 Banpu Statement of Financial Position (cont.)**

<b>In million THB</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Other Parties	0	824	0
Property, Plant and Equipments - Net	5,913	8,443	11,993
Goodwill - Net	58	50	41
Goodwill	58	50	41
Intangible Assets - Net	0	0	227
Concession Rights	0	0	227
Deferred Tax Assets	770	819	769
Other Non-Current Assets	7,081	8,674	9,155
Other Non-Current Assets - Other	7,081	8,674	9,155
<b>Total Non-Current Assets</b>	<b>22,885</b>	<b>37,157</b>	<b>43,352</b>
<b>Total Assets</b>	<b>29,200</b>	<b>42,963</b>	<b>47,698</b>
Bank Overdrafts and Short-Term Borrowings from Financial Institutions	450	2,435	2,324
Trade Accounts and Other Payable	203	394	589
Other Short-Term Account Payables - Net	55	2	4
Related Parties	55	2	4
Advances and Short-Term Loans	14,883	0	0
Related Parties	14,883	0	0
Current Portion of Long-Term Liabilities	40	54	348
Long-Term Borrowings from Financial Institutions	40	54	348
Other Current Liabilities	1,845	1,948	1,928
Corporate Income Tax Payable	129	69	73
Other Current Liabilities - Others	1,715	1,879	1,855
<b>Total Current Liabilities</b>	<b>17,476</b>	<b>4,832</b>	<b>5,192</b>
Net of Current Portion of Long-Term Liabilities	173	107	2,550
Long-Term Borrowings from Financial Institutions	173	107	2,550
Net of Current Portion of Post Employee Benefit Obligations	26	32	28
Deferred Tax Liabilities	56	109	142
<b>Total Non-Current Liabilities</b>	<b>255</b>	<b>249</b>	<b>2,720</b>
<b>Total Liabilities</b>	<b>17,730</b>	<b>5,082</b>	<b>7,913</b>
Authorized Share Capital	19,957	30,957	31,045
Ordinary Shares	19,957	30,957	31,045
Issued and Fully Paid-Up Share Capital	12,972	30,457	30,484
Ordinary Shares	12,972	30,457	30,484

**Table 2.7 Banpu Statement of Financial Position (cont.)**

In million THB	2015	2016	2017
Premium (Discount) On Share Capital	308	7,157	7,192
Ordinary Shares	308	7,157	7,192
Retained Earnings (Deficit)	544	3,064	5,543
Retained Earnings - Appropriated	602	905	1,146
Legal and Statutory Reserves	602	905	1,146
Retained Earnings (Deficit) - Unappropriated	(58)	2,159	4,397
Other Components of Equity	(2,979)	(3,507)	(4,212)
Other Surplus (Deficit)	(1,979)	(1,979)	(1,956)
Surplus (Deficit) From Business Combinations Under Common Control	(1,979)	(1,979)	(1,979)
Other Surplus (Deficit) - Others	0	0	23
Other Items	(1,000)	(1,529)	(2,257)
Equity Attributable to Equity Holders of Parent	10,845	37,171	39,006
Non-Controlling Interests	624	710	779
<b>Total Equity</b>	<b>11,470</b>	<b>37,881</b>	<b>39,785</b>

## 2.10 Common Size Analysis

### 2.10.1 Income Statement Common size Analysis

**Table 2.8 GPSC Common Size of Income Statement**

	Common Size Analysis					
	Banpu 2017	2013	2014	2015	2016	2017
Revenue from sale and rendering of services	100%	100%	100%	100%	100%	100%
Revenue from finance lease	6%	3%	3%	3%	3%	3%
Cost of sale and rendering of services	76%	95%	94%	93%	87%	85%
<b>Gross profit</b>	<b>24%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>17%</b>	<b>18%</b>
Revenue from sale of Nitrogen	0%	0%	0%	0%	0%	1%
Cost of sale of Nitrogen	0%	0%	0%	0%	0%	1%
Dividend income	0%	0%	0%	1%	2%	1%

**Table 2.8 GPSC Common Size of Income Statement (cont.)**

	Common Size Analysis					
	Banpu	2013	2014	2015	2016	2017
Other income	57%	1%	1%	1%	1%	2%
Selling and distribution expenses	18%	0%	0%	0%	0%	0%
Administrative expenses	1%	1%	2%	3%	4%	4%
Share of profit of associates and joint ventures	0%	0%	1%	2%	2%	3%
<b>Profit before finance cost and tax expense</b>	<b>2%</b>	<b>7%</b>	<b>9%</b>	<b>11%</b>	<b>17%</b>	<b>20%</b>
Finance costs	6%	2%	2%	2%	2%	2%
<b>Profit before tax expense</b>	<b>2%</b>	<b>5%</b>	<b>7%</b>	<b>9%</b>	<b>15%</b>	<b>19%</b>
Tax expense	66%	0%	0%	0%	1%	1%
<b>Profit for the year</b>	<b>65%</b>	<b>5%</b>	<b>7%</b>	<b>9%</b>	<b>14%</b>	<b>17%</b>

### 2.10.2 Common Size of Financial Position Statement

**Table 2.9 GPSC Common Size of Financial Position Statement**

	Common Size Analysis					
	Banpu	2013	2014	2015	2016	2017
<b>Assets</b>						
<b>Current assets</b>						
Cash and cash equivalents	2.4%	15%	8%	5%	9%	7%
Restricted accounts	-	0.19%	0%	0%	1%	0%
Current investments	-	2%	0%	15%	4%	0%
Trade accounts receivable	2.5%	12%	7%	5%	4%	6%
Current portion of finance lease receivable	0.0%	1%	1%	1%	1%	1%
Other receivables	1.5%	2%	1%	2%	1%	1%
Inventories	1.0%	1%	1%	1%	1%	1%
Refundable value added tax	-	0%	0%	0%	0%	0%
Other current assets	2.2%	1%	1%	0%	0%	0%
<b>Total current assets</b>	<b>9.1%</b>	<b>33%</b>	<b>19%</b>	<b>29%</b>	<b>20%</b>	<b>17%</b>
<b>Non-current assets</b>						
Investments in associates	-	4%	6%	6%	8%	10%
Investments in joint ventures	38.6%	3%	5%	4%	4%	4%

**Table 2.9 GPSC Common Size of Financial Position Statement (cont.)**

	Common Size Analysis					
	Banpu	2013	2014	2015	2016	2017
Other long-term investments	-	0%	6%	5%	5%	5%
Long-term loans to and interest receivables from related parties	-	0%	0%	0%	4%	5%
Finance lease receivable	-	17%	16%	11%	10%	9%
Property, plant and equipment	25.1%	42%	47%	42%	45%	45%
Goodwill	0.1%	0%	0%	0%	0%	0%
Intangible assets	0.5%	0%	0%	1%	1%	1%
Assets not used in operation	-	0%	0%	0%	0%	0%
Deferred tax assets	1.6%	0%	0%	0%	0%	0%
Right of use of natural gas distribution pipeline	-	0%	0%	1%	1%	1%
Right of use of asset	-	0%	0%	0%	1%	2%
Other non-current assets	19.2%	1%	1%	1%	1%	1%
<b>Total non-current assets</b>	<b>90.9%</b>	<b>67%</b>	<b>81%</b>	<b>71%</b>	<b>80%</b>	<b>83%</b>
<b>Total assets</b>	<b>100.0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Current liabilities</b>						
Short-term borrowing from						
financial institution	4.9%	1%	0%	0%	0%	0%
Trade accounts payable	1.2%	7%	5%	4%	2%	3%
Other payables	0.0%	3%	2%	1%	1%	1%
Payable for assets under construction	-	0%	0%	0%	1%	1%
Payable for Utility Project	-	1%	0%	0%	0%	0%
Accrued interest expenses	-	0%	0%	0%	0%	0%
Current portion of long-term borrowings from financial institutions	0.7%	5%	4%	3%	3%	2%
Provision	-	0%	0%	0%	0%	0%
Other current liabilities	4.0%	2%	0%	0%	0%	0%
<b>Total current liabilities</b>	<b>10.9%</b>	<b>19%</b>	<b>12%</b>	<b>8%</b>	<b>7%</b>	<b>7%</b>
<b>Non-current liabilities</b>						
Long-term borrowings from financial institutions	5.3%	24%	26%	24%	25%	16%
Debentures	-	0%	0%	0%	0%	8%

**Table 2.9 GPSC Common Size of Financial Position Statement (cont.)**

	Common Size Analysis					
	Banpu	2013	2014	2015	2016	2017
Deferred tax liabilities	0.3%	1%	1%	1%	1%	1%
Non-current provisions for employee benefits	0.1%	0%	0%	0%	0%	0%
Other non-current liabilities	-	0.18%	0.19%	0.65%	0.44%	0.18%
<b>Total non-current liabilities</b>	5.7%	<b>25%</b>	<b>27%</b>	<b>26%</b>	<b>26%</b>	<b>26%</b>
<b>Total liabilities</b>	16.6%	<b>44%</b>	<b>39%</b>	<b>34%</b>	<b>33%</b>	<b>33%</b>
<b>Equity</b>						
Share capital						
Authorised share capital	65.1%	26%	35%	27%	26%	25%
Issued and paid-up share capital	63.9%	26%	26%	27%	26%	25%
Premium on ordinary shares	15.1%	8%	8%	17%	16%	16%
Other surpluses (deficits)	-	-3%	-3%	-2%	-2%	-2%
Retained earnings	11.6%			0%	0%	0%
Appropriated	2.4%			0%	0%	0%
Legal reserve	2.4%	0%	1%	1%	1%	1%
Unappropriated	9.2%	24%	27%	22%	23%	24%
Other components of equity	-8.8%	0%	0%	0%	0%	0%
Non-controlling interests	1.6%	1%	2%	2%	3%	3%
<b>Total equity</b>	83.4%	<b>56%</b>	<b>61%</b>	<b>66%</b>	<b>67%</b>	<b>67%</b>
<b>Total liabilities and equity</b>	100.0%	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



## 2.11 Trend Analysis

### 2.11.1 Income Statement Trend Analysis

**Table 2.10 GPSC Income Statement Trend Analysis**

	Trend Analysis						
	CAGR	CMS	2013	2014	2015	2016	2017
Revenue from sale and rendering of services	-6%	100%	100%	92%	88%	81%	78%
Revenue from finance lease	-6%	3%	100%	97%	91%	85%	78%
Cost of sale and rendering of services	-9%	85%	100%	91%	85%	73%	69%
<b>Gross profit</b>	<b>16%</b>	<b>18%</b>	<b>100%</b>	<b>107%</b>	<b>116%</b>	<b>170%</b>	<b>182%</b>
Revenue from sale of Nitrogen	0%	1%	100%	94%	93%	90%	101%
Cost of sale of Nitrogen	0%	1%	100%	93%	92%	89%	102%
Net foreign exchange gain (loss)	-38%	0%	100%	34%	201%	-16%	15%
Dividend income	2785%	1%	0%	100%	2560078%	3733394%	0%
Other income	27%	2%	100%	73%	103%	132%	259%
Selling and distribution expenses	19%	0%	100%	171%	151%	163%	204%
Administrative expenses	32%	4%	100%	145%	240%	323%	304%
Loss from lawsuit	-100%	0%	100%	0%	0%	0%	0%
Share of profit of associates and joint ventures	281%	3%	100%	10876%	13727%	14036%	20966%
Profit before finance cost and tax expense	23%	20%	100%	119%	136%	196%	227%
Finance costs	-12%	2%	100%	78%	66%	70%	60%
<b>Profit before tax expense</b>	<b>33%</b>	<b>19%</b>	<b>100%</b>	<b>140%</b>	<b>173%</b>	<b>263%</b>	<b>314%</b>
Tax expense	257%	1%	100%	1745%	5717%	8905%	16304%
<b>Profit for the year</b>	<b>31%</b>	<b>17%</b>	<b>100%</b>	<b>138%</b>	<b>165%</b>	<b>251%</b>	<b>292%</b>

**Table 2.11 Banpu Income Statement Trend Analysis**

	Trend Analysis				
	CAGR	CMS	2015	2016	2017
Revenues from Sale of Goods and Rendering of Services	6.6%	100.0%	100%	98%	114%
Revenues from Sales	6.6%	11.5%	100%	98%	114%
Other Income	14.6%	0.8%	100%	135%	131%
Interest Income	-6.5%	0.3%	100%	170%	87%
Dividend Income	118.9%	10.5%	100%	368%	479%
Other Incomes - Others	15.5%	57.4%	100%	129%	133%
Shares of Profits from Investments Accounted for Using the Equity Method	39.4%	168.9%	100%	185%	194%
<b>Total Revenues</b>	<b>15.6%</b>	<b>76.0%</b>	<b>100%</b>	<b>121%</b>	<b>134%</b>
Cost of Sale of Goods and Rendering of Services	16.6%	76.0%	100%	101%	136%
Cost of Goods Sold	16.6%	18.2%	100%	101%	136%
Selling and Administrative Expenses	19.0%	18.2%	100%	133%	142%
Administrative Expenses	19.0%	1.3%	100%	133%	142%
Other Expenses	981.8%	1.3%	100%	2932%	11703%
Loss on Foreign Currency Exchange	981.8%	95.5%	100%	2932%	11703%
<b>Total Expenses</b>	<b>17.9%</b>	<b>73.4%</b>	<b>100%</b>	<b>107%</b>	<b>139%</b>
<b>Profit (Loss) Before Finance Costs and Income Tax Expenses</b>	<b>12.8%</b>	<b>1.6%</b>	<b>100%</b>	<b>138%</b>	<b>127%</b>
	<b>CAGR</b>	<b>CMS</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Finance Costs	-30.9%	5.6%	100%	190%	48%
Income Tax Expenses	-19.2%	66.1%	100%	71%	65%
<b>Net Profit (Loss)</b>	<b>20.5%</b>	<b>64.7%</b>	<b>100%</b>	<b>146%</b>	<b>145%</b>

## 2.11.2 Financial Position Statement Trend Analysis

**Table 2.12 GPSC Financial Position Statement Trend Analysis**

	Trend Analysis						
	CAGR	CMS	2013	2014	2015	2016	2017
<b>Assets</b>							
<i>Current assets</i>							
Cash and cash equivalents	-11%	7%	100%	54%	45%	85%	62%
Restricted accounts	37%	0%	100%	226%	292%	446%	356%
Current investments	-71%	0%	100%	0%	1008%	246%	1%
Trade accounts receivable	-7%	6%	100%	60%	57%	44%	73%
Current portion of finance lease receivable	9%	1%	100%	107%	124%	102%	141%
Other receivables	-11%	1%	100%	43%	85%	58%	64%
Inventories	6%	1%	100%	92%	104%	118%	125%
Refundable value added tax	-100%	0%	100%	21%	0%	0%	0%
Other current assets	-1%	0%	100%	98%	84%	64%	94%
<b>Total current assets</b>	<b>-9%</b>	<b>17%</b>	<b>100%</b>	<b>56%</b>	<b>113%</b>	<b>80%</b>	<b>68%</b>
<i>Non-current assets</i>							
Investments in associates	37%	10%	100%	152%	197%	257%	354%
Investments in joint ventures	23%	4%	100%	175%	190%	216%	229%
Other long-term investments	774%	5%	100%	537375%	537375%	584625%	584675%
Long-term loans to and interest receivables from related parties	17%	5%				100%	117%
Finance lease receivable	-8%	9%	100%	94%	87%	81%	72%
Property, plant and equipment	11%	45%	100%	110%	129%	144%	150%
Goodwill	-2%	0%			100%	103%	97%
Intangible assets	109%	1%	100%	274%	1856%	1968%	1905%
Assets not used in operation	-15%	0%	100%	100%	104%	44%	53%
Deferred tax assets	-100%	0%			100%	238%	0%
Right of use of natural gas distribution pipeline	0%	1%			100%	100%	99%
Right of use of asset	175%	2%				100%	275%
Other non-current assets	26%	1%	100%	109%	129%	141%	250%
<b>Total non-current assets</b>	<b>15%</b>	<b>83%</b>	<b>100%</b>	<b>121%</b>	<b>137%</b>	<b>161%</b>	<b>173%</b>
<b>Total assets</b>	<b>8%</b>	<b>100%</b>	<b>100%</b>	<b>99%</b>	<b>129%</b>	<b>134%</b>	<b>138%</b>

**Table 2.12 GPSC Financial Position Statement Trend Analysis (cont.)**

	Trend Analysis						
	CAGR	CMS	2013	2014	2015	2016	2017
<b><i>Current liabilities</i></b>	0%	0%					
Short-term borrowing from	0%	0%					
financial institution	-100%	0%	100%	0%	0%	0%	0%
Trade accounts payable	-15%	3%	100%	73%	63%	37%	52%
Other payables	-15%	1%	100%	86%	67%	64%	52%
Payable for assets under construction	174%	1%			100%	401%	751%
Payable for Utility Project	-100%	0%	100%	42%	0%	0%	0%
Accrued interest expenses	-100%	0%	100%	48%	0%	0%	0%
Current portion of long-term borrowings from financial institutions	-19%	2%	100%	71%	71%	85%	44%
Provision	100%	0%					100%
Other current liabilities	-27%	0%	100%	19%	20%	13%	28%
<b>Total current liabilities</b>	<b>-16%</b>	<b>7%</b>	<b>100%</b>	<b>65%</b>	<b>57%</b>	<b>52%</b>	<b>51%</b>
<b><i>Non-current liabilities</i></b>	0%	0%					
Long-term borrowings from financial institutions	-1%	16%	100%	108%	129%	138%	95%
Debentures	100%	8%					100%
Deferred tax liabilities	3%	1%	100%	92%	111%	105%	115%
Non-current provisions for employee benefits	35%	0%	100%	120%	250%	291%	335%
Other non-current liabilities	8%	0%	100%	105%	470%	330%	137%
<b>Total non-current liabilities</b>	<b>9%</b>	<b>26%</b>	<b>100%</b>	<b>107%</b>	<b>131%</b>	<b>138%</b>	<b>142%</b>
<b>Total liabilities</b>	<b>1%</b>	<b>33%</b>	<b>100%</b>	<b>89%</b>	<b>99%</b>	<b>102%</b>	<b>103%</b>
<b><i>Equity</i></b>	0%	0%					
Share capital	0%	0%					
Authorised share capital	7%	25%	100%	133%	133%	133%	133%
Issued and paid-up share capital	7%	25%	100%	100%	133%	133%	133%
Premium on ordinary shares	29%	16%	100%	100%	280%	280%	280%
Other surpluses (deficits)	1%	-2%	100%	110%	103%	103%	103%

**Table 2.12 GPSC Financial Position Statement Trend Analysis (cont.)**

	Trend Analysis						
	CAGR	CMS	2013	2014	2015	2016	2017
Retained earnings	0%	0%					
Appropriated	0%	0%					
Legal reserve	38%	1%	100%	175%	223%	288%	360%
Unappropriated	9%	24%	100%	113%	120%	129%	142%
Other components of equity	0%	0%			100%	159%	-24%
Non-controlling interests	43%	3%	100%	169%	258%	370%	421%
<b>Total equity</b>	<b>13%</b>	<b>67%</b>	<b>100%</b>	<b>107%</b>	<b>152%</b>	<b>159%</b>	<b>166%</b>
<b>Total liabilities and equity</b>	<b>8%</b>	<b>100%</b>	<b>100%</b>	<b>196%</b>	<b>129%</b>	<b>134%</b>	<b>138%</b>

**Table 2.13 Banpu Financial Position Trend Analysis**

	Trend Analysis				
	CAGR	CMS	2013	2014	2015
<b>Current Assets</b>					
Cash and Cash Equivalents	3021%	2%	100%	99%	97377%
Short-Term Investments	-68%	0%	100%	19%	10%
Short-Term Investments Restricted or Pledged	132%	0%	0%	100%	232%
Trade Accounts and Other Receivable	2%	3%	100%	88%	103%
Advances and Short-Term Loans	14%	1%	100%	435%	129%
Other Parties	-62%	1%	0%	100%	38%
Related Parties	-72%	0%	100%	120%	8%
Inventories	9%	1%	100%	119%	120%
Raw Material and Factory Supplies	9%	1%	100%	119%	120%
Other Short-Term Account Receivables - Net	35%	0%	100%	178%	183%
Related Parties	-72%	0%	100%	178%	183%
Other Current Assets	-19%	2%	100%	118%	65%
Dividend Receivables	-30%	1%	100%	100%	49%
Other Current Assets - Others	52%	1%	100%	302%	231%
<b>Total Current Assets</b>	<b>-17%</b>	<b>9%</b>	<b>100%</b>	<b>92%</b>	<b>69%</b>

**Table 2.13 Banpu Financial Position Trend Analysis (cont.)**

	Trend Analysis				
	CAGR	CMS	2013	2014	2015
<b>Non-current Assets</b>					
Cash Restricted or Pledged	-100%	0%	100%	0%	0%
Investment in Associates Joint Ventures And/Or Jointly-Control Entities, Equity Method	44%	39%	100%	196%	209%
Investment Accounted for Using Cost Method	254%	6%	100%	489%	1253%
Net of Current Portion Of Long-Term Loans	-100%	0%	0%	100%	0%
Other Parties	-62%	1%	0%	100%	0%
Property, Plant and Equipment - Net	42%	25%	100%	143%	203%
Goodwill - Net	-16%	0%	100%	85%	71%
Goodwill	-16%	0%	100%	85%	71%
Intangible Assets - Net	100%	0%	0%	0%	100%
Concession Rights	100%	0%	0%	0%	100%
Deferred Tax Assets	0%	2%	100%	106%	100%
Other Non-Current Assets	14%	19%	100%	123%	129%
Other Non-Current Assets - Other	14%	19%	100%	123%	129%
<b>Total Non-Current Assets</b>	<b>38%</b>	<b>91%</b>	<b>100%</b>	<b>162%</b>	<b>189%</b>
<b>Total Assets</b>	<b>28%</b>	<b>100%</b>	<b>100%</b>	<b>147%</b>	<b>163%</b>
Bank Overdrafts and Short-Term Borrowings From Financial Institutions	127%	5%	100%	542%	517%
Trade Accounts and Other Payable	70%	1%	100%	194%	290%
Other Short-Term Account Payables - Net	-74%	0%	100%	3%	7%
Related Parties	-72%	0%	100%	3%	7%
Advances and Short-Term Loans	14%	1%	100%	0%	0%
Related Parties	-72%	0%	100%	0%	0%
Current Portion of Long-Term Liabilities	196%	1%	100%	135%	876%
Long-Term Borrowings from Financial Institutions	196%	1%	100%	135%	876%



**Table 2.13 Banpu Financial Position Trend Analysis (cont.)**

	Trend Analysis				
	CAGR	CMS	2013	2014	2015
Other Current Liabilities	2%	4%	100%	106%	105%
Corporate Income Tax Payable	-25%	0%	100%	53%	57%
Other Current Liabilities - Others	4%	4%	100%	110%	108%
<b>Total Current Liabilities</b>	<b>-45%</b>	<b>11%</b>	<b>100%</b>	<b>28%</b>	<b>30%</b>
<b>Non-Current Liabilities</b>					
Net of Current Portion of Long-Term Liabilities	284%	5%	100%	62%	1472%
Long-Term Borrowings from Financial Institutions	196%	1%	100%	62%	1472%
Net of Current Portion Of Post Employee Benefit Obligations	5%	0%	100%	127%	111%
Deferred Tax Liabilities	60%	0%	100%	196%	254%
Total Non-Current Liabilities	227%	6%	100%	98%	1068%
<b>Total Liabilities</b>	<b>-33%</b>	<b>17%</b>	<b>100%</b>	<b>29%</b>	<b>45%</b>
<b>Equity</b>					
Authorized Share Capital	25%	65%	100%	155%	156%
Ordinary Shares	25%	65%	100%	155%	156%
Issued and Fully Paid-Up Share Capital	53%	64%	100%	235%	235%
Ordinary Shares	25%	65%	100%	235%	235%
Premium (Discount) On Share Capital	383%	15%	100%	2325%	2336%
Ordinary Shares	25%	65%	100%	2325%	2336%
Retained Earnings (Deficit)	219%	12%	100%	563%	1019%
Retained Earnings - Appropriated	38%	2%	100%	150%	190%
Legal and Statutory Reserves	38%	2%	100%	150%	190%
Retained Earnings (Deficit) - Unappropriated	104%	9%	100%	-3718%	-7571%
Other Components of Equity	19%	-9%	100%	118%	141%
Other Surplus (Deficit)	-1%	-4%	100%	100%	99%
Surplus (Deficit) From Business Combinations Under Common Control	0%	-4%	100%	100%	100%
Other Surplus (Deficit) - Others	100%	0%	0%	0%	100%

**Table 2.13 Banpu Financial Position Trend Analysis (cont.)**

	Trend Analysis				
	CAGR	CMS	2013	2014	2015
Other Items	50%	-5%	100%	153%	226%
Equity Attributable to Equity Holders of Parent	90%	82%	100%	343%	360%
Non-Controlling Interests	12%	2%	100%	114%	125%
<b>Total Equity</b>	<b>86%</b>	<b>83%</b>	<b>100%</b>	<b>330%</b>	<b>347%</b>

## 2.12 Forecast Financial Statement

### 2.12.1 Income Statement

**Table 2.14 Income Statement Assumption**

	Assumption	
Revenue from sale and rendering of services		
Revenue from finance lease		Straight -line to maturity
Cost of sale and rendering of services	85%	of revenue from sale of rendering
Revenue from sale of Nitrogen	1%	of Total sale and rendering service
Cost of sale of Nitrogen	94%	of revenue from sale of Nitrogen
Dividend income		Constant as 2017 for conservative
Other income	1%	of Total sale and rendering service
Selling and distribution expenses	0.05%	of revenue from sale of rendering
Administrative expenses	5%	of revenue from sale of rendering
Share of profit of associates and joint ventures		Constant as 2017 for conservative
Finance costs	3.84%	Finance Cost from WACC

**Table 2.15 Forecast Income Statement**

	2018 (F)	2019 (F)	2020 (F)	2021 (F)	(in Baht)
<b>December 31</b>					<b>2022 (F)</b>
Revenue from sale and rendering of services	22,882,837,195	23,230,220,721	24,186,751,419	24,250,823,567	24,322,320,953
Revenue from finance lease	669,273,725	669,273,725	669,273,725	669,273,725	669,273,725
Cost of sale and rendering of services	-17,530,220,861	-17,813,725,866	-18,571,138,604	-18,622,324,267	-18,673,678,484
Gross profit	6,021,890,058	6,085,768,579	6,284,886,539	6,297,773,024	6,317,916,193
Revenue from sale of Nitrogen	114,414,186	116,151,104	120,933,757	121,254,118	121,611,605
Cost of sale of Nitrogen	-107,549,335	- 109,182,037	-113,677,732	-113,978,871	-114,314,908
Dividend income	270,005,280	270,005,280	270,005,280	270,005,280	270,005,280
Other income	228,828,372	232,302,207	241,867,514	242,508,236	243,223,210
Selling and distribution expenses	-11,776,055	-11,949,747	-12,428,013	-12,460,049	-12,495,797
Administrative expenses	-1,059,844,991	-1,075,477,250	-1,118,521,131	-1,121,404,378	-1,124,621,760
Share of profit of associates and joint ventures	517,130,619	517,130,619	517,130,619	517,130,619	517,130,619
<b>Profit before finance cost and tax expense</b>	<b>5,973,098,134</b>	<b>6,024,748,754</b>	<b>6,190,196,834</b>	<b>6,200,827,979</b>	<b>6,218,454,440</b>
Finance costs	-569,447,365	-524,242,618	-479,037,871	-299,266,162	-254,061,416
Tax expense	-540,365,077	-550,050,614	-685,339,075	-826,218,654	-954,302,884
<b>Profit for the year</b>	<b>4,863,285,692</b>	<b>4,950,455,522</b>	<b>5,025,819,887</b>	<b>5,075,343,163</b>	<b>5,010,090,140</b>

2.12.2 Financial Position Statement

**Table 2.16 Forecast Financial Position Statement**

	2018 (F)	2019 (F)	2020 (F)	2021 (F)	2022 (F)
<b>Assets</b>					
Current assets					
Cash and cash equivalents	4,548,925,668	6,375,692,844	10,105,170,424	10,437,537,082	14,198,501,944
Restricted accounts	286,420,851	286,420,851	286,420,851	286,420,851	286,420,851
Current investments	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000
Trade accounts receivable	3,353,091,399	3,403,994,558	3,544,157,897	3,553,546,583	3,564,023,311
Current portion of finance lease receivable	669,273,725	669,273,725	669,273,725	669,273,725	669,273,725
Other receivables	687,580,920	687,580,920	687,580,920	687,580,920	687,580,920
Inventories	517,662,561	496,790,824	465,208,478	433,626,132	402,043,786
Other current assets	205,488,880	243,382,729	321,710,455	328,040,516	404,364,174
<b>Total current assets</b>	<b>10,274,444,004</b>	<b>12,169,136,451</b>	<b>16,085,522,749</b>	<b>16,402,025,809</b>	<b>20,218,208,711</b>
<b>Non-current assets</b>					
Investments in associates	6,795,417,000	7,532,762,000	7,532,762,000	7,532,762,000	7,532,762,000
Investments in joint ventures	2,729,953,000	2,794,724,496	2,794,724,496	2,794,724,496	2,794,724,496
Other long-term investments	2,923,374,630	2,923,374,630	2,923,374,630	2,923,374,630	2,923,374,630
Long-term loans to and interest receivables from related parties	2,965,049,601	2,965,049,601	2,965,049,601	2,965,049,601	2,965,049,601

**Table 2.16 Forecast Financial Position Statement (cont.)**

	2018 (F)	2019 (F)	2020 (F)	2021 (F)	2022 (F)
Finance lease receivable	4,684,916,072	4,015,642,347	3,346,368,623	2,677,094,898	2,007,821,174
Property, plant and equipment	28,149,467,063	27,014,503,223	25,297,117,670	23,579,732,116	21,862,346,562
Goodwill	14,874,653	14,874,653	14,874,653	14,874,653	14,874,653
Intangible assets	481,351,750	452,720,500	424,089,250	395,458,000	366,826,750
Assets not used in operation	73,114,997	73,114,997	73,114,997	73,114,997	73,114,997
Deferred tax assets	-	-	-	-	-
Right of use of natural gas distribution pipeline	558,932,130	558,932,130	558,932,130	558,932,130	558,932,130
Right of use of asset	1,043,439,584	1,043,439,584	1,043,439,584	1,043,439,584	1,043,439,584
Other non-current assets	509,291,823	498,880,183	474,483,309	450,086,435	425,689,561
<b>Total non-current assets</b>	<b>50,929,182,303</b>	<b>49,888,018,345</b>	<b>47,448,330,943</b>	<b>45,008,643,540</b>	<b>42,568,956,138</b>
<b>Total assets</b>	<b>61,203,626,307</b>	<b>62,057,154,796</b>	<b>63,533,853,692</b>	<b>61,410,669,349</b>	<b>62,787,164,850</b>
<b>Current liabilities</b>					
Trade accounts payable	1,627,153,772	1,648,439,815	1,717,618,908	1,722,361,064	1,727,118,836
Other payables	312,339,835	316,695,638	324,231,660	313,396,435	320,421,091
Payable for assets under construction	537,315,745	-	-	-	-
Debt matured within a year	-	-	3,500,000,000	-	-
Current portion of long-term borrowings from financial institutions	1,175,746,333	1,175,746,333	1,175,746,333	1,175,746,333	1,175,746,333



**Table 2.16 Forecast Financial Position Statement (cont.)**

	2018 (F)	2019 (F)	2020 (F)	2021 (F)	2022 (F)
Provision	101,170,772	101,170,772	101,170,772	101,170,772	101,170,772
Other current liabilities	152,804,130	154,935,093	158,621,896	153,321,044	156,757,674
<b>Total current liabilities</b>	<b>3,906,530,587</b>	<b>3,396,987,651</b>	<b>6,977,389,569</b>	<b>3,465,995,649</b>	<b>3,481,214,705</b>
<b>Non-current liabilities</b>					
Long-term borrowings from financial institutions	8,641,748,667	7,466,002,333	6,290,256,000	5,114,509,667	3,938,763,333
Debentures	4,993,464,074	4,993,464,074	1,493,464,074	1,493,464,074	1,493,464,074
Deferred tax liabilities	507,690,427	507,690,427	507,690,427	507,690,427	507,690,427
Non-current provisions for employee benefits	76,669,665	76,669,665	76,669,665	76,669,665	76,669,665
Other non-current liabilities	198,661,930	201,432,413	206,225,656	199,333,974	203,801,965
<b>Total non-current liabilities</b>	<b>14,418,234,762</b>	<b>13,245,258,912</b>	<b>8,574,305,822</b>	<b>7,391,667,807</b>	<b>6,220,389,465</b>
<b>Total liabilities</b>	<b>18,324,765,349</b>	<b>16,642,246,563</b>	<b>15,551,695,391</b>	<b>10,857,663,456</b>	<b>9,701,604,170</b>
Equity					
Share capital					
Authorised share capital	14,983,008,000	14,983,008,000	14,983,008,000	14,983,008,000	14,983,008,000
Issued and paid-up share capital	14,983,008,000	14,983,008,000	14,983,008,000	14,983,008,000	14,983,008,000
Premium on ordinary shares	9,485,108,656	9,485,108,656	9,485,108,656	9,485,108,656	9,485,108,656
Other surpluses (deficits)	- 1,118,213,914	- 1,118,213,914	-1,118,213,914	-1,118,213,914	-1,118,213,914



**Table 2.16 Forecast Financial Position Statement (cont.)**

	2018 (F)	2019 (F)	2020 (F)	2021 (F)	2022 (F)
Retained earnings					
Appropriated					
Legal reserve	951,160,171	1,198,682,947	1,449,973,941	1,703,741,099	1,954,245,606
Unappropriated	16,684,693,465	18,912,398,450	21,174,017,399	23,457,921,822	25,712,462,385
Other components of equity	-	-	-	-	-
Non-controlling interests	1,827,040,681	1,827,040,681	1,827,040,681	1,827,040,681	1,827,040,681
Total equity	42,812,797,058	45,288,024,819	47,800,934,763	50,338,606,344	52,843,651,414
<b>Total liabilities and equity</b>	<b>61,203,626,307</b>	<b>62,057,154,796</b>	<b>63,533,853,692</b>	<b>61,410,669,349</b>	<b>62,787,164,850</b>

2.12.3 Forecast Cash Flow Statement

**Table 2.17 Forecast Cash Flow Statement**

	2018 (F)	2019 (F)	2020 (F)	2021 (F)	2022 (F)
Cash flows from operating activities					
Profit for the year	4,863,285,692	4,950,455,522	5,025,819,887	5,075,343,163	5,010,090,140
Adjustments to reconcile profit to cash receipts (payments)					
Tax expense	540,365,077	550,050,614	685,339,075	826,218,654	954,302,884
Finance costs	569,447,365	524,242,618	479,037,871	299,266,162	254,061,416
Depreciation and amortisation	1,615,383,853	1,722,088,423	1,746,016,804	1,746,016,804	1,746,016,804
Share of profit of associates and joint ventures	- 517,130,619	- 517,130,619	- 517,130,619	- 517,130,619	- 517,130,619
Dividend income	- 270,005,280	- 270,005,280	- 270,005,280	- 270,005,280	- 270,005,280
	6,801,346,088	6,959,701,278	7,149,077,738	7,159,708,884	7,177,335,345
<b>Changes in operating assets and liabilities</b>					
Trade accounts receivable	310,313,428	- 50,903,160	- 140,163,339	- 9,388,686	- 10,476,728
Finance lease receivable	605,187,023	669,273,725	669,273,725	66+9,273,725	669,273,725
Inventories	- 32,876,959	20,871,738	31,582,346	31,582,346	31,582,346

**Table 2.17 Forecast Cash Flow Statement (cont.)**

	2018 (F)	2019 (F)	2020 (F)	2021 (F)	2022 (F)
Other current assets	14,330,447	- 37,893,849	- 78,327,726	- 6,330,061	- 76,323,658
Other non-current assets	78,041,251	10,411,640	24,396,874	24,396,874	24,396,874
Trade accounts payable	4,286,714	21,286,042	69,179,094	4,742,156	4,757,772
Other payables	- 295,355,259	4,355,803	7,536,022	- 10,835,225	7,024,655
Other current liabilities	- 35,827,682	2,130,963	3,686,803	- 5,300,852	3,436,630
Payable for assets under construction	- 39,328,329	- 537,315,745	-	-	-
Other non-current liabilities	93,589,667	2,770,483	4,793,243	- 6,891,681	4,467,991
Net cash generated from operating	7,503,706,388	7,064,688,919	7,741,034,780	7,850,957,479	7,835,474,950
Taxes paid	- 540,365,077	- 550,050,614	- 685,339,075	- 826,218,654	- 954,302,884
<b>Net cash from operating activities</b>	6,948,660,445	6,501,122,858	7,040,875,670	7,013,937,333	6,870,692,175
<b>Cash flows from investing activities</b>					
Cash outflow for investments in joint ventures	-103,828,818	-64,771,496	-	-	-
Cash outflow for investments in associates	-647,100,539	-737,345,000	-	-	-
Purchase of plant and equipment	-2,490,506,667	-558,493,333	1,717,385,554	1,717,385,554	1,717,385,554
Dividends received	270,005,280	270,005,280	270,005,280	270,005,280	270,005,280
Interest received	80,650,163	80,650,163	80,650,163	80,650,163	80,650,163

**Table 2.17 Forecast Cash Flow Statement (cont.)**

	<b>2018 (F)</b>	<b>2019 (F)</b>	<b>2020 (F)</b>	<b>2021 (F)</b>	<b>2022 (F)</b>
<b>Net cash from (used in) investing activities</b>	-2,890,780,581	-1,009,954,386	2,068,040,997	2,068,040,997	2,068,040,997
<b>Cash flows from financing activities</b>					
Repayment of long-term borrowings from financial institutions	-997,104,402	-1,175,746,333	-1,175,746,333	-1,175,746,333	-1,175,746,333
Repayment of issue of debentures	-	-	-	-3,500,000,000	-
Dividend paid	-2,431,642,846	-2,475,227,761	-2,512,909,943	-2,537,671,581	-2,505,045,070
Interest paid	-569,447,365	-524,242,618	-479,037,871	-299,266,162	-254,061,416
<b>Net cash used in financing activities</b>	-3,998,194,613	-4,175,216,713	-4,167,694,148	-7,512,684,077	-3,934,852,819
<b>Net increase (decrease) in cash and cash equivalents</b>	<b>584,145,034</b>	<b>1,826,767,176</b>	<b>3,729,477,580</b>	<b>332,366,659</b>	<b>3,760,964,862</b>
Cash and cash equivalents at beginning of period	3,964,780,634	4,548,925,668	6,375,692,844	10,105,170,424	10,437,537,082
<b>Cash and cash equivalents at ending of period</b>	<b>4,548,925,668</b>	<b>6,375,692,844</b>	<b>10,105,170,424</b>	<b>10,437,537,082</b>	<b>14,198,501,944</b>

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