

# BLS Power-Up Day

September 19, 2022



 **GPSC**

**1.**

**Key Highlight & Business Improvement Plan**

**2.**

**Outlook & Update of Projects**





**1.**

## **Key Highlight & Business Improvement Plan**

**2.**

## **Outlook & Update of Projects**



# The World Situation: External Factors

## Geopolitical tensions



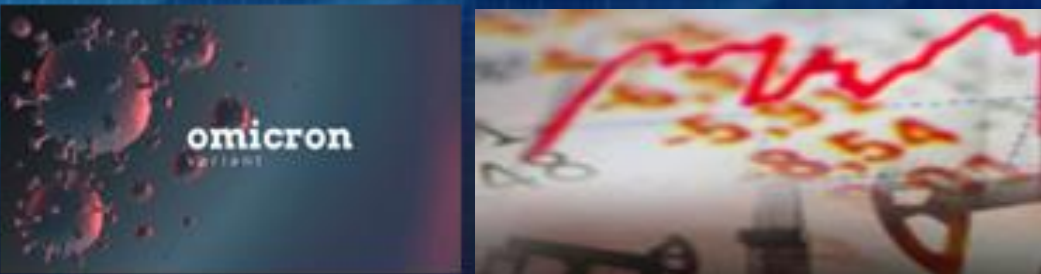
- >> Ongoing tension between Russia and Ukraine
- >> Russia announced shutdown of Nord Stream 1 pipeline, pressured Europe's energy crisis during winter
- >> Rising tensions between U.S. and China over Taiwan

## Fuel price surge



- >> Rising fuel costs remains a massive problem for business and consumers

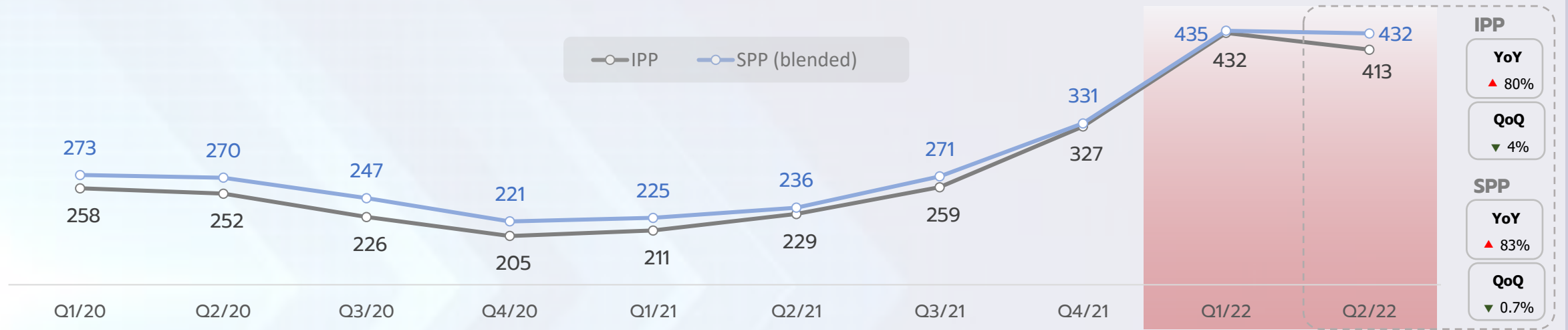
## Global recession risks



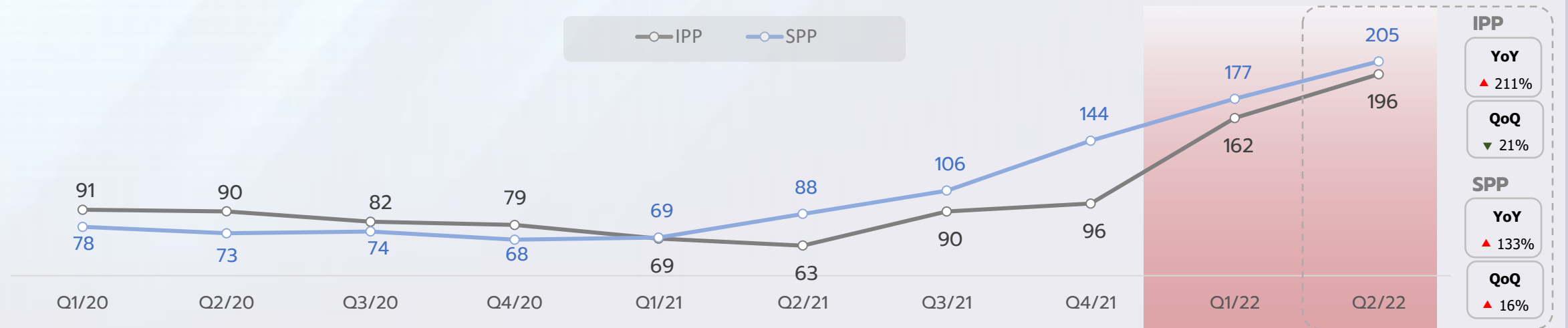
- >> Commodity prices shock exacerbated cost-of-living crisis, resulting in higher-than-expected inflation
- >> Supply bottlenecks and repeated COVID-19 lockdowns in China crimped the World's patchy pandemic recovery

# GPSC's Energy Price amid External Challenges

## Natural Gas Cost 2021 – Q2/2022 (THB/MMBTU)



## Coal Cost 2021 – Q2/2022 (USD/Ton JPU) (excluding freight costs)

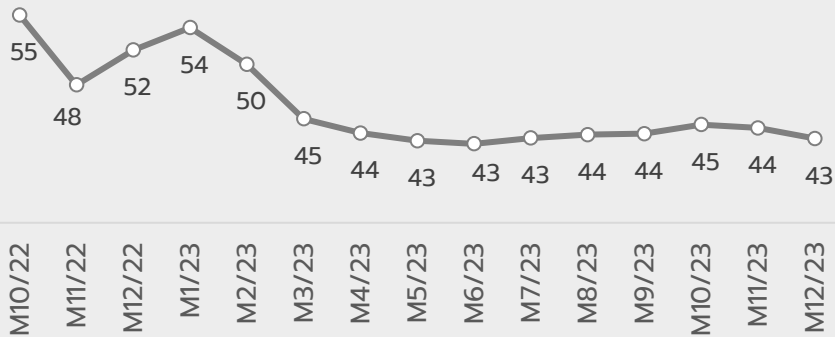




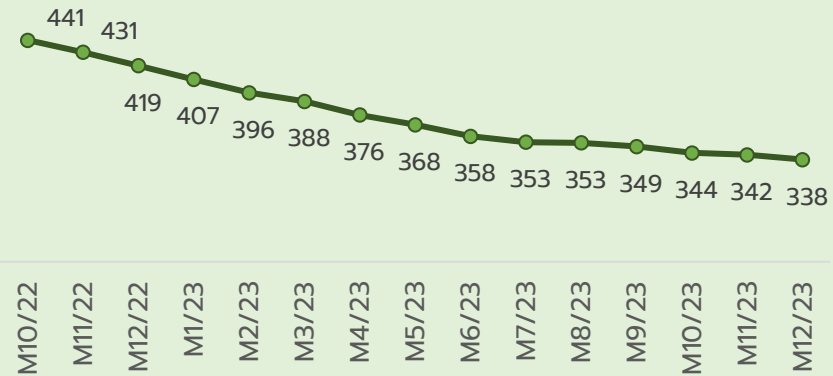
# GPSC Outlook: Gradual Recovery Underway

**“The pressure from soaring energy prices supports the increase of Ft”**

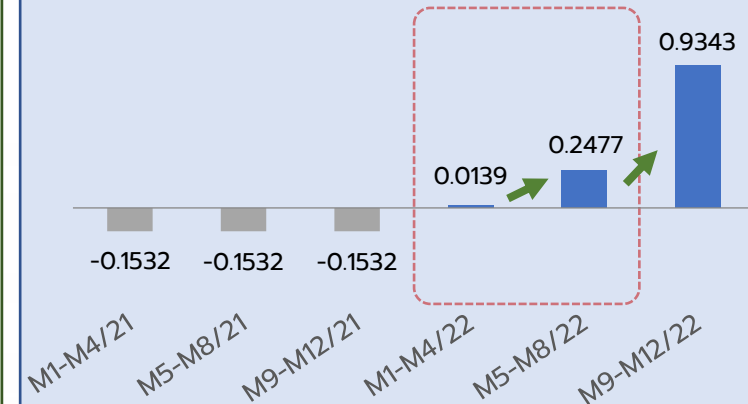
**JKM Forward Curve\* (USD/MMBTU)**



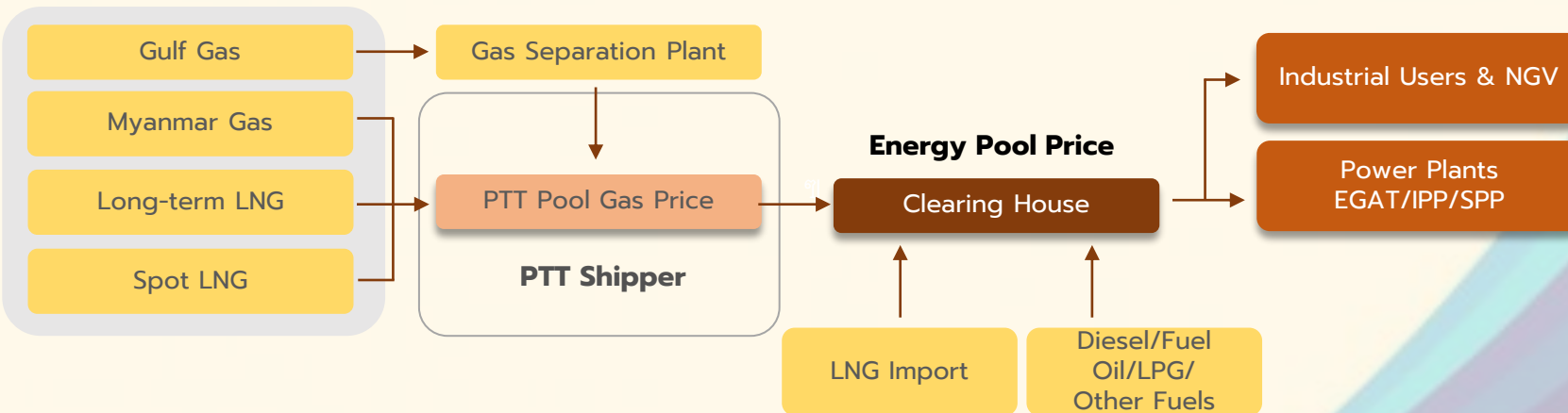
**ICE Newcastle Coal Forward Curve\* (USD/Ton)**



**Ft (THB/kWh)**



**The Energy Pool Price (EPP) structure was effective since April-2022**



**+ The gradual increase of Ft in a step rate in 2022**

On 27 Jul 2022, the Energy Regulatory Commission (ERC) passed a resolution concurring the automatic power tariff adjustment mechanism (Ft) for the collection of electricity invoice during **1 Sep – 31 Dec 2022** at **93.43 Satang/unit**, which increased by 68.66 Satang/unit from the previous period.

# GPSC Business Improvement Plan | What We Have Done So Far?

## GPSC I S1: Strengthen & Expand the Core

**Operational Excellence Strategy:  
Best in Class Target by 2025**



### Project

1. Plant Optimization
2. Plant Efficiency Improvement
3. Outage Management
4. Contract Management

**> THB 300 MM**

### Strengthen & Expand the Core

- Best in class operations
- Customer-centric utility
- Expansion into adjacencies (e.g., water)

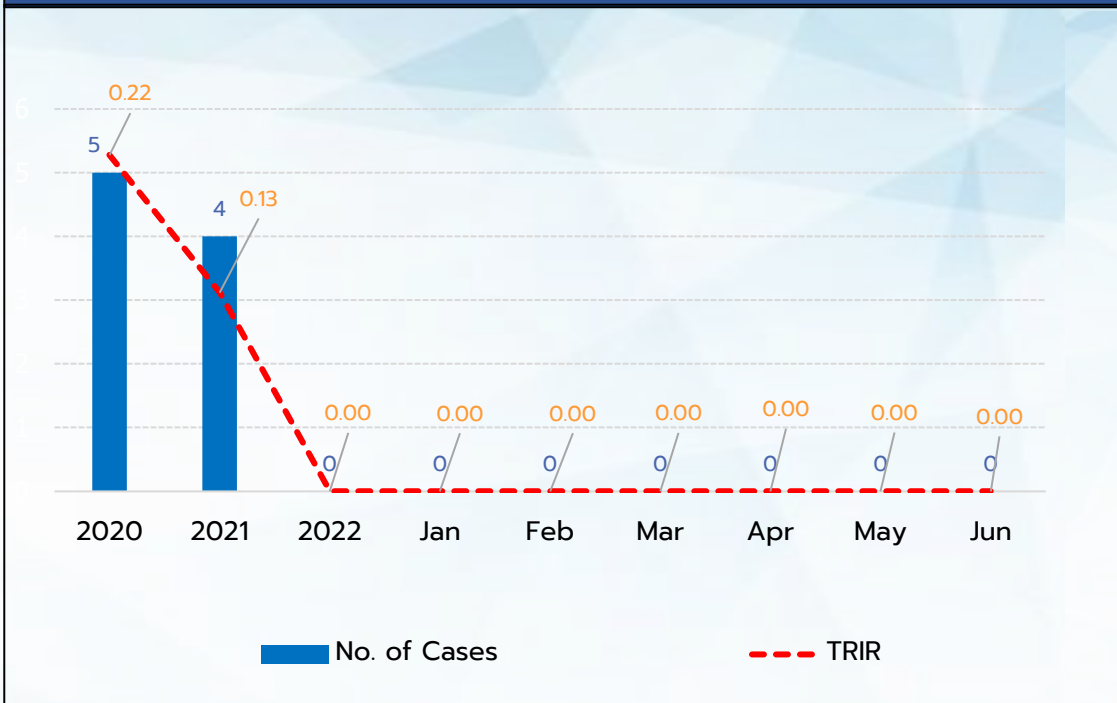
# GPSC Business Improvement Plan | Strengthen The Core

## S1 Improve operational efficiency with OEMS

### >> Operation Performance 1H22: Operation Best in Class, Safety and Reliability Results



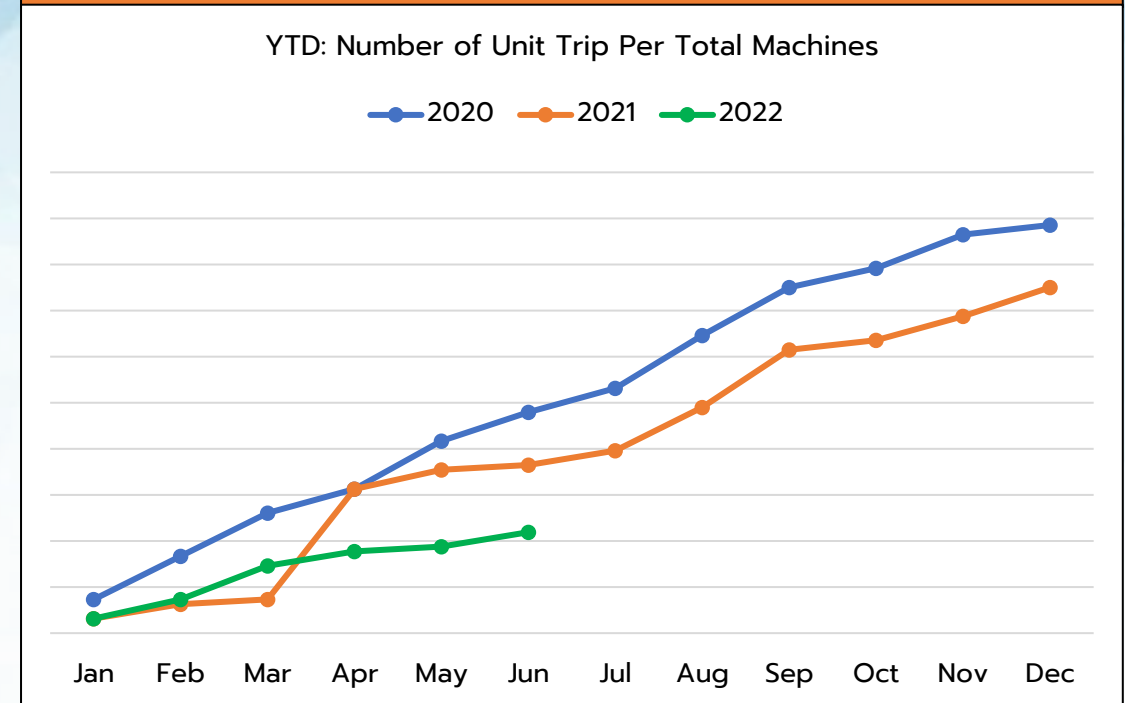
#### Safety – 2022 TRIR\*



❑ A perfect safety record of ZERO TRIR for 1H2022

\* TRIR : Total recordable incident rate

#### Reliability – 2022 No. of Unit Trip



❑ Significant improvement of incident and unplanned outage compared to 2021 and 2020



S1

## Operation Performance 1H2022 : Improvements

### Reliability Improvement:

- Steam Back Up Project : Improved customer steam reliability
- New GIS 115kV North Bus 7 bays at GSPP2&3 and GE Ph.3-5 to support new generators of GSPP2 SPP replacement and interconnection line to CUP-3 (substation and switch gear improvement).
- Digital Fault Recorder (DFR) : Improvement at MTP1 and substation



## Energy Price Crisis War Room Weekly Meeting

### Key Agenda:

- Fuel Price Projection (Gas and Coal)
- Asset Optimization
- Plant Merit Order
- Supply Chain Management
- Financial Performance
- Contract Management



## GPSC I S2: Scale-up Green energy

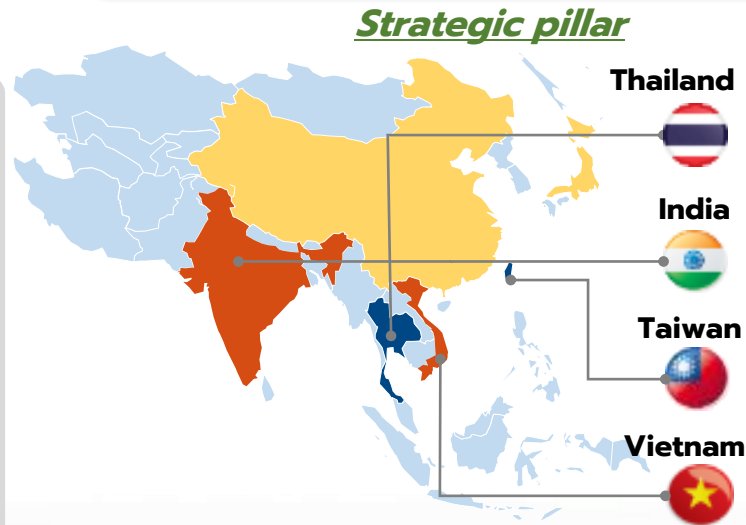
Priority 2<sup>nd</sup> home market and focusing on platform growth in Renewable energy



**S2**

**Scale-up Green energy**

- Solar power scale-up
- Wind power scale-up
- ESS-RE hybrid power entry



### Key focus

- Seeking new opportunities of hybrid RE
- Solar PPPA
- Capture the opportunities with new National Energy Plan (NEP)



- Using AEPL investment platform to execute projects
- To dispatch staffs as the secondment to build expertise & keep monitoring performance to GPSC



- Focusing on current project including;  
**Sheng Yang Energy**: Solar project of 25 MW equity capacity through GRP  
**CFXD**: Offshore wind of 149 mw equity capacity through GRSC TW



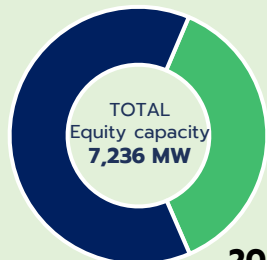
- Joint development with PTT group and strategic partners



**GPSC Aspiration:** "To be top 3 power company in SEA with more than half of MW from green portfolio"

### Conventional Energy

4,512 MW, 63%



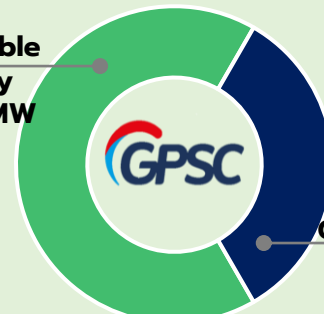
2022-2025

### Renewable Energy

2,724 MW, 38%

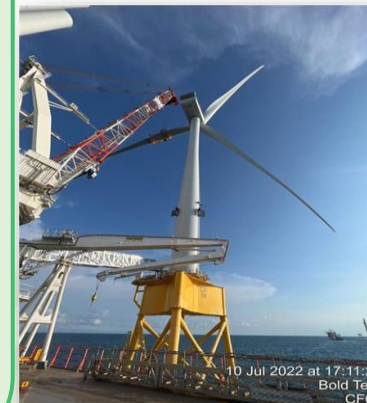


Renewable Energy 8,000 MW



2030

Conventional Energy



**10 Jul 22, CFXD Progress :** The first turbine has been successfully installed



First power Ph. 1 (96 MW) : Aug-2022



First power Ph. 2 (499 MW) : May-2023



Estimated full COD: Q1/2024



## GPSC I S3: S-curve & Batteries



S3

### S-curve & Batteries

- Energy storage systems
- EV & Mobility batteries
- New S-Curves

### S-curve



H2 Value Chain

Study and  
Exploring  
technology



CO2 Capture



Digital Power

Develop smart  
energy platform



## Batteries

Key Drivers to make **Thailand and ASEAN EV** happen

Government  
Incentive

EV Makers

GPSC

NUOVO

Battery &  
Components

Infrastructure

Service

PTT Group Collaboration & Value Chain Development



EV Platform



MIH Platform



EV Autonomous Pilot



Swap&Go



Battery Cell Technology



Giga-scale Capability



Local R&D



Capability & Collaboration



Smart Station



EV Quick Charge



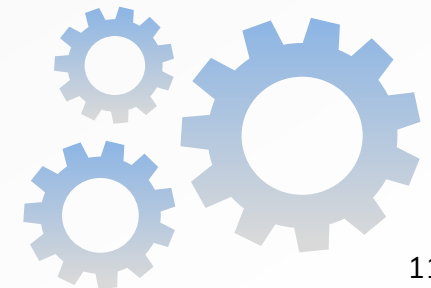
Charging Solution



EVMe



Digital Platform





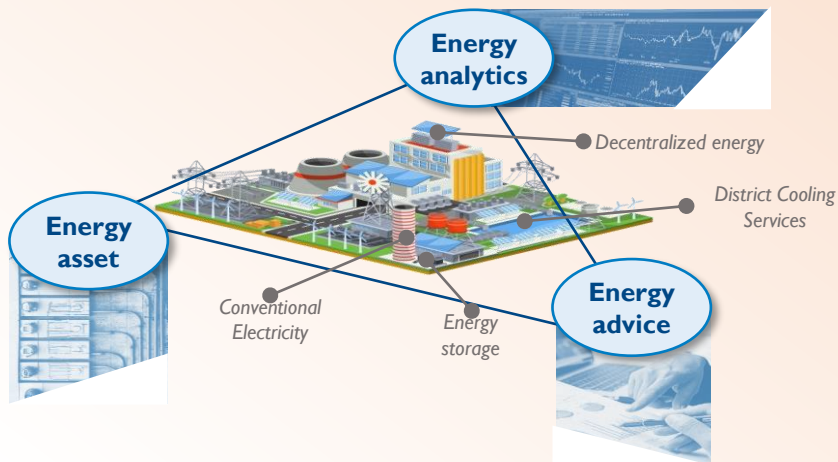
## GPSC | S4: Shift to Customer-centric Solutions



### Shift to Customer-centric Solutions

- Distributed generation
- District cooling
- Energy Management services (EMS)

### Concept of Energy Management services



### Energy management services to provide all-round energy support

#### Distributed Generation



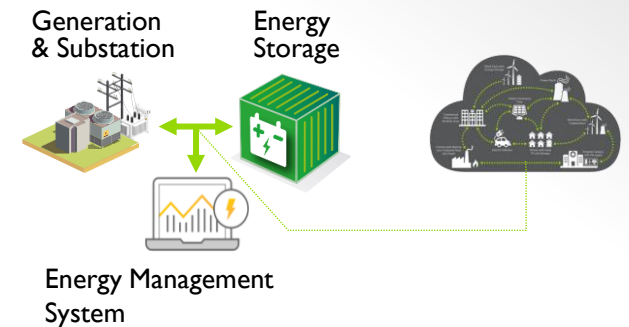
#### Integrated Energy Storage System



#### Energy Trading Platform



#### System Interconnecting & Optimization for Future Technology



## Continue business development and extend collaboration



**May 22, the National Energy Policy Committee approved a new quota for purchasing electricity from renewable energy sources under a Feed-in-Tariff scheme between 2022-2030 for power plants with no fuel costs in accordance with the national Power Development Plan 2018-2037, First Revision (PDP 2018 Rev.1).**

- ❑ The PDP 2018 Rev. 1 (2018-2037) aims to increase generating capacity from 46,090 megawatts to 77,211 megawatts by 2037 as part of Thailand's climate pledge to achieve carbon neutrality and net-zero greenhouse gas emissions by 2050 and 2065, respectively.
- ❑ Power plant with no fuel costs includes solar ground-mounted, solar with BESS, wind power, and biomass.
- ❑ GPSC aims to participate in this renewable energy auction.



## **2 Jun 22, PTT Group Study CCS Hub Model Technology Prototyping for Net Zero Goals To drive GPSC's Net Zero GHG Emission Target**

- ❑ The cooperation is an important step for GPSC to jointly study the application of Carbon Dioxide Capture and Storage Technology (CCS), which is one of the technologies to reduce greenhouse gas emissions.
- ❑ This development will be able to be used in a large commercial scale to drive the organization and Thailand to achieve concrete goals of Carbon Neutrality and Net Zero Emission.

## Continue business development and extend collaboration

### 13 Jun 2022, GPSC and PEA signed a Memorandum of Understanding (MOU) "Seeking Mutual Opportunities to Become Energy Suppliers and Operate Related Businesses"

- ❑ The scope of this cooperation is to study and develop an operation model as an electricity supplier for PEA, including the study of joint investment between PEA and GPSC, as well as its affiliates, so as to be well prepared for other service businesses, such as **trading and exchange of Renewable Energy Certificates (RECs), Energy Attributed Certificates (EACs), or Carbon Credits.**



### 7 Jul 2022, GPSC and SC ASSET commenced on the study of clean energy innovations for real-estate market.

The scopes of cooperation and development are as follows:

- ❑ Power generation from **clean energy combined with the use of batteries as energy storage** system and backup power system.
- ❑ Study and development of other business models, such as **electrical safety systems for homes and buildings.**
- ❑ Trial of **applications related to energy management system** or other relevant applications with the Super Application of SC Asset in order to support Smart Home technology.

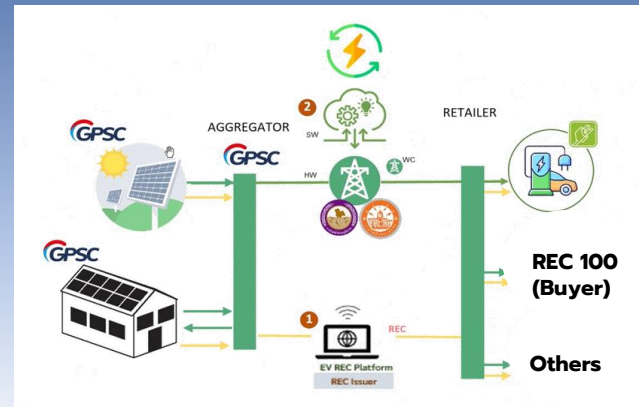


## Continue business development and extend collaboration

### ERC Sandbox Phase 2 for Green Innovation and Green Regulation

15 Aug 22, projects from GPSC have qualified for the ERC Sandbox Phase 2.

- To study and develop green energy trading platform and renewable energy certificate: REC
- To study the business model of electricity trading for third party access (TPA) under the new PPA
- A pilot project for the development of energy management innovation in the smart city



### 2 Sep 22, GPSC, PTT and WD announced collaboration in studying renewable energy development and application guidelines for using electricity in the production processes of WD factories in Thailand

- ❑ An evaluation of opportunities for procurement of renewable energy from multiple sources for WD under the ERC Sandbox Phase 2
- ❑ This collaboration will create long-term procurement of renewable energy from multiple sources for WD after official TPA implementation.



**15 Sep 22, GPSC joins hands with SANY, LEADWAY and ROOTCLOUD** to explore the development of battery swapping station for electric commercial vehicles, preparing for new s-curve industries

- ❑ To study the feasibility to develop battery swapping services and battery-as-a-service business for eCV along with the monitoring and operational management software
- ❑ The initial phase of the study will be focus on highway routes connecting the heavy traffic logistic areas

## Strengthening financial performance & Ensuring Liquidity

### ➤ Enhance synergy value from the acquisition of GLOW to create greater efficiency and scale

>> Higher synergy outcome: THB 997 MM in 6M22 vs THB 660 MM in 6M21

### ➤ Stringent cost control

>> OPEX target: Cutting 30% from original budget

### ➤ Ensure financial liquidity and maintain financial strength

>> On 10 Jun 22, GPSC successfully issued its second green debentures for institutional and high-net-worth investors worth THB 12 billion with tenor of 3-15 years at coupon rates between 2.55 - 4.40%.

The use of proceeds of this issuance are to invest in renewable energy projects and to refinance the company's existing loans and the group's green projects.



>> On 13 Sep 22, GPSC and SMBC jointly enter into an agreement of ESG Loan, the first in PTT Group, amounting USD 185 MM with 10-year contract term.

The credit is designated for the implementation of clean energy project in the future in line with the target to increase renewable energy portfolio to over 50% of total capacity by 2030.





# GPSC Action plan | Sustainability for All

## Global Pressure



- ▶ Secure global net zero by mid-century and keep 1.5 degrees within reach
- ▶ Adapt to protect communities and natural habitats
- ▶ Twenty countries pledge end to finance for overseas fossil fuel projects

## Thailand Policy Driven



- ▶ Thailand pledge to achieve carbon neutrality by 2050, net zero by 2065 and to cut GHG emissions by 40% within 2030.
- ▶ Carbon Pricing Implementation in Thailand
- ▶ Renewable Energy / Climate Related Regulation and Carbon Tax

## Stakeholders' Concern



- ▶ Low-carbon electricity generation technologies, with renewable energy
- ▶ Investment and capital expenditure in low-carbon R&D, technologies and business models to improve efficiency
- ▶ Reduce the share of unabated fossil fuel power generation
- ▶ Rapid retirement of existing coal baseload generation

## GPSC Corporate Strategy

## Net Zero Ambition

S1



Strengthen  
&  
Expand the core



S2



Scale - up  
Green Energy



S3



S - curve  
&  
Batteries



S4

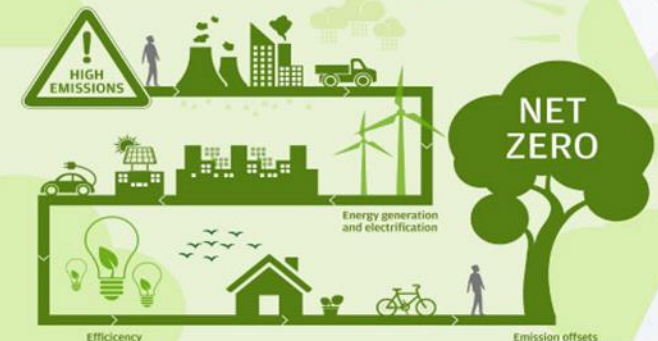


Shift to  
Customer - centric  
Solution



## TARGET

Net Zero GHG Emissions **by 2060**



Carbon Neutrality **by 2050**

Carbon intensity reduction  
**10% by 2025 & 35% by 2030**



**1.**

## **Key Highlight & Business Improvement Plan**

**2.**

## **Outlook & Update of Projects**



**The slight increase of total revenue with the gradual increase of Ft in a step rate in 2022 and full operational in Glow Energy Phase 5.**



## **Glow Energy Phase 5**

- Insurance claim is expected to receive in Q4/2022



## **Improving Operation Excellence Management System (OEMS)**

- Improve reliability & efficiency compared to 2021



## **XPCL performance**

- Expected to recognize higher profit sharing from water level during 2022



## **Coal price**

- Coal price is forecasted to remain high but slightly weak in 2H/2022



## **Natural gas price**

- Natural gas is forecasted to remain high in 2H/2022

## AEPL : Solar Power Platform in India



GPSC Hold  
**42.93%** of shares

Contracted Capacity  
**4,634 MW**

SCOD | 2021-2024

Project	Electricity Capacity (MW)	COD
<b>Operating</b> (23 projects)	2,859	-
<b>Under construction</b> (12 projects)	1,775	2022 – 2024

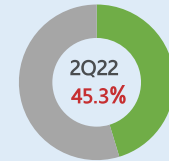
## CFXD: Construction Progress update & Key milestones



GPSC Hold  
**25%** of shares

Contracted Capacity  
**595 MW**

SCOD | 2022-2024



- ⚡ First power Ph. 1 (96 MW) : Aug-2022
- ⚡ First power Ph. 2 (499 MW) : May-2023
- 🌀 Estimated full COD: Q1/2024

## Energy Recovery Unit (ERU)

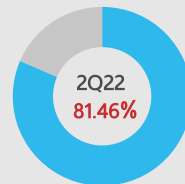


SCOD | 2025<sup>1</sup>



**Electricity**  
(MW) 250

**Steam**  
(ton/hr.) 175



### Project updates:

- The project is in the process of the construction of foundation
- Overall, the project has reached 81.46%.

Note: 1. The project has been affected by COVID-19 pandemic and has been postponed the commercial operation from 2023 to 2025.

## SPP Replacement - Stage 1 | Glow Energy Phase 2



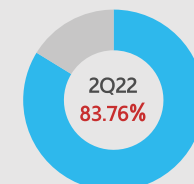
SCOD | Q4/2022

- Project 1 : Oct-2022
- Project 2 : Dec-2022



**Electricity**  
(MW) 192

**Steam**  
(ton/hr.) 300



### Project updates:

- The project is in the process of testing machines and equipment
- Overall, the project has reached 83.76%.



# Q&A SESSION

**IR Contact:**

Pongsak Plaingam +662 140 4646

Thanaporn Tantiwinyupong +662 140 1808

Achariya Sanrattana +662 140 1818

Sunanthana Thong-oon +662 140 1846

[ir@gpscgroup.com](mailto:ir@gpscgroup.com)

[www.gpscgroup.com](http://www.gpscgroup.com)



# Appendix



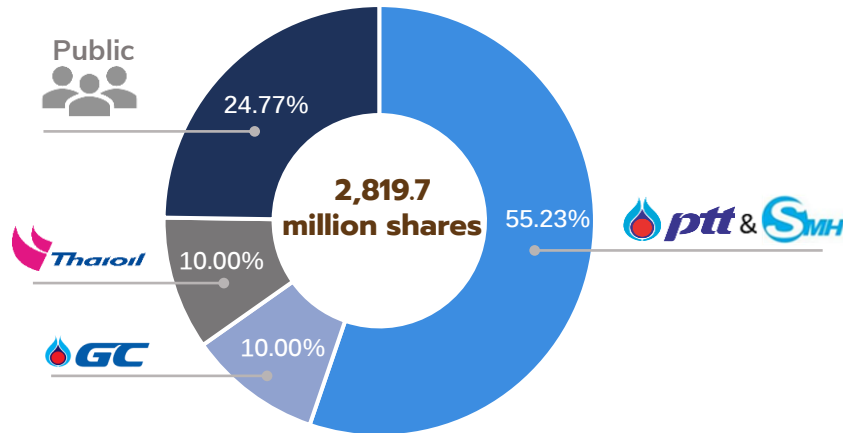


## The power and smart energy flagship of PTT Group

*"GPSC, The global leading innovative and sustainable power company, the core business is to **generate and supply electricity and utilities** to customers and also **developing new S-Curve business** to create value to stakeholders."*

### GPSC's shareholding structure

As of Sep 2022



### COMPANY INFORMATION (as of Sep 14, 2022)

**Business Type** | Energy & Utilities listed on SET

**Paid-up Capital** | THB 28,197 million

**Market Cap.** | THB 194,561 million  
(3<sup>rd</sup> in power sector)

### CREDIT RATINGS

AA+

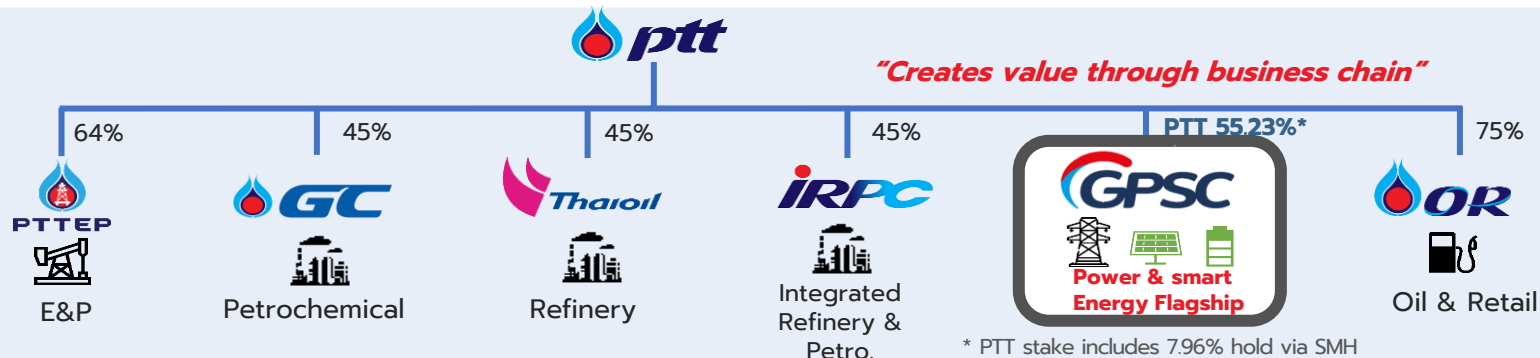


A+(tha)

BBB-

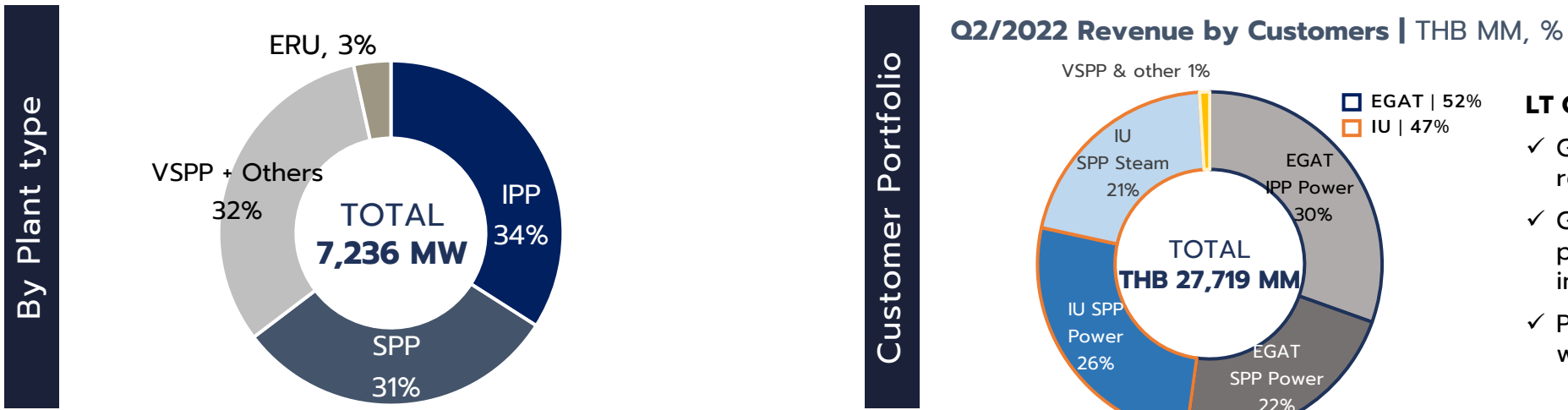
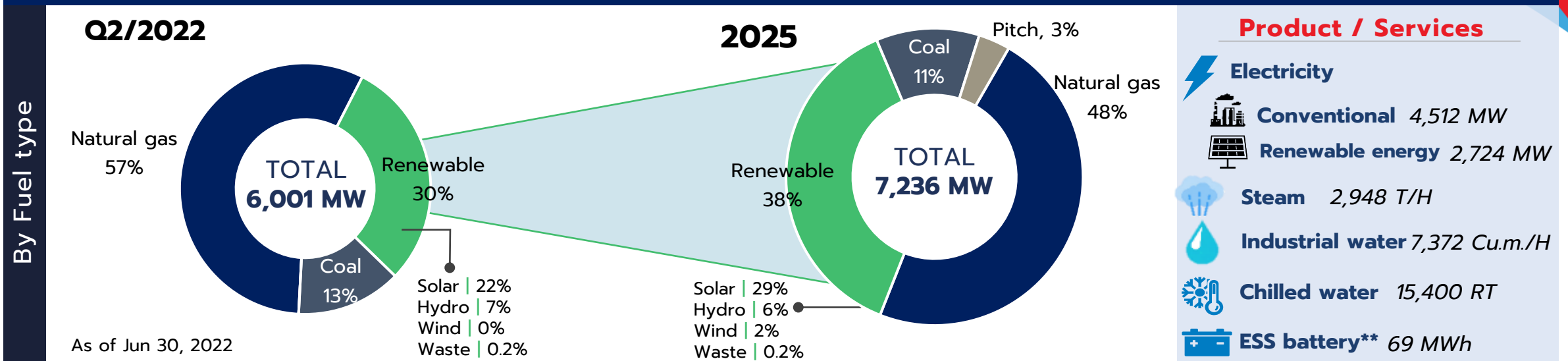
FitchRatings

### PTT Group's Business





## Total committed equity capacity (as of Q2/2022)\*



### LT OFF-TAKE CONTRACTS

- ✓ Guaranteed market and source of revenue
- ✓ Guarantee a minimum level of profit in regard to their investment
- ✓ Price adjustment formula, varying with fuel price

**Note:** \* Total equity capacity includes Solar Power Platform (Avaada) 1,989 MW and Offshore wind farm (CFXD) 149 MW.

\*\* Total size of ESS battery after transferred of the assets related to battery business to NUOVO PLUS which GPSC holds 49% stake.

# Corporate Strategy 2022 | Strategic house (2022 – 2030)





**S1**

## **Strengthen & Expand the Core**

- Best in class operations
- Customer-centric utility
- Expansion into adjacencies (e.g., water)



**S2**

## **Scale-up Green energy**

- Solar power scale-up
- Wind power scale-up
- ESS-RE hybrid power entry



**S3**

## **S-curve & Batteries**

- Energy storage systems
- EV & Mobility batteries
- New S-Curves



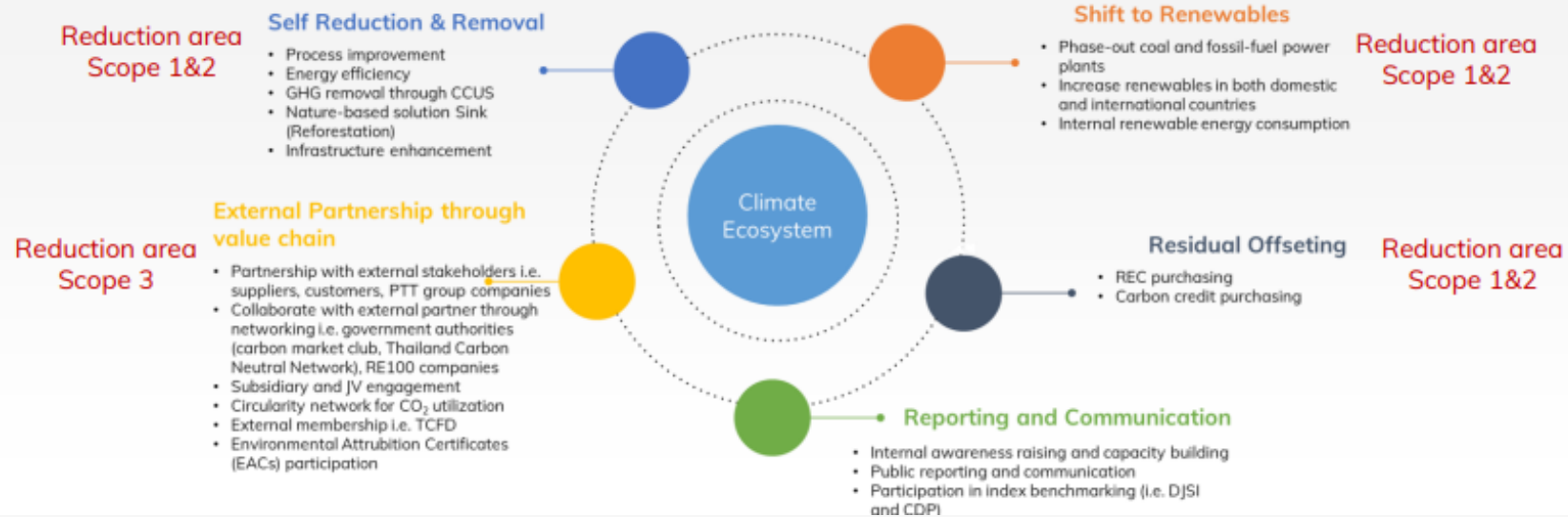
**S4**

## **Shift to Customer-centric Solutions**

- Distributed generation
- District cooling
- Energy Management services (EMS)



# GPSC Action plan | Sustainability for All



## The route to net zero for utilities

## Net Zero Ambition

### INTERNAL

### EXTERNAL



#### Reduce fossil fuel usage

- Adopt best practice operational excellence
- Retrofit non-renewable power plants, etc.



#### Grow renewables

- Execute the growth strategy as planned by
  - Develop solar and wind power plants
  - Integrate distributed solar and Switch to microgrid, etc.



#### Enhance infrastructure

- ESS with renewable energy generation support and EMS
- Implement digital transformation
- Study and adopt CCUS, etc.



#### Trading / Offsets

- Study carbon credits, emissions trading schemes, shadow carbon pricing, etc.



# National Energy Plan and Thailand's incentives for EV



## 1. Digitalization:

Grid modernization and smart energy management

## 2. Decarbonization

RE50@50 + ESS, CCUS and Hydrogen

## 3. Decentralization

Smart microgrid & infrastructure development

## 4. De-regulation

Third Party Access, new price structure

## 5. Electrification

EV30@30 and Charging station

## Thailand Smart Mobility 30@30 Plan 2019 – 2030

By 2030, 30% (~750,000 units) of total production will be ZEV.

From 2035, only Zero-emission EV (ZEV) will be allowed to register as new vehicle.

## Government's Package to boost EV Consumption



THB  
2 MM

### 2022-2023

- Customs duty discount up to 40%

### 2022-2025

- Excise tax cut to 2% from 8%

### Buyer

### 2022-2023

- Subsidy THB 70,000 for battery size under 30 kWh
- Subsidy THB 150,000 for battery size over 30 kWh

THB  
2-7 MM

### 2022-2025

- Customs duty discount up to 20% for battery over 30 kWh
- Excise tax cut to 2% from 8%

none



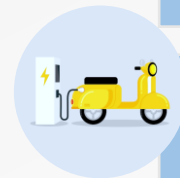
<THB  
2 MM\*

### 2022-2025

- Excise tax cut to 0%

### 2022-2025

- Subsidy THB 150,000 for battery size over 30 kWh



<THB  
150,000

none

### 2022-2025

- Subsidy THB 18,000

EV

### > CKD (Completely Knocked Down)

Domestic manufacture with domestic or imported parts

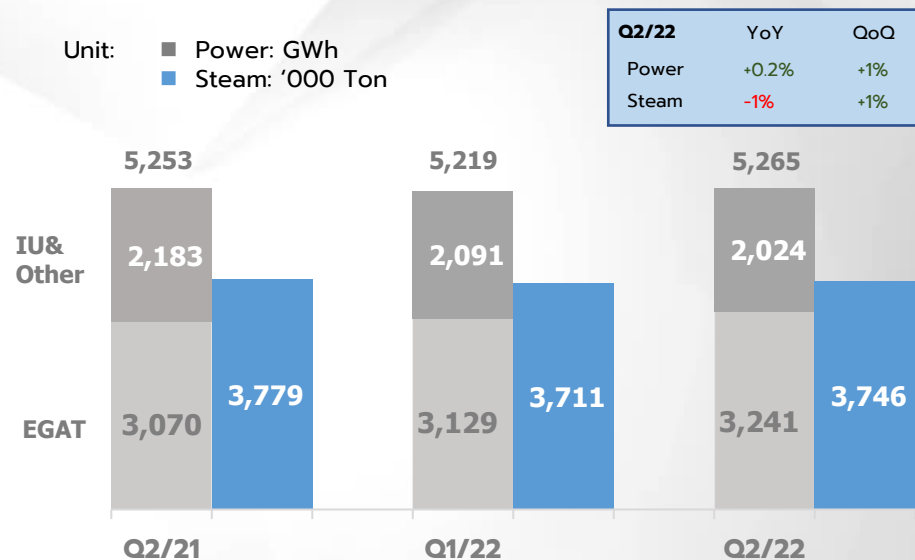
### > CBU (Completely Built Up)

Imported finished car from abroad

\* The package covers domestic manufactured truck only

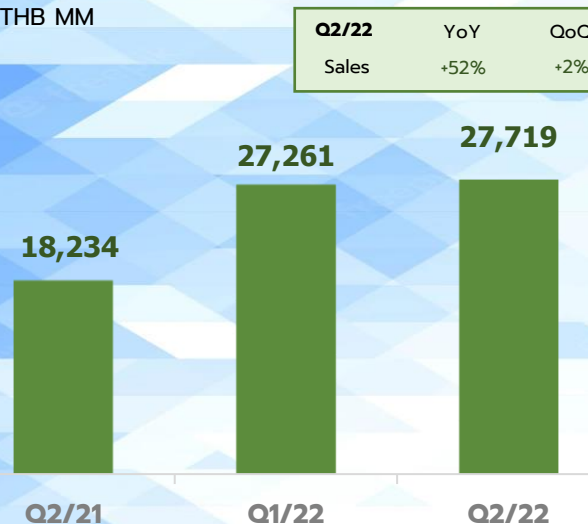
# Q2/2022 Key Highlight | Business Performance

## High electricity demand during COVID-19



## Sales revenue

Unit: THB MM

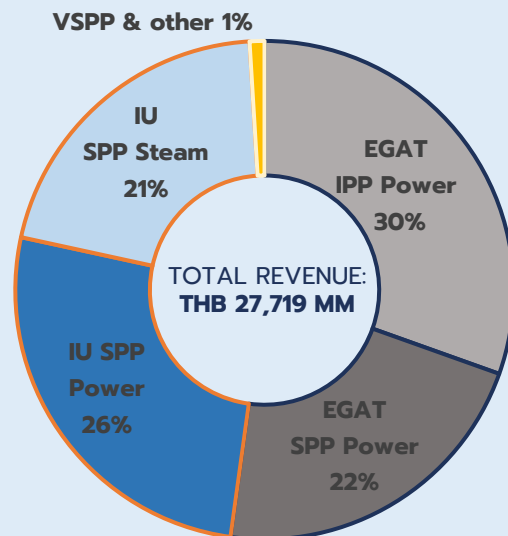


## Cost of sales

Unit: THB MM



Unit: THB MM



## Q2/2022 Revenue by Customers | THB MM, %



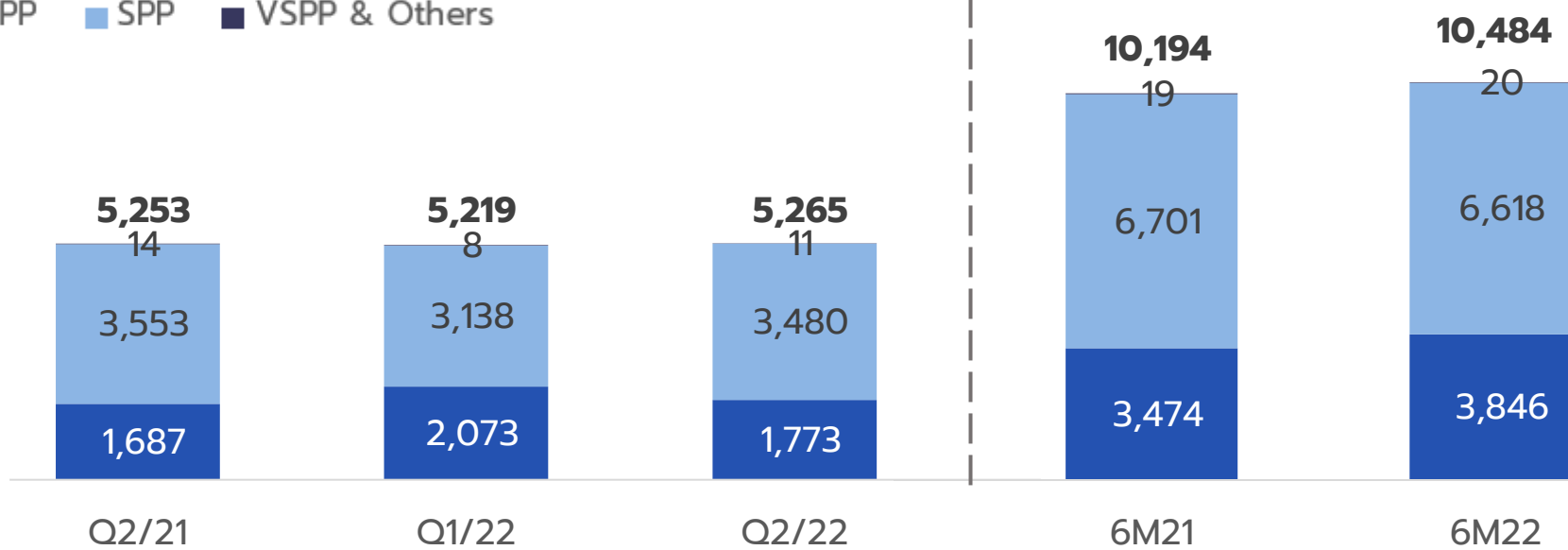
Significantly higher natural gas and coal price, resulting in lower margin in selling electricity to industrial customers



## Key Macro Factors (as of Jun 2022)

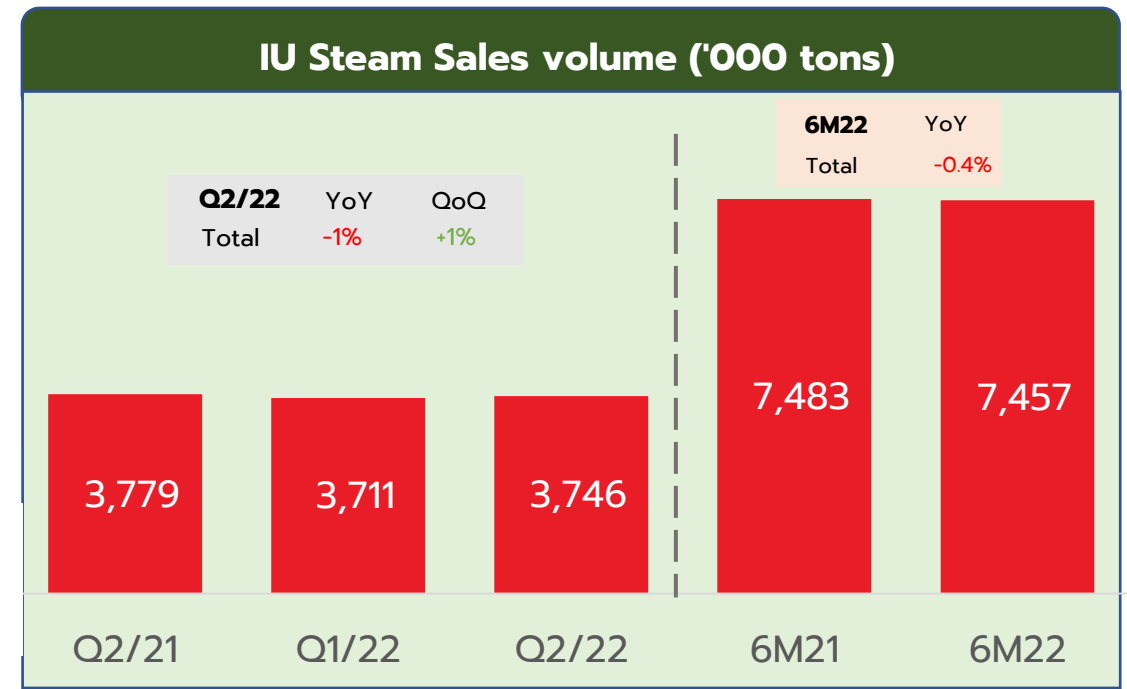
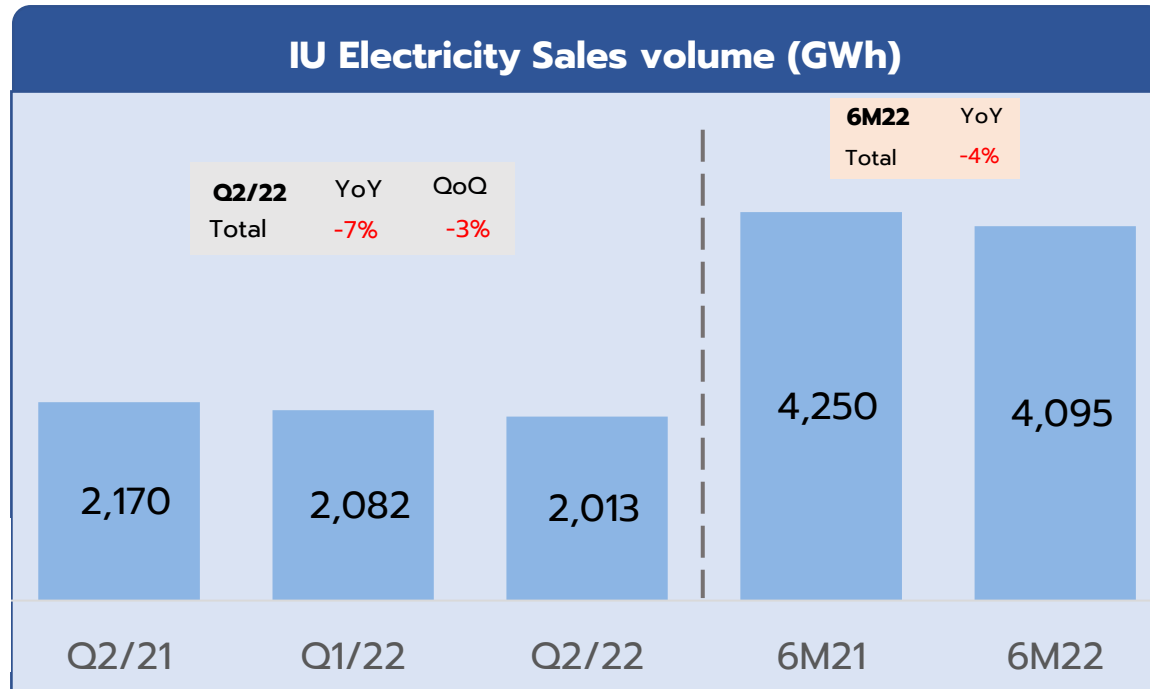
## Electricity Sales volume (GWh) & Steam Sales volume ('000 tons)

■ IPP ■ SPP ■ VSPP & Others



Q2/22	YoY	QoQ
Total	+0.2%	+1%
VSPP & Others	-19%	+32%
SPP	-2%	+11%
IPP	+5%	-14%

6M22	YoY
Total	+3%
VSPP & Others	+3%
SPP	-1%
IPP	+11%

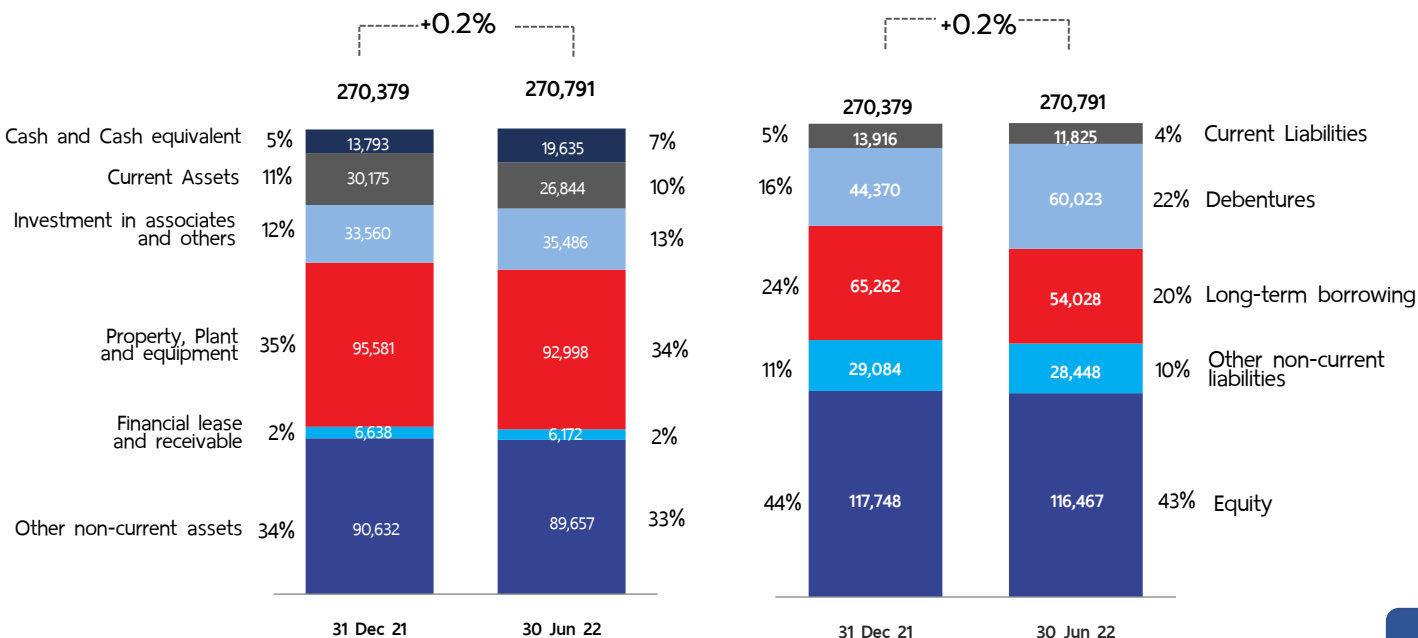


# Q2/2022 Operating Results

Overall operating results of the Company and its subsidiaries (unit: THB million)	Q2/21	Q1/22	Q2/22	change +/-(-)		6M/21	6M/22	change +/-(-)
				YoY	QoQ			YoY
Operating revenue	18,234	27,261	27,719	52%	2%	34,858	54,980	58%
Cost of sales (excluding depreciation and amortization)	(12,748)	(24,447)	(24,095)	89%	(1%)	(24,033)	(48,542)	102%
Gross profit	5,486	2,814	3,625	(34%)	29%	10,825	6,438	(41%)
Selling and administrative expenses	(516)	(391)	(436)	(16%)	11%	(950)	(827)	(13%)
Other operating income	5	5	6	25%	19%	10	12	11%
EBITDA	4,975	2,428	3,195	(36%)	32%	9,885	5,623	(43%)
Depreciation and amortization	(2,172)	(2,135)	(2,157)	(1%)	1%	(4,226)	(4,293)	2%
EBIT	2,803	293	1,037	(63%)	255%	5,659	1,330	(76%)
Finance costs	(987)	(974)	(1,046)	6%	7%	(1,961)	(2,020)	3%
Other non-operating income and expenses	512	921	619	21%	(33%)	775	1,540	99%
Dividend received and shares of profit of associates and joint ventures	522	173	435	(17%)	152%	819	608	(26%)
Income tax expenses	(348)	34	(53)	(85%)	(258%)	(800)	(19)	(98%)
Profit before FX and extraordinary items	2,502	446	992	(60%)	123%	4,492	1,438	(68%)
Net foreign exchange gain (loss)	(68)	(68)	(184)	(170%)	(169%)	(66)	(252)	281%
Net profit	2,434	377	808	(67%)	114%	4,426	1,185	(73%)
Non-controlling interests	(132)	(64)	(124)	(6%)	94%	(150)	(188)	25%
Net profit for the Company	2,302	313	684	(70%)	118%	4,276	997	(77%)
Adjusted Net Income <sup>1</sup>	2,720	771	1,204	(56%)	56%	5,079	1,975	-61%
Gross profit margin (%)	30%	10%	13%	(17%)	3%	31%	12%	31 (19%)
Net profit margin (%)	13%	1%	2%	(10%)	1%	12%	2%	(10%)
Adjusted Net Income margin (%)	15%	3%	6%	(9%)	3%	15%	4%	(10%)

# Q2/2022 Operating Results (QoQ)

## Summary of Financial Position



### Total asset +412 MTHB

- Cash and cash equivalents +5,842
- Investment in associates and JV, mainly Nuovo Plus +1,925
- PPE -2,583
- Other current assets -3,331
- Other non-current assets -975

### Liabilities +1,692 MTHB

- Debentures +9,073
- Loans -4,463
- Liabilities held-for-sale -2,086

### Equity -1,281 MTHB

- NI for the period +1,185
- Dividend payment -2,920
- Other comprehensive income +454

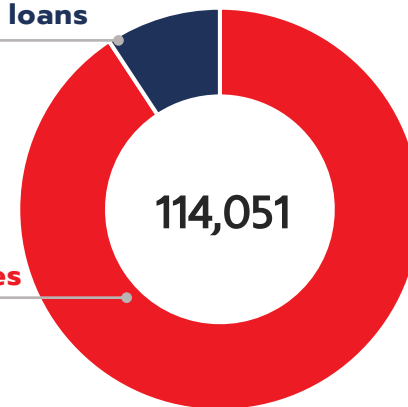
## Total Interest-Bearing Debt (THB million)

Short-term loans  
and current portion of long-term loans

THB 10,579 million | 9%

Non-current portion of  
long-term loans and debentures

THB 103,472 million | 91%



## CREDIT RATINGS

AA+

A+(tha)  
BBB-

**TRIS**  
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# Q2/2022 | Financial Performance

## Events & Highlights



### Strong electricity and steam demand of SPP portfolio

- Total electricity sales volume increased 11% QoQ (sales volume to EGAT +39% QoQ)
- Stable steam demand from industrial customers

### SRC & GIPP : EP gain from operating with diesel oil fuel

### Gain from sales of the assets related to battery business to NUOVO PLUS

- Recognized gain from assets and shares sales to NUOVO PLUS THB 288 MM



### Significant higher fuel cost from rising natural gas and coal price

- NG price of SPP portfolio +105% YoY and -1% QoQ
- Coal price of SPP portfolio +134% YoY and +16% QoQ

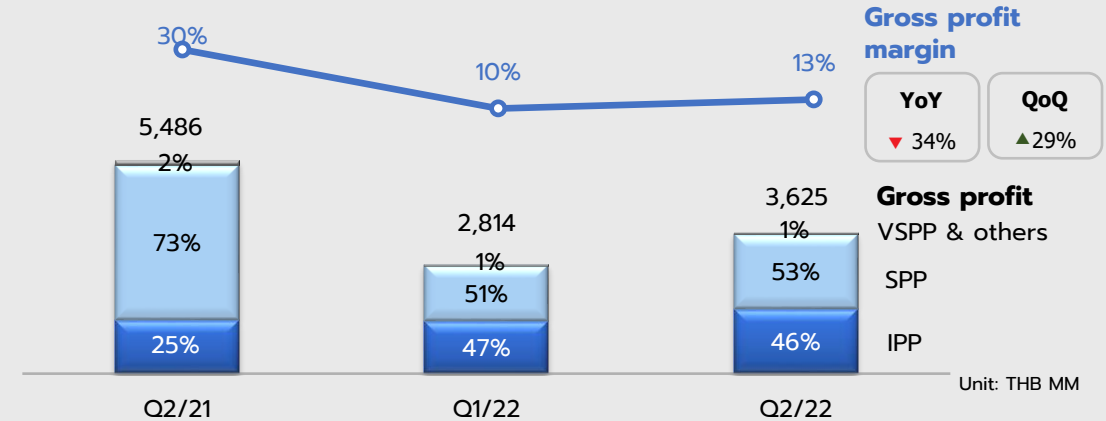
### Purchase Price Allocation (PPA) impact

- PPA for investment in AEPL has been completed in Q2/22. According to accounting standard, PPA amortization after the closing of the investment until the end of Q2/22 was booked in Q2/22 of THB -177 MM

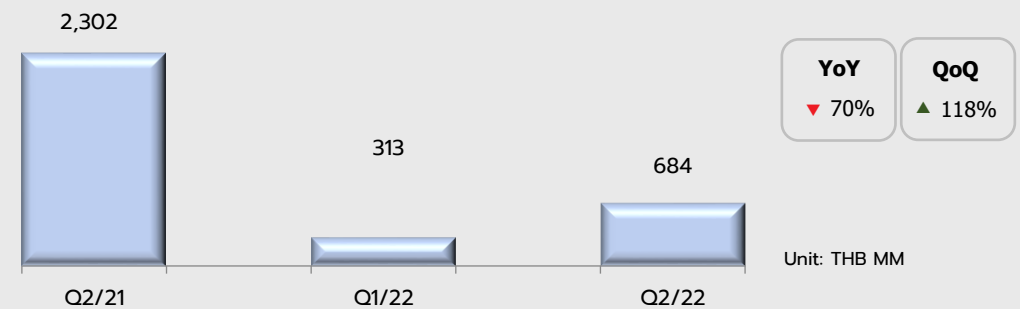
**GH1 unplanned maintenance : 13 days in Q2/2022**

## Q2/2022 Performance

### Gross profit & Gross profit margin by power plant type



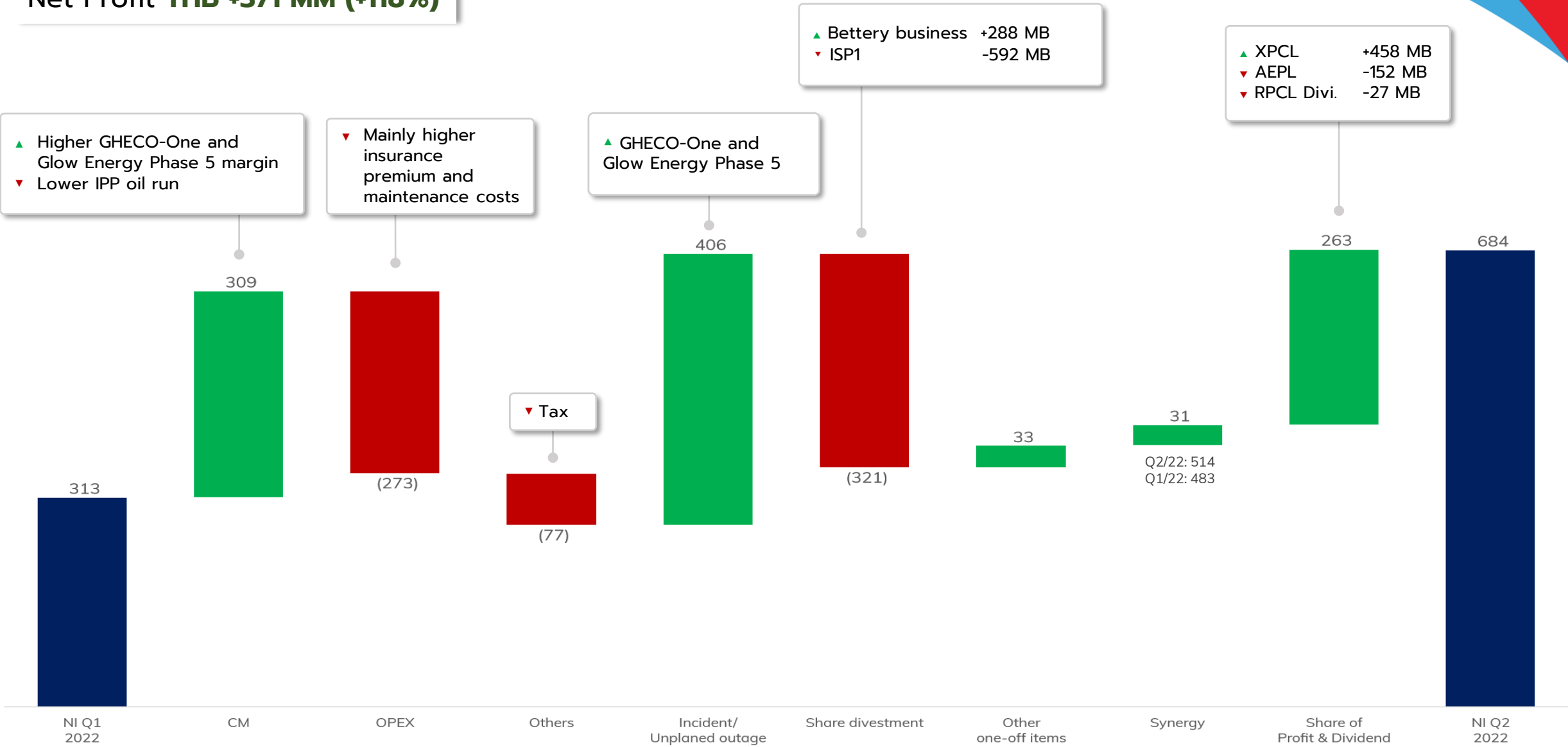
### Net Income



**The increase of Ft can partly offset the higher fuel cost.**

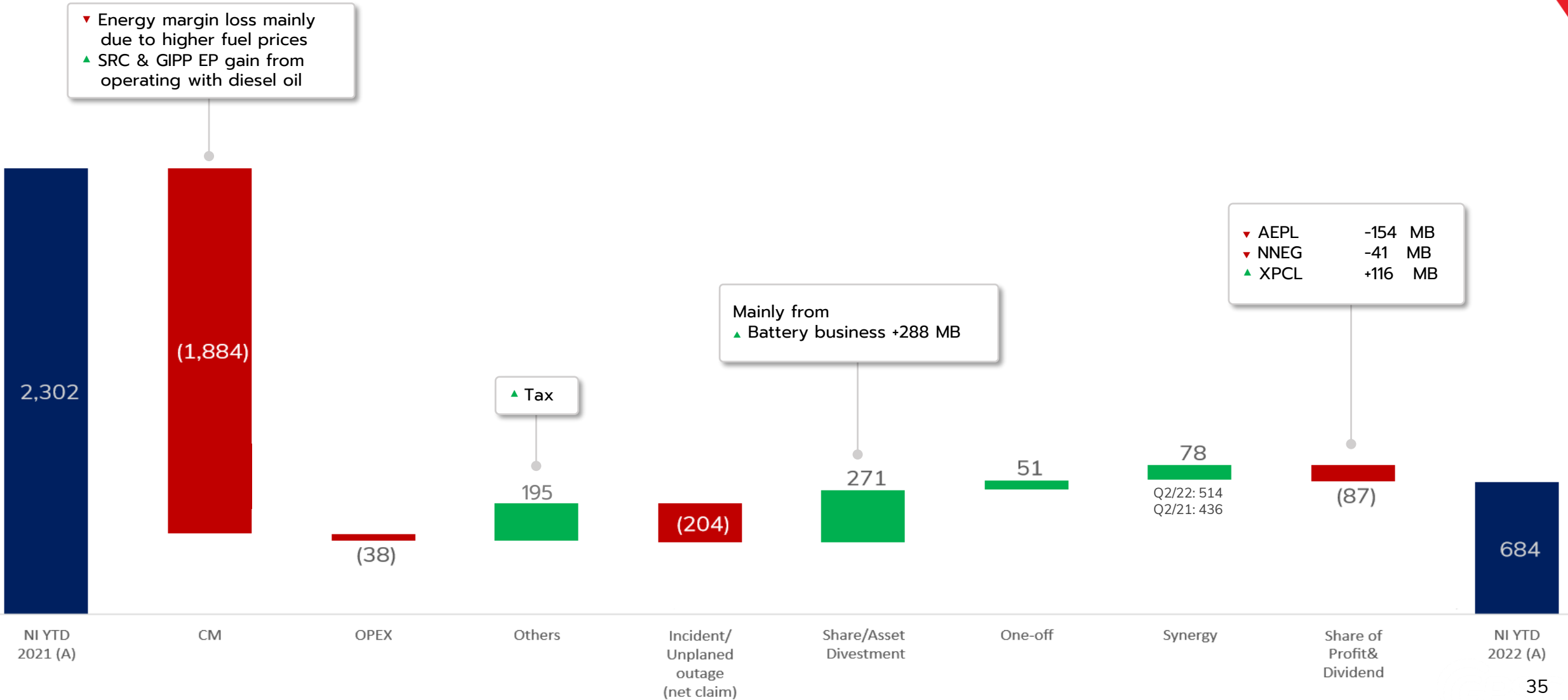
# Q2/2022 vs Q1/2022 (QoQ) Net Profit

Net Profit THB +371 MM (+118%)



# Q2/2022 vs Q2/2021 (YoY) Net Profit

Net Profit THB -1,618 MM (-70%)





# GPSC | Power Plant Portfolio (1/2)

Name	Type	Shareholding (%)	Total capacity (MW)	Equity Power capacity (MW)	Equity Operating Power capacity (MW)	Steam (T/H)	Industrial water (Cu.m/H)	COD	Tenor
<b>IPP</b>									
Sriracha	IPP	GPSC (100%)	700	700	700	-	80	2000	25
Glow IPP	IPP	GLOW (95%)	713	677	677	-	-	2003	25
Huay Ho	IPP	GLOW (67%)	152	102	102	-	-	1999	30
GHECO-One	IPP	GLOW (65%)	660	429	429	-	-	2012	25
XPCL	IPP	GPSC (25%)	1285	321	321	-	-	2019	29
RPCL	IPP	GPSC (15%)	1400	210	210	-	-	2008	25
<b>Total IPP</b>			<b>4,910</b>	<b>2,439</b>	<b>2,439</b>	<b>-</b>	<b>80</b>		
<b>SPP</b>									
CUP-1	SPP	GPSC (100%)	226	226	226	890	720	2006	10-15
CUP-2	SPP	GPSC (100%)	113	113	113	170	510	2008	15
CUP-3	SPP	GPSC (100%)	-	-	-	280	770	2009	15
Rayong Expansion (CUP-3)	SPP	GPSC (100%)	15	15	15	-	-	2019	n/a
CUP-4	SPP	GPSC (100%)	49	49	49	140	-	2019	Long-term
Glow Energy Phase 1	SPP	GLOW (100%)	-	-	-	250	1,340	1994	-
Glow Energy Phase 2	SPP	GLOW (100%)	281	281	281	300	1,180	1996	(extension)
Glow Energy Phase 4	SPP	GLOW (100%)	77	77	77	137	2,050	2005	25
Glow Energy Phase 5	SPP	GLOW (100%)	328	328	328	160	-	2011	10-20
Glow SPP 2/ GLOW SPP 3	SPP	GLOW (100%)	513	513	513	190	150	1999	25
Glow SPP 11 Phase 1	SPP	GLOW (100%)	120	120	120	-	360	2000	25
Glow SPP 11 Phase 3	SPP	GLOW (100%)	42	42	42	-	-	2006	10-20
Glow SPP 11 Phase 2	SPP	GLOW (100%)	110	110	110	-	212	2012	25
Glow Energy CFB 3	SPP	GLOW (100%)	85	85	85	79	-	2010	10-20
IRPC-CP Phase 1	SPP	GPSC (51%)	45	23	23	86.7	-	2015	25-27
IRPC-CP Phase 2	SPP	GPSC (51%)	195	99.4	99.4	66.3	-	2017	25
IRPC-CP Phase 3	SPP	GPSC (51%)	70	35.7	-	-	-	2024	-
NNEG	SPP	GPSC (30%)	125	38	38	9	-	2016	25
NNEG Expansion	SPP	GPSC (30%)	60	18	18	3	-	2020	21
NNEG Expansion 2	SPP	GPSC (30%)	30	9	-	1.59	-	2024	-
BIC-1	SPP	GPSC (25%)	117	29.25	29.25	5	-	2013	25
BIC-2	SPP	GPSC (25%)	117	29.25	29.25	5	-	2017	25
<b>Total SPP</b>			<b>2,718</b>	<b>2,241</b>	<b>2,196</b>	<b>2,773</b>	<b>7,292</b>		

# GPSC | Power Plant Portfolio (2/2)

Name	Type	Shareholding (%)	Total capacity (MW)	Equity Power capacity (MW)	Equity Operating Power capacity (MW)	Steam (T/H)	Industrial water (Cu.m/H)	COD	Tenor
<b>VSPP and others</b>									
Rayong Waste to Energy (WTE)	VSPP	GPSC (100%)	9.8	9.8	9.8	-	-	2021	18
Glow Energy Solar Plant	VSPP	GLOW (100%)	1.55	1.55	1.55	-	-	2012	25
CHPP	VSPP	GPSC (100%)	5	5	5	-	-	2008	30
CHPP (Solar)	VSPP	GPSC (100%)	5	5	5	-	-	2016	25
GRP (NPS, WXA, PPS)	VSPP	GPSC (50%)	39.5	19.75	19.75	-	-	2014-15	25
GRP1 (Sheng Yang)	Solar	GPSC (45%)	55.8	25.11	-	-	-	2016-21	20
AEPL (Solar Power Platform)	Solar	GPSC (43%)	4,634	1,989	1,227			2018-24	10-25
TSR (SSE1)	VSPP	GPSC (40%)	80	32	32	-	-	2013	25
NL1PC	Hydro	GPSC (40%)	65	26	26	-	-	2019	24
Chonburi Clean Energy (CCE)	VSPP	GLOW (33%)	8.6	2.87	2.87	-	-	2019	20
CFXD (Offshore wind farm) (Under closing process)	Wind	GPSC (25%)	595	149	-	-	-	2022-24	20
Private PPA	Solar	GPSC Gr. (100%)	40.38	40.38	11.38			2018-24	Long-term
<b>Total VSPP and others</b>			<b>5,540</b>	<b>2,306</b>	<b>1,366</b>	<b>-</b>	<b>-</b>		
<b>ERU</b>									
ERU (Under construction)	Petroleum Pitch	GPSC (100%)	250	250	-	175	-	2025	25
<b>Total ERU</b>			<b>250</b>	<b>250</b>	<b>-</b>	<b>175</b>	<b>-</b>		
<b>Total capacity</b>			<b>13,418</b>	<b>7,236</b>	<b>6,001</b>	<b>2,948</b>	<b>7,372</b>		

**Note:** - Total committed equity capacity as of June 30, 2022.

- Equity capacity includes 100% stake in GLOW, CFXD, Private PPA and ERU

- On January 18, 2022, GPSC has raised the equity injection amounting USD 25 million in AEPL and shareholding proportion was increased to 42.93%

# 2022 Maintenance Schedule | Sriracha and Rayong Plants

2022														
Main Unit	Description	Duration	Q1			Q2			Q3			Q4		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CUP-1	GTG-14	19 Days	23/1	MI	11/2									
	GTG-11	17 Days					24/5	HGPI	10/6					
	AB11	13 Days			14/3	3Y	27/3							
	GTG-15	22 Days									21/10	MI	11/11	
	GTG-16	22 Days					6/5	1Y	17/5					
CUP-2	AB21	13 Days							1/7	3Y	13/7			
CUP-3	STG31	15 Days								1/8	MI	15/8		
CUP-4	GTG-41	6 Days		19/2	RMI	25/2								
SRC	GT-11	26 Days							1/7	CI	26/7			
	GT-12	26 Days							1/7	CI	26/7			
RDF	BMH Machine	30 Days							1/7	1Y	30/7			

Notes: Rayong Site		Notes: Sriracha Site	
GTG		GTG	
HGPI	Hot Gas Path Inspection for Gas Turbine	CI	Combustion Inspection for Gas Turbine
MI	Major Inspection for Gas Turbine	HGPI	Hot Gas Path Inspection for Gas Turbine
RMI	Remote Minor Inspection for Gas Turbine	MO	Major Overhaul for Gas Turbine
STG		RCIE	Rotor and Casting Inspection Evaluation
Minor	Minor Inspection for Steam Turbine		
1MO	2 <sup>nd</sup> Major Overhaul for Steam Turbine		
2MO	2 <sup>nd</sup> Major Overhaul for Steam Turbine		
AB			
1Y	One Year Inspection Aux. Boiler		
3Y	Three Year Inspection Aux. Boiler		
HRSG		HRSG	
1Y	One Year Inspection HRSG	1Y	One Year Inspection HRSG
3Y	Three Year Inspection HRSG	3Y	Three Year Inspection HRSG
Others		Other	
1Y	One Year Inspection NG Station Test	1Y	One Year Inspection NG Station Test
5Y	Five Year Inspection NG Station (NDT)	5Y	Five Year Inspection NG Station (NDT)
FO	Forced Outage	FO	Forced Outage



# 2022 Maintenance Schedule | IRPC-CP

Main Unit	Description	Duration	2022															
			Q1				Q2				Q3				Q4			
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
Block 1																		
CTG 21	A	5 Days								5								
HRSG 21	YI	5 Days								5								
CTG 22	A	5 Days								5								
HRSG 22	YI	5 Days								5								
STG 23	YI	5 Days								5								
Block 2																		
CTG 31	A	5 Days						5										
HRSG 31	YI	5 Days						5										
CTG 32	A	6 Days										5						
HRSG 32	YI	6 Days										5						
STG 33	YI	5 Days										5						
Aux. Boiler	YI	8 Days												7				

- Notes:**
- YI: Yearly Inspection, A: Inspection Level A
  - The duration of maintenance above does not include inspection by law.

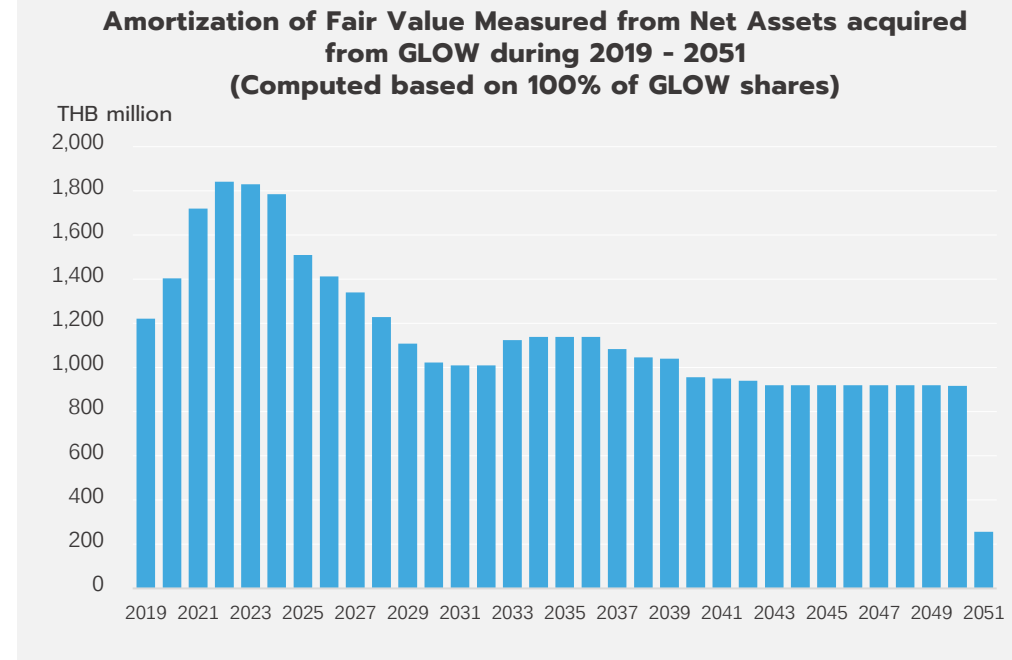
# 2022 Maintenance Schedule | GLOW's Main Units

Main Units	Description	Duration	2022											
			Q1			Q2			Q3			Q4		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GSPP2	CTG_3A_3B	3 Days							15/7	MI	18/7			
GSPP2	CTG_1B	10 Days				18/4	MI	28/4						
GSPP2	CTG_2A	6 Days						3/6	MI	9/6				
GSPP2	CFB_2	4 Days			12/3	MI	16/3							
GSPP3	CFB_1	22 Days						10/6	3Y	2/7				
	CFB_2	20 Days			11/3	MO	31/3							
GSPP11 (Plant 2)	GT_1	2 Days						18/6	MI	20/6				
GSPP11 (Plant 3)	GE_2	16 Days					23/5	MO	7/6					
GSPP11 (Plant 1)	GT_100	20 Days								17/8	MO	5/9		
HHPC	Unit_1	14 Days										20/10	MI	2/11
	Unit_2	14 Days											3/11	MI

# Fair Value Measurement of Net Assets from Acquisition of Glow

unit: THB million

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



GPSC has completed the acquisition of 69.11% on 14 March 2019 at a total of THB 93,001 million, the company has measured the fair value of GLOW net assets as follows:

- The fair value uplift of THB 37,594 million from **Purchase Price Allocation (PPA)**
- **The fair value recognition of net assets** acquired from GLOW will be amortized yearly (based on the remaining period of the contract, 5 to 31 years).
- **Goodwill** will be subjected to an impairment test on a yearly basis.





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