

Q3/2020

Opportunity Day

4 December 2020



PTT Public Company Limited (PTT)

GPSC's parent company: the largest energy conglomerate in Thailand












Upstream

Intermediate

Downstream

Technology & Engineering

Business Area	Company	PTT's Holding (%)	Activities
 E&P	PTTEP	65.29%	Exploration and production
 Coal	PTT Global Management	100%	Coal business
 LNG	PTT Global LNG PTT LNG	50% 100%	LNG value chain LNG receiving terminal
 Gas	Gas Pipeline*	100%	Sole owner/operation of the transmission pipeline
	S&M*	100%	Supply & marketing of natural gas
	GSP*	100%	Extracting hydrocarbon contents in natural gas for petrochemical's feedstock
 Trading	Trading*	100%	Import/Export/Out-out trading of petroleum and petrochemical products
 Oil Marketing	PTTOR**	100%	Retail service stations and commercial marketing
 Petrochemical & Refining	PTTGC	47.68%	Petrochemical flagship
	TOP	45.03%	Refinery flagship
	IRPC	47.55%	Integrated refinery & petrochemical
 Power		31.7%***	Power flagship New S-Curve business of PTT group

Note:

*Businesses directly operated by PTT PLC

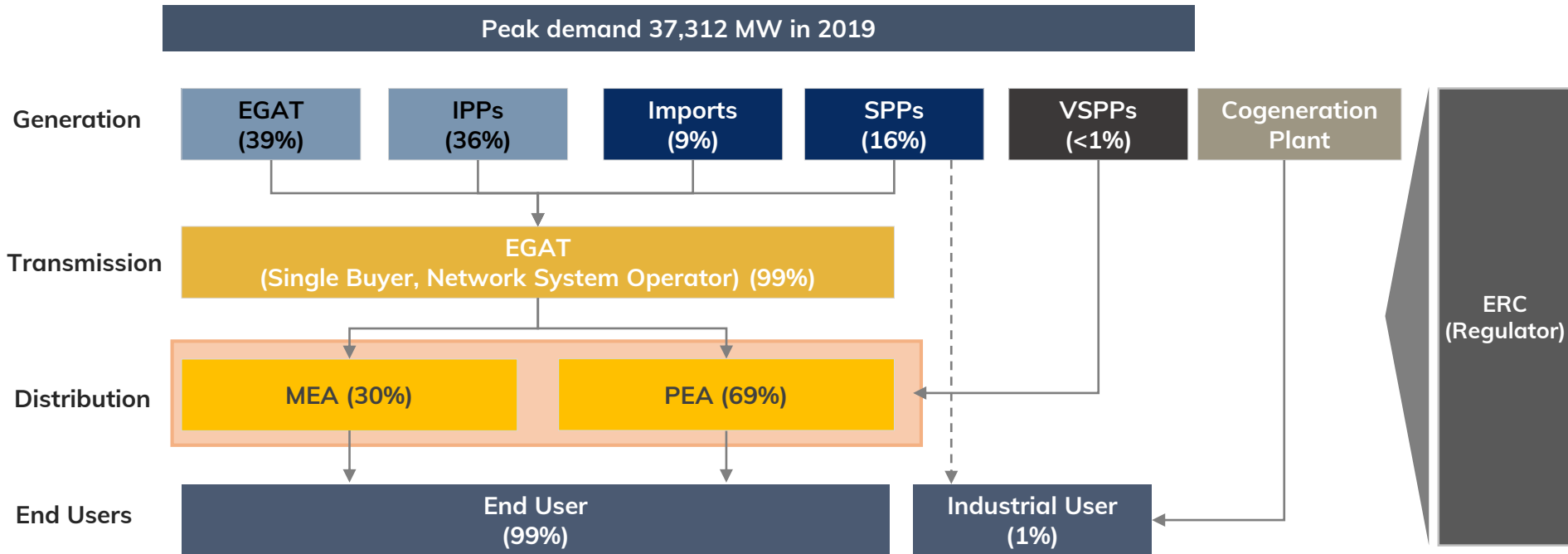
**Transferred asset to PTTOR on July 1, 2018

***According to the announcement of PTT and TOP dated 21 Aug 2020, PTT will hold 31.7% of the total number of shares of GPSC after the business restructuring is completed

Source: PTT's Investor Update May 2019

Current power industry structure in Thailand

- **EGAT and IPPs dominate electricity generation market**, with the combined market share 75%.
- EGAT is the sole purchaser for almost all of the electricity generated, while VSPPs sell electricity directly to the MEA and PEA
- SPPs sell electricity to both EGAT and directly to industrial users



Definition

EGAT Electricity Generating Authority of Thailand (State-owned entity)
 IPP Independent Power Producers
 SPP Small Power Producers
 VSPP Very Small Power Producers
 MEA Metropolitan Electricity Authority (State-owned entity)
 PEA Provincial Electricity Authority (State-owned entity)
 ERC Energy Regulatory Commission

Power Plant Definition & Revenue Structure

IPP

Independent Power Producer (IPP):

- A large power producer who has entered into the Power Purchase Agreement (PPA) with contracted capacity more than 90 MW
- IPPs are obliged to sell their entire output to EGAT

SPP

Small Power Producer (SPP) / Cogeneration (Cogen):

- A small power producer who sell their electricity to EGAT* and sell their electricity and utilities (e.g. steam, industrial water, chilled water) to Industrial customers (IUs)

Contract Type:

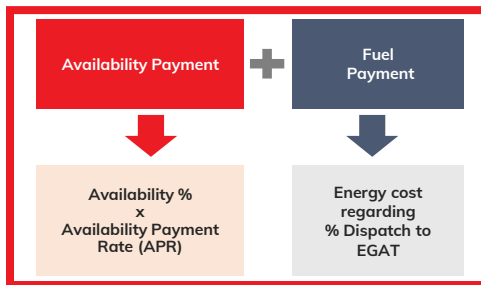
EGAT:

- Firm: Contract term > 5 years ; CP + EP (+ FS)**
 - Non-Firm: Contract term <= 5 Years; Only EP_{NF}
- IUs: Commercial contract as agreed.

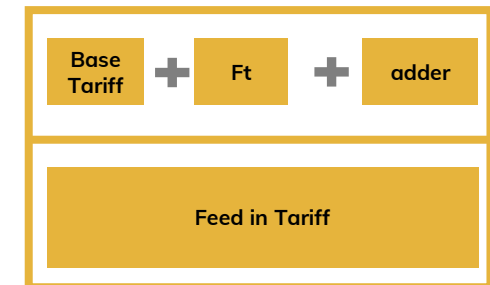
VSPP

Very Small Power Producer (VSPP):

- A very small generator whose power generating process is generated from renewable energy, cogeneration, biogas, biomass, waste heat, etc. with contracted capacity no more than 10 MW of electricity capacity
- VSPPs are able to sell power to the Distribution Utility Authority only



EGAT (Power)			
Firm	Capacity Payment	+	Energy Payment
Non-Firm	K factor (seasonal weight)	×	Energy Payment
Industrial Customers			
Electricity	PEA tariff TOU Rate 4.2**		
Steam	Steam Base Cost × (Gas index + CPI index)		



* Under various type of contracts.

** Fuel Saving (FS)

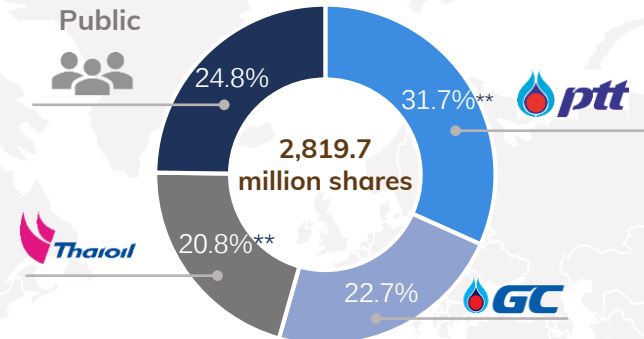
*** Reference rate with conditions:
<https://www.pea.co.th/>

GPSC Innovative Power Company at a Glance | as of 20 Nov 2020

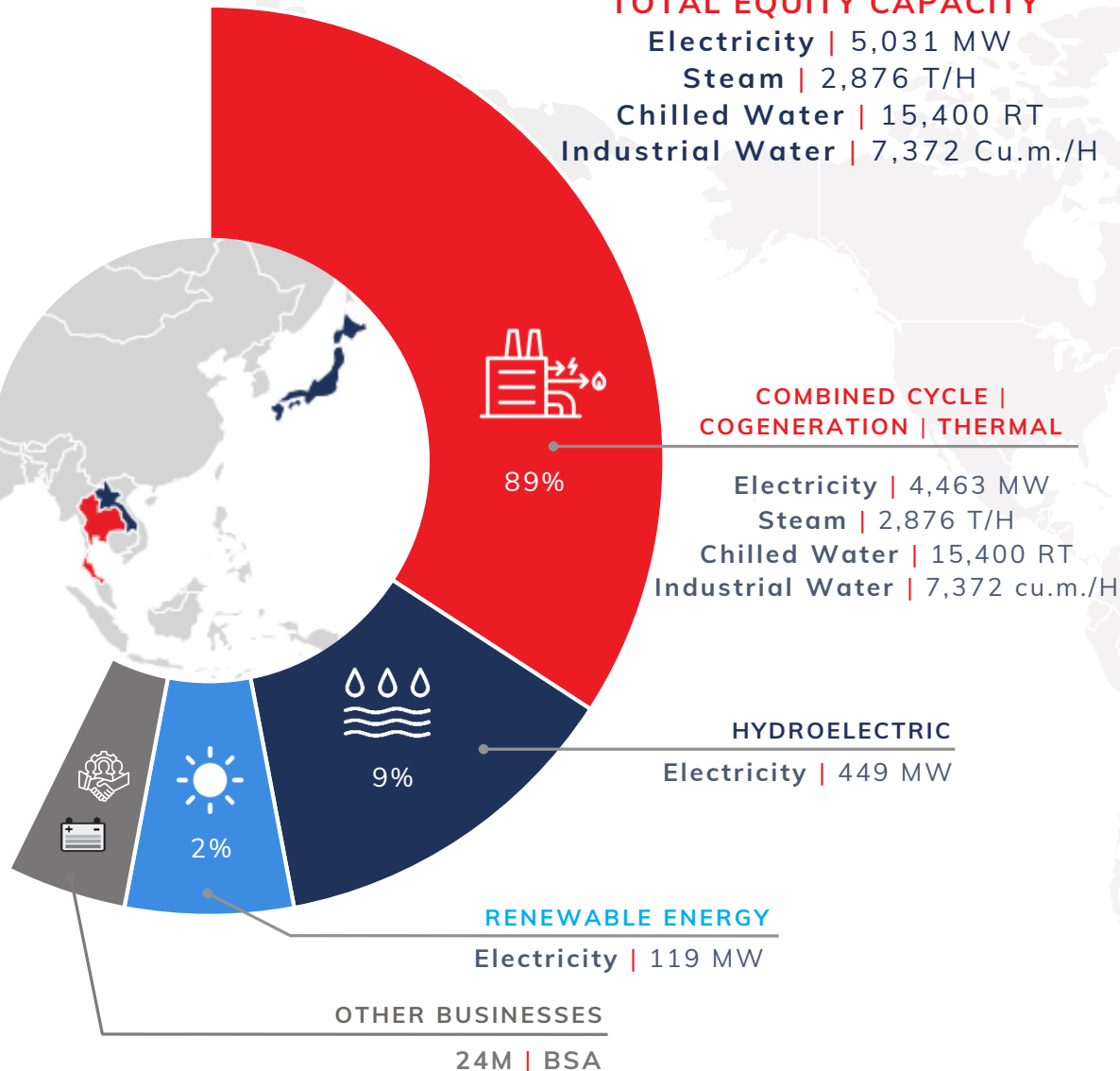
TOTAL EQUITY CAPACITY*

Electricity | 5,031 MW
 Steam | 2,876 T/H
 Chilled Water | 15,400 RT
 Industrial Water | 7,372 Cu.m./H

SHAREHOLDING STRUCTURE



**According to the announcement of PTT and TOP dated 21 Aug 2020 PTT and TOP will hold 31.7% and 20.8% of the total number of shares of GPSC, respectively, after the business restructuring is completed.



COMPANY INFORMATION

Business Type | Energy & Utilities
 Paid-up Capital | THB 28,197 million
 Market Cap. | THB 191,742 million
 Listed on | Stock Exchange of Thailand

CREDIT RATINGS

BBB- S&P Global

AA-

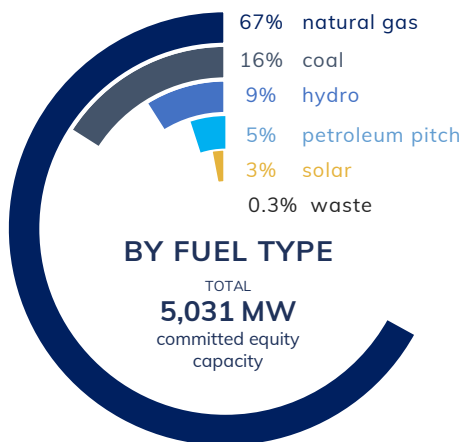
TRIS
RATING
A Strategic Partner of EXCELLENCE

A+(tha)

FitchRatings

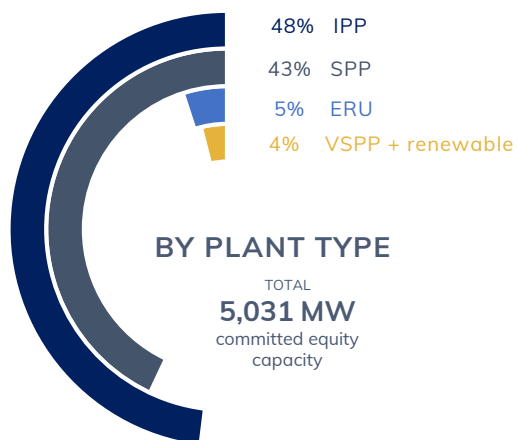
Note: *Committed equity capacity which based on GRP restructure shareholding to be completed on Q1/2021

GPSC's Business Portfolio by Fuel and Plant Type | as of Dec 2020



BY FUEL TYPE

FUEL TYPE	INSTALLED MW			EQUITY MW		
	total capacity	in operation	%	total capacity	in operation	%
natural gas	5,047	5,047	62%	3,399	3,399	67%
hydro	1,502	1,502	19%	449	449	9%
coal	1,045	1,045	13%	814	814	16%
petroleum pitch	250	-	3%	250	-	5%
solar	205	149	3%	106	81	2%
waste	18	9	0.2%	13	3	0.3%
TOTAL	8,067	7,751	100%	5,031	4,746	100%



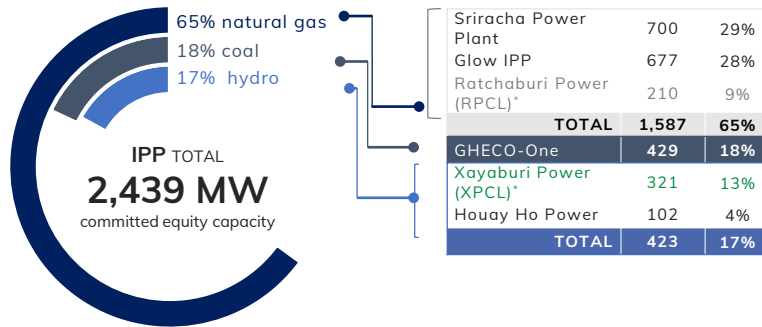
BY PLANT TYPE

PLANT TYPE	INSTALLED MW			EQUITY MW		
	total capacity	in operation	%	total capacity	in operation	%
IPP	4,910	4,910	61%	2,440	2,440	49%
SPP	2,614	2,614	32%	2,192	2,192	43%
ERU	250	-	3%	250	-	5%
VSPP + renewable	293	227	4%	150	115	3%
TOTAL	8,067	7,751	100%	5,031	4,746	100%

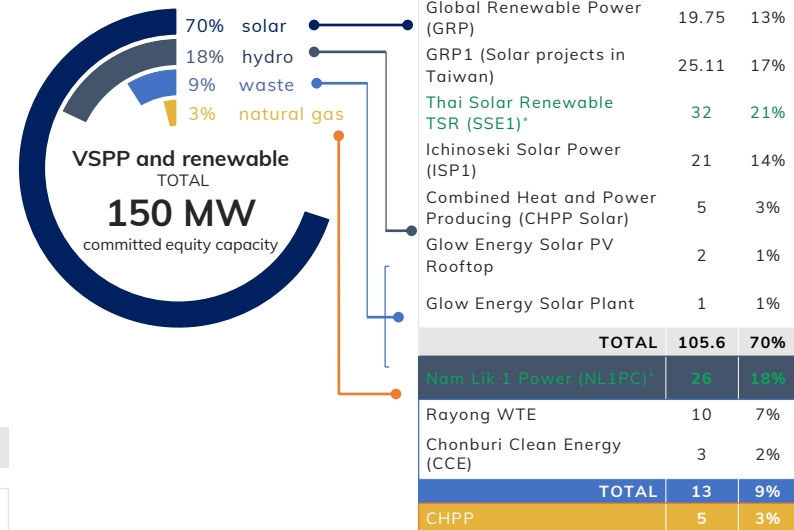
Note: Committed equity capacity which also based on GRP restructure shareholding to be completed on Q1/2021
Including NNEG Expansion which COD on 31-Oct-2020

GPSC's Business Portfolio by Plant Type | as of Dec 2020

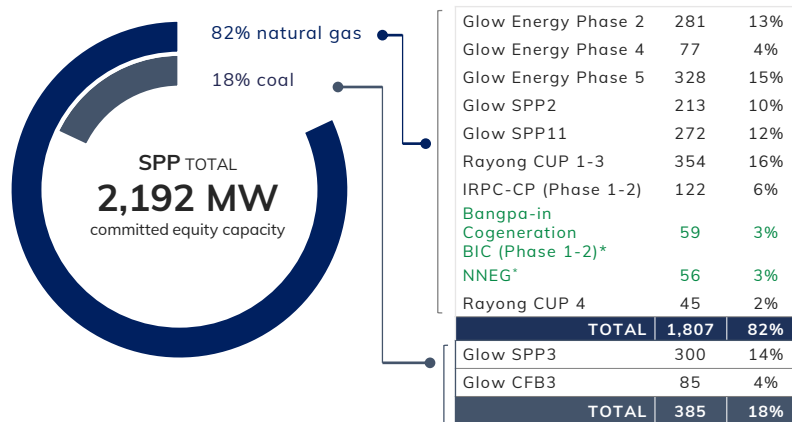
IPP | 48%



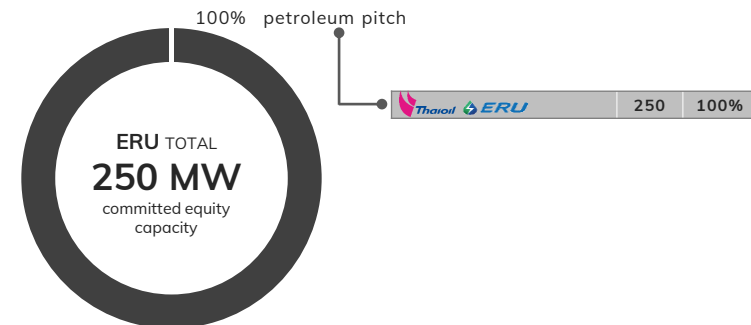
VSPP and renewable | 3%



SPP | 44%



ERU | 5%



Note: *GPSC associates and Joint Ventures

Q3/2020 & Recent and Key Highlights



SIGNIFICANT GROWTH

Strong operational performance in Q3/2020 with business expansion and plans to new S-Curve business

- Strong turnover with growing profits from solid electricity and steam demand
- Recognised benefits from GPSC-GLOW synergy
- Focus on S-Curve business to become an energy solution service provider of PTT group via:
 - Battery Business,
 - Energy Storage & System Integration
 - Smart Energy Management

Strong Credit Profile

All rating agencies affirmed credit rating with stable outlook.

- S&P Rating affirms at “BBB-”
- TRIS Rating affirms at “AA-”
- Fitch Rating affirms at “A+”



PROFIT

132% YoY Increase in Adjusted Net Income

- Decreased IPP gross profit due to lower AP of GHECO-One and lower dispatch of HHPC
- Higher margin of SPP portfolio from lower natural gas and coal price
- Decreased finance cost after the Right Offering
- Increased share of profit from XPCL

30% QoQ Increase from Q3/2020

- Higher share of profit from XPCL during rainy season
- IPP and SPP portfolio decreased due to lower AP of GHECO-One, lower dispatch of HHPC and lower electricity sales volume of SPP portfolio



SUSTAINABILITY

Interim Dividend

1H/20 interim dividend payment of THB 0.50 per share.

Awards

Received 4 awards at 10th Annual Corporate – Institutional Investment Poll from Alpha South East Asia

Received 3 awards at “the Climate Actions Together” from Greenhouse Gas Management Organization

Received “the Eco Factory certification award” from the institute of Waste and Sustainability 2020.

Received Thailand Sustainability Investment (THSI) award for 3rd consecutive year.



CONTROL

Projects Under Construction



NNEG Expansion started COD on 31 Oct 2020.



WTE, 84% construction progress, SCOD in Q2/2021

ERU, jointly operated with Thaioil, 48.1% construction progress, SCOD in 2023



SPP Replacement, replacement of:

- **GE Phase 2 (Stage 1):** under construction with SCOD in 2022
- **GSPP2 and GSPP3 (Stage 2):** under feasibility study for internal investment approval

Growth and Strategic Directions

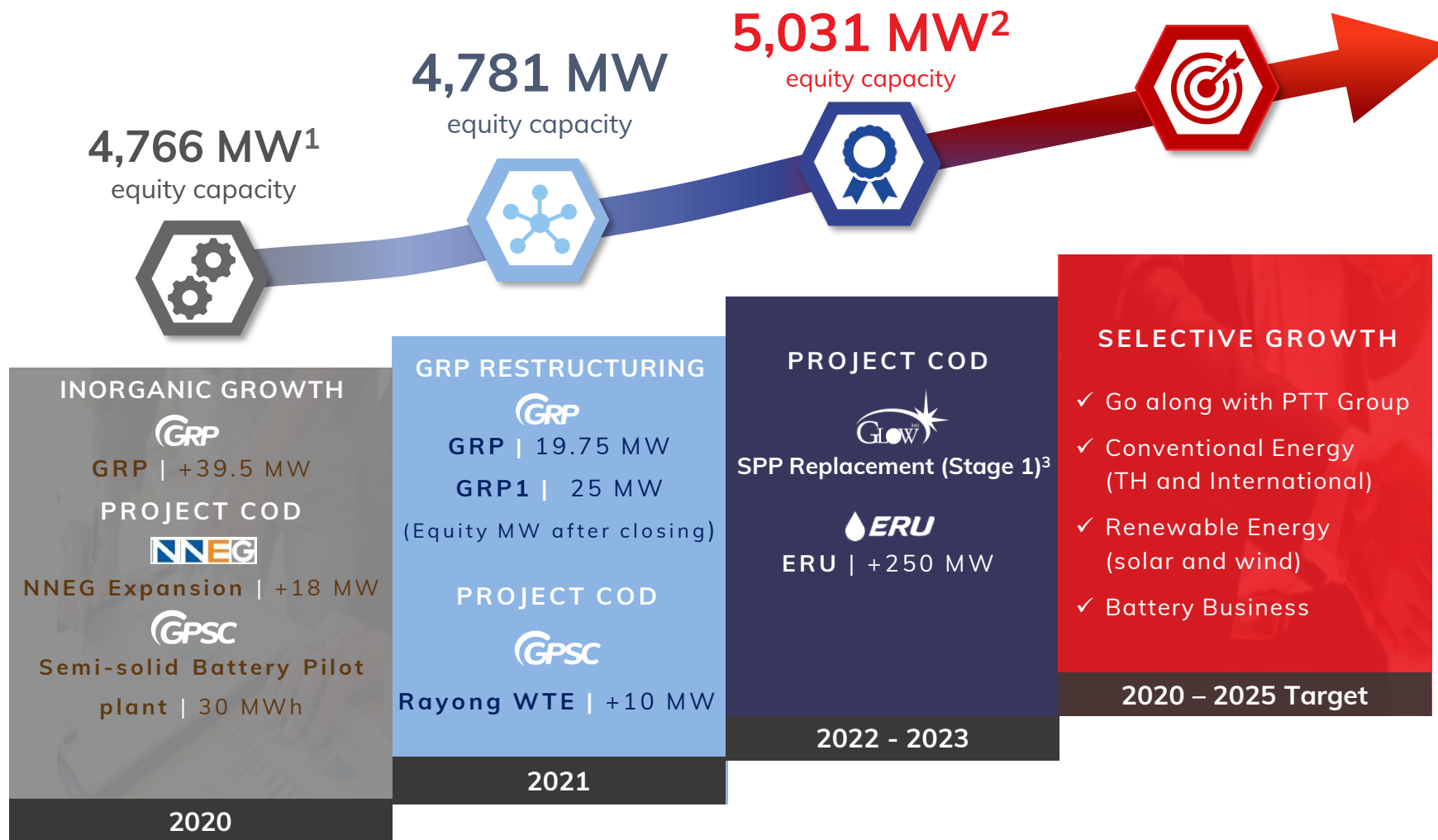
Update of Projects

Financial Activities and Plans

Financial Performance



GPSC Electricity Growth Pipeline



Notes: 1. Consisting of operating projects 4,708 MW (COD before 2020), GRP 39.5 MW, NNEG Expansion 18 MW

2. Maintain original capacity of Glow Cogeneration plants

3. **SPP Replacement Stage 1:** Glow Energy Phase 2 (new plant with 2 PPAs with EGAT, total capacity of 192 MW electricity and 300 T/h steam, SCOD in 2022; and

SPP Replacement Stage 2: Glow SPP2 and Glow SPP3 is under feasibility study for internal investment approval.

Strategic Directions and Growth Strategy | 3S Strategy






SYNERGY & INTEGRATION

-  Synergy Capture
-  Operation Excellence & Asset Optimization
-  Corporate & Business Infrastructure



SELECTIVE GROWTH

-  Go along with PTT Group
-  Domestic and International
-  Renewable



S-CURVE

-  Battery Business
-  Energy Storage System Integrator
-  Energy Management Solution Provider

Synergy and Integration

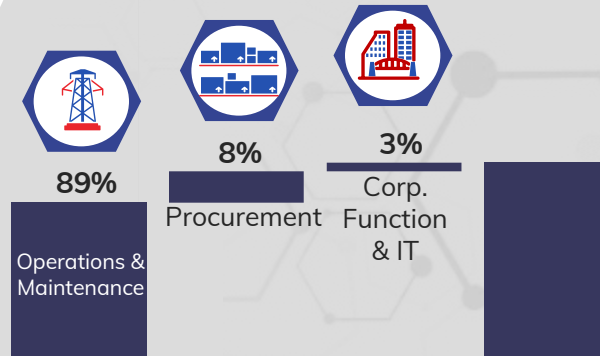


SYNERGY AND INTEGRATION IMPLEMENTATION



“working as one team to deliver synergy”

RECURRING SYNERGY VALUE BASED ON CURRENT PLAN



**THB+1.6 bn
per year**

Ramp up with full
synergy value
contribution by 2024

As of **9M/2020**, the recognized synergy value is approx. **THB 466 mm** (pre-tax) from O&M, procurement and corporate functions.

SYNERGY & INTEGRATION



Operation Excellence & Asset Optimization



Corporate & Business Infrastructure



2020 FOCUS MOVED FROM IDENTIFYING POTENTIAL TO DELEVERING PROMISES

- ✓ Execution Focus | Move to monitoring and controlling
- ✓ Speed of Delivery | Prioritization and planning
- ✓ Enablement & Ownership Transfer

Synergy and Integration | Synergy Initiative Updates



Quick win **GLOW** steam to **CUP-3** (Realized Network Integration)

- First energy from GLOW to GPSC's network
- Completed commissioning on 17 June 2020
- Supply excess steam from GLOW to increase GPSC reliability and optimization



Selective Growth

SELECTIVE GROWTH



Go along with PTT Group



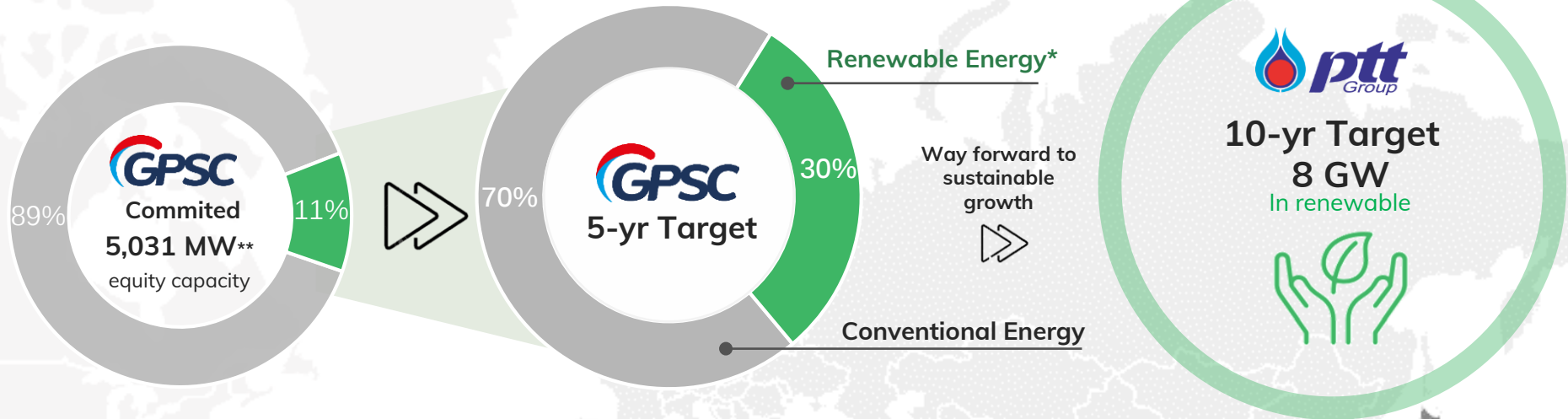
Domestic and international



Renewable

SUSTAINABILITY STRATEGY & COMMITMENT

- ✓ To be listed in **DJSI by 2022**
- ✓ Increasing renewable energy up to **30% of GPSC's installed capacity**
- ✓ Expanding internationally focusing on solar and wind through GRP, a subsidiary equally owned by PTT and GPSC.



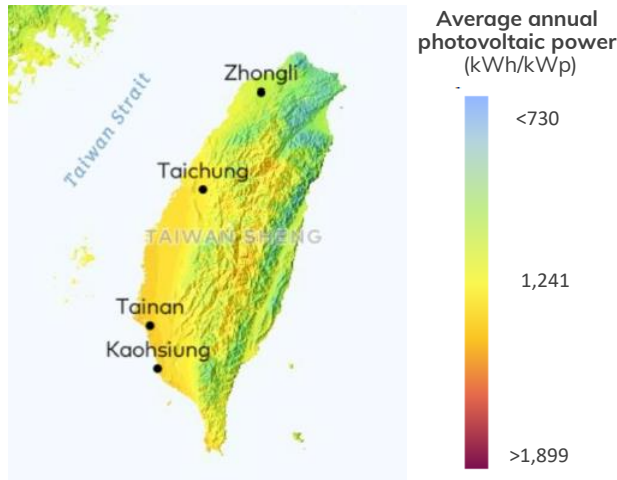
GPSC's Focus Countries:
Thailand, Myanmar, Vietnam and Taiwan



Note: * Renewable energy mentioned on this page covers energy from solar, wind, waste, hydro, etc.

** Committed equity capacity which based on GRP restructure shareholding to be completed on Q1/2021

Taiwan | Overview



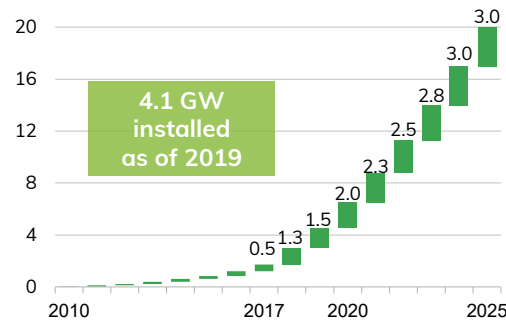
Land Area: 36,000 sq. km
 Population: 24 million people
 GDP: 590 billion USD
 Sovereign credit rating (S&P): AA-
 Power Market structure: Single buyer (Taiwan Power Company)
 PDP key takeaways:

- To achieve greenhouse gas reduction to below 50% by 2050 with focus on promoting solar and wind power generation
- To phase out nuclear power plants within 2025

Taiwan's Key Takeaways

- Urgent to replace nuclear with renewables with strong focus on wind and solar power (solar rooftop receiving highest Feed-In-Tariff among renewable sources)
- Developed PPA framework
- Developed transmission and distribution infrastructure (run by Taipower)
- Highly industrialized economy with high economic stability (low interest and stable currency) supporting ease of doing business
- Market liberalization of electricity supply chain of renewable energy

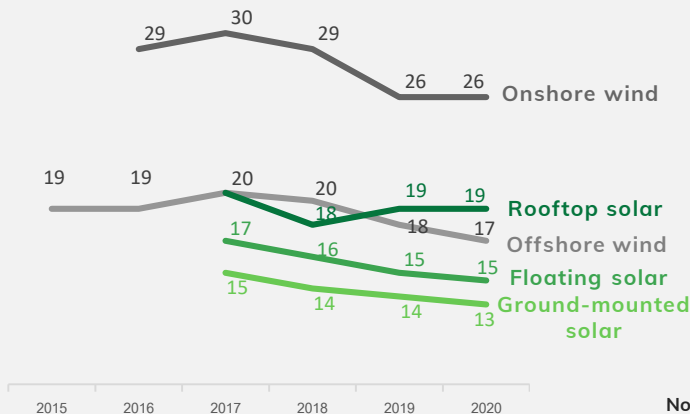
Solar Installed Capacity and Target (GW)



Taiwan's Renewable Installation Target

Sources	2020	2025
Solar PV	6,500	20,000
Onshore Wind	728	1,200
Offshore Wind	520	5,500
Hydro Power	2,100	2,150
Biomass	768	813
Geothermal	150	200
Fuel Cell	22.5	60
Total	10,789	29,923

Historical Solar and Wind Tariffs | UScent/kWh



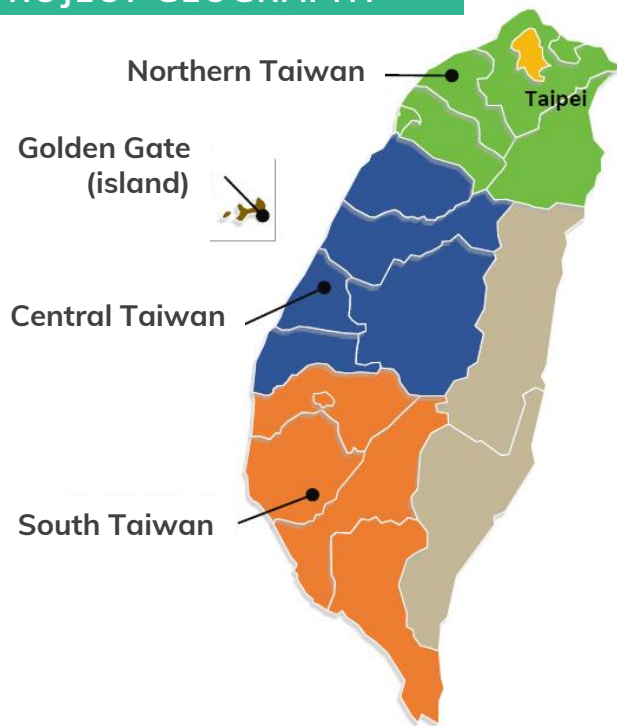
Solar's Key Takeaways

- Solar rooftop having the highest FiT rate of 19 UScent/kWh while downward FiT trend for ground-mounted and floating type
- Fixed FiT throughout 20-year PPA, secured at COD date
- Developer will receive incentive markup for the use of high-performing module
- Extra markup for project established in Northern Taiwan

Notes: 1. Conversion rate of 30.02 NTD/USD 2. Index from World Bank; 3. Index from OECD; 3. Index from IFHV
 Sources: World Bank, Taiwan Ministry of Economic Affairs (MOEA) and Sasini Management Consulting (29 May 2020)

Project Information | 50 MW Solar through Share Acquisition

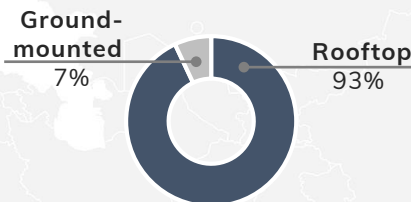
PROJECT GEOGRAPHY



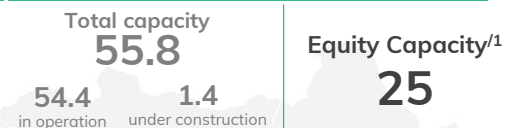
TYPE



Solar PV rooftop and ground-mounted



ELECTRICITY (MW)



CUSTOMER

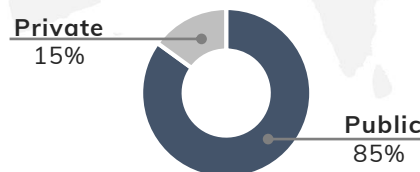


Taiwan Power Company (Taipower)

S&P Global Ratings: AA-

LOCATIONS

253 sites, nation-wide on public and private properties



TARIFF

~4.05 - 6.10 NTD/kWh

TOTAL INVESTMENT

NTD 2,521 mm
(THB ~2,748 mm Equiv.)

Note: FX 1.09 THB : 1 NTD

GPSC's HOLDING



50%



50%



90%



10%



Sheng Yang Energy

First investment in Taiwan

Sole off-taker (TaiPower) with financial strength

Fixed FiT through 20 years, no minimum energy requirement

O&M provided by the seller for 20 years

Note: 1. Committed equity capacity which based on GRP restructure shareholding to be completed on Q1/2021

S-Curve Business

THE JOURNEY OF PTT AND GPSC NEW S-CURVE

Smart Energy Management
& Solution Provider

Energy Storage &
System Integration

Battery
Business



Distributed
Energy
Resources

Transformation
Enablement

Digital
Energy

S-CURVE



Battery Business



Energy Storage &
System Integrator



Smart Energy
Management &
Solution Provider

Current (Transition Phase)

End-game



Battery
Manufacturer
with own R&D

30 MWh and Scale up

Commercial Scale



Admired System
Integrator

EPC & System Integrator



One-stop service
smart solution provider



New Energy
Business

Pilot Projects & Business Model



Expand business

S-Curve Business | Shift Design to Decide

BATTERY MANUFACTURE



From Lab to Reality

Proven Technology

Pilot Scale

- Pre-Marketing
- Proven cost
- Partner for scale up
- Benchmarking

Commercial Scale

Build wider applications and scale-up to global

R&D
Technology development in Lab

BATTERY MANUFACTURE DEVELOPMENT



30 MWh Semi-Solid Battery Pilot Plant

First Battery Cell by End of 2020



39%

Type	Semi-solid battery
Capacity (MWh/year)	30
Customers	<ul style="list-style-type: none"> • Mobility – E Bus/Tuktuk • BESS – Residential / C&I • Overseas Orders
GPSC's shareholding	100% operating assets under GPSC
Location	Map Ta Phut Industrial Estate, Rayong, Thailand

Progress Updates:

- Preparing for installation and Site Acceptance Test (SAT).
- Engineering design, construction and system testing are on schedule.

S-Curve Business | Pilot Smart Energy Projects

Application and Target Market for Battery Pilot Plant

Pilot Plant (30 MWh)

Mobility: EV Bus

- Bangkok Mass Transit Authority
- PTT Group shuttle bus

Commercial & Industrial

- Charging station
- Industrial Estate

Micro-Grid

- Remote Area

Residential Energy Storage System (RESS)

- Property Development
- Backup server
- Energy Storage Mobility
- Others

Others Business



ESS FOR GC's INNOVATION CENTER (Launched: Feb 2020)

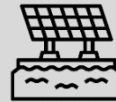


- ✓ Increase gas engine efficiency
- ✓ Peak shift with ESS
- ✓ 250kW/1.5MWh
- ✓ Emergency backup power



First offshore floating solar farm

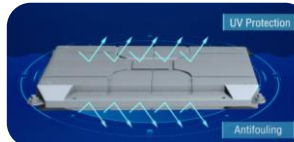
100 kW floating solar farm installed for seaside of PTT Tank



100 kW Offshore Floating Solar



Floating solar farm would cut the electricity cost of **PTT Tank** and reduce carbon dioxide emission



GC developed special plastic "InnoPlus HD8200B" for retardance of barnacle-bore and antifouling floating pontoon



CHPP designed and installed the floating solar system

S-Curve Business | Pilot Smart Energy Projects

Solar PPPA and Energy Management for Retail Customers

Target Market



PTT Group network



Reputable Industrial & commercial



Government offices, University, Hospitals

Product

Solar PPPA: Synergy with partners

EPC: Exclusive EPC

ESS: Partnership with strategic suppliers, tech experts

Pontoon: Market development & add more reference sites

Others business: Initiative & pilot projects



6 MW Smart Energy Project at Suranaree University To create a low carbon university



1.74 MW
Solar Rooftop



Solar Rooftop: Mono PERC Half-Cell Module (1.68 MW)



Solar Rooftop: Bifacial cells (60 kW)



4.312 MW
Floating Solar



Using special-grade polyethylene floating pontoons developed by GC



100-200 kWh
Lithium-ion BESS



High efficiency BESS with management of solar power generation for optimum energy production's decision-making



AI &
Smart Energy Platform



Blockchain-based smart grid and Artificial Intelligence (AI)



Cutting-edge innovation and smart energy platform for inter-building energy trading and real-time management

VISTEC SMART ENERGY MANAGEMENT (Phase II: Q4/2020)



- ✓ 1.39 MW renewable energy (solar roof + floating)
- ✓ 1.2 MWh ESS for backup, renewable optimization and zero-import building
- ✓ Blockchain P2P energy trading
- ✓ EV chargers
- ✓ Artificial Intelligence



@Wangchan Valley | Smart Natural Innovation Platform



Area

- Hotel
- Health center
- Service apartment
- School
- Reservoir
- Green area
- Commercial area
- Research and innovation center

Total Area

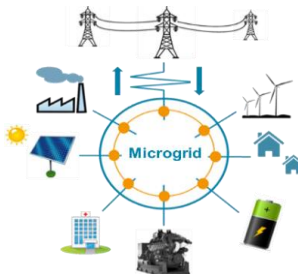
- Phase 1: 794 Rai
- Phase 2: 1,183 Rai
- Total: 1,977 Rai

Estimated Population

- Phase 1: 12,390 persons

Estimated Power Demand

- ~20-30 MW



SMART Energy Management



Clean Energy Generation



Flexibility Distributed Generation



Cost Efficient No Clean Energy Shedding

Growth and Strategic Directions

Update of Projects

Financial Activities and Plans

Financial Performance



Nava Nakorn Electricity Generation (NNEG) Expansion

Newly started
project



100%



COD | 31 Oct 2020

Progress Update

Type	Gas-fired Cogeneration
Electricity Capacity (MW)	<ul style="list-style-type: none">• Total = 185• Expansion = 60
Steam Capacity (ton/hour)	<ul style="list-style-type: none">• Total = 40• Expansion = 10
Customers	<ul style="list-style-type: none">• Industrial Users• EGAT (SPP firm, 90 MW, 25-yr)
GPSC's shareholding	30% of total shares
Location	Nava Nakorn Industrial Promotion Zone, Pathumthani

Rayong Waste to Energy (WTE)

Project under construction



84%

Progress Update

- RDF Power Plant is under construction with 84% progress and on schedule.

Remark: RDF Project has been starting to sort waste to produce RDF energy since 2018.

Type	Waste
Capacity (MW)	9.8
Customers	Provincial electricity Authority (PEA)
GPSC's shareholding	100% operating assets under GPSC
Location	Mueang, Rayong, Thailand

SPP Replacement

(Stage 1: Glow Energy Phase 2)

Project under construction



Area prep.
process

SCOD | Q4/2022



Progress Update

- An existing plant is under the demolition work with the progress of 79% and the land being prepare for new power plant.

Type	Gas-fired Cogeneration
Electricity Capacity (MW)	192
Steam Capacity (ton/hour)	300
Customers	<ul style="list-style-type: none">• Industrial Users• EGAT (SPP firm, 2*30 MW, 25-yr)
GPSC's shareholding	100% of total shares
Location	Map Ta Phut Industrial Estate Rayong, Thailand

Energy Recovery Unit (ERU)

Project under construction



48%



SCOD | 2023

Progress Update

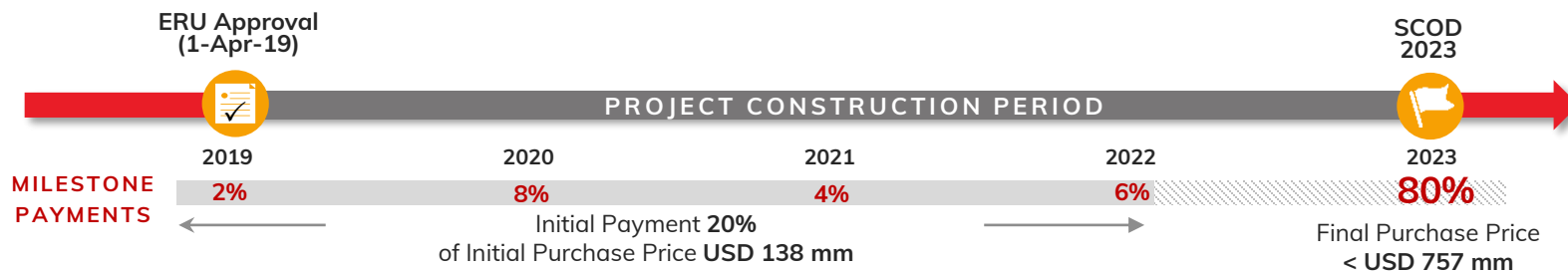
- **Engineering design work:** 90% of 3D Model Review
- **Construction:** Foundation work, Major Equipment Foundation
- **Procurement of main machinery and equipment:** purchase, manufacturing plan, PIM can proceed according to plan

Type	Petroleum Pitch
Capacity (MW, T/h)	Electricity 250 MW, Steam 175 T/h
Customers	Thai Oil PLC (25-yr, 200 MW of electricity + 175 T/h of steam)
GPSC's shareholding	100% of total shares in ERU Co.
Location	Thaioil Refinery, Sriracha, Chonburi, Thailand



ERU Project is a thermal power plant project that produces electricity and steam by using petroleum pitch which is a result of the refinery of Clean Fuel Project (CFP) of Thaioil. The electricity and steam produced are sent back to the CFP at the Thaioil Refinery.

PROJECT TIMELINE & MILESTONE PAYMENTS



Growth and Strategic Directions

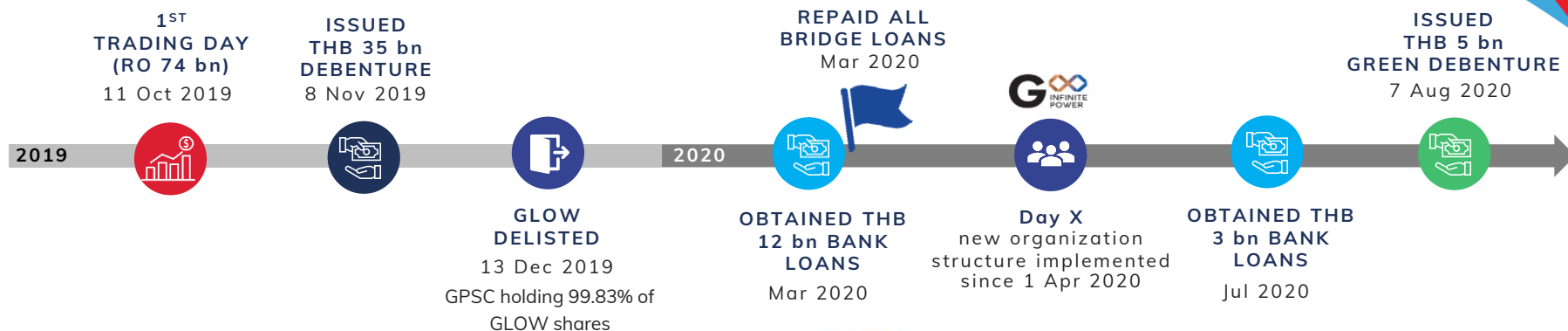
Update of Projects

Financial Activities and Plans

Financial Performance



Key Financial Activities



GPSC's 1st GREEN DEBENTURES



THB 5,000 million to institutional and/or high net worth investors with over **6-time oversubscription**



3 tranches of:

- 5-year** tranche of THB 1,500 million with a fixed coupon rate of **2.11%**;
- 10-year** tranche of THB 1,000 million with a fixed coupon rate of **2.94%**; and
- 15-year** tranche of THB 2,500 million with a fixed coupon rate of **3.24%**.



Proceeds will be used to finance Rayong Waste to Energy (WTE) project and solar projects



AA-

GPSC's PRUDENT FINANCIAL POLICY

- 1 Net Debt to Equity $\leq 1.0x$**
- 2 Net Debt to EBITDA $\leq 4.0x$**
- 3 Dividend Policy | Minimum dividend at the rate of not less than 30% of the net profit**

according to the financial statements of the Company after the deduction of tax, reserved funds as required by law (with additional conditions)

Growth and Strategic Directions

Update of Projects

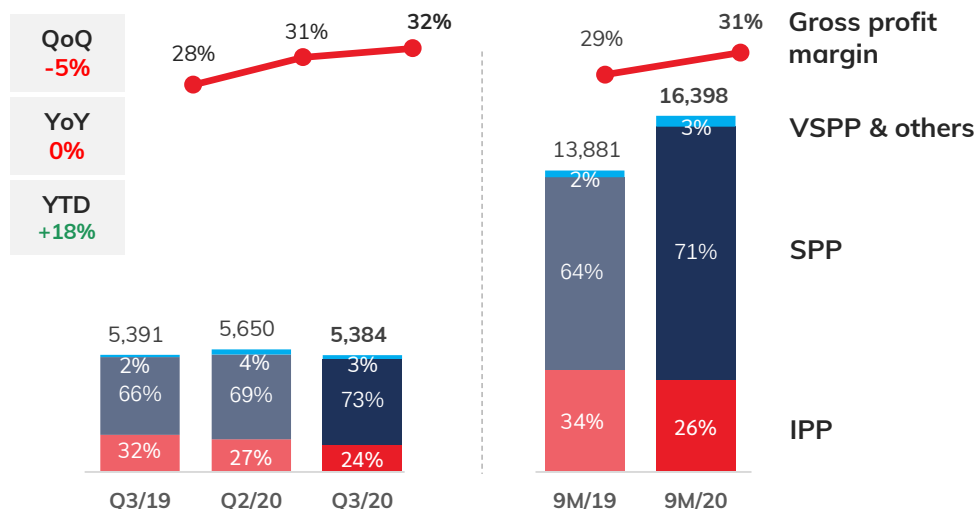
Financial Activities and Plans

Financial Performance



Q3/2020 Key Financial Highlights | THB million

GROSS PROFIT & GROSS PROFIT MARGIN BY TYPE OF POWER PLANT | THB million, %



Q3/2020 Gross profit decreased qoq and yoy while increased YTD mainly due to the following;

QoQ

- Lower AP of GHECO-One (8.5 days maintenance)
- Lower power dispatch from HHPC
- Lower natural gas costs resulting in higher margin

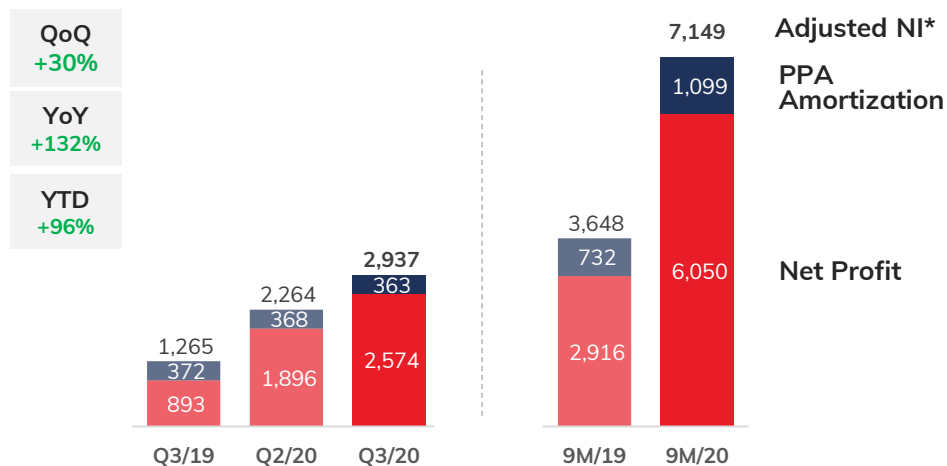
YoY

- Lower AP of GHECO-One (8.5 days maintenance)
- Lower power dispatch from HHPC
- Lower natural gas and coal costs resulting in higher margin
- Revenue from GRP increased after an acquisition completion on 26 March 2020

YTD

- Fully recognition of gross profit from GLOW in 2020, while only 18 days in Q1/2019

NET PROFIT & ADJUSTED NET INCOME* | THB million



Q3/2020 Adjusted Net Income increased qoq, yoy and YTD mainly due to the following;

QoQ

- Dividend received from RPCL (THB 270 million)
- Share of profit increased from XPCL during rainy season

YoY

- Dividend received from RPCL
- Finance cost decreased after completed Rights Offering in Q4/2019

YTD

- Fully recognition of GLOW's results in 2020 both in terms of number of days (18 days in Q1/2019) and percentage shareholding (69.11%, 95.25%, and 99.83% in 2019)

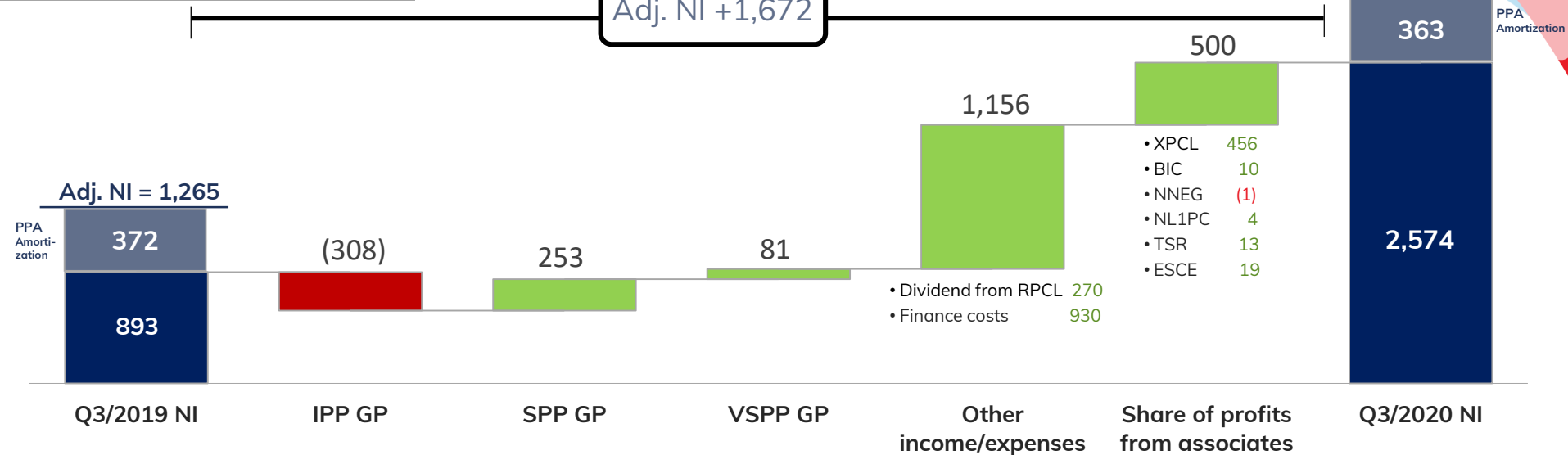
*Adjusted Net Income is net profit attributed to the company adjusted to reflect the company's true earnings from its normal operations which excludes: fair value of intangible asset from the acquisition of GLOW (PPA Amortization)

Q3/2020 vs Q3/2019 and Q2/2020 Net Profit*

Q3/2020 VS Q3/2019 (THB million)

Adj. NI +1,672

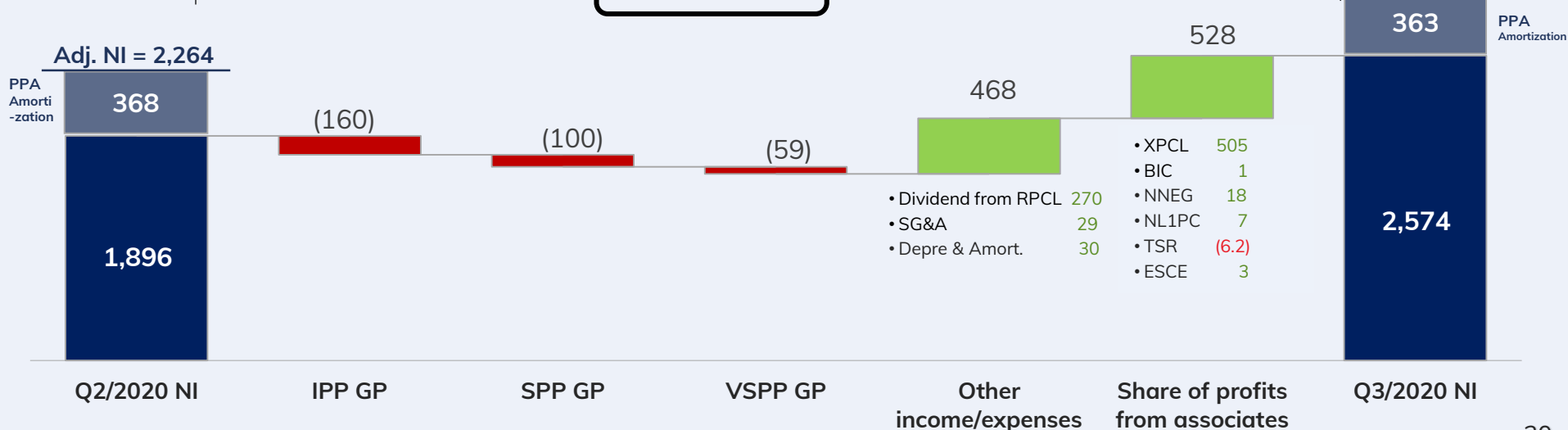
Adj. NI = 2,937



Q3/2020 VS Q2/2020 (THB million)

Adj. NI +673

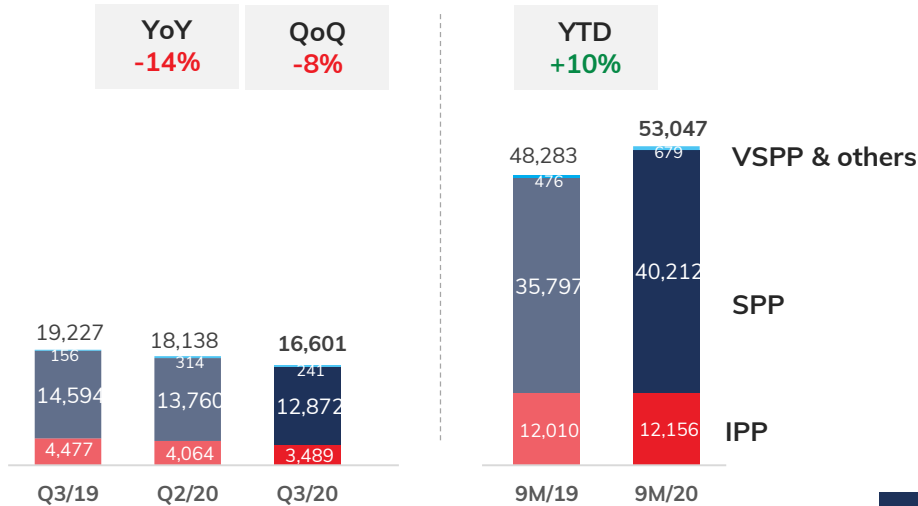
Adj. NI = 2,937



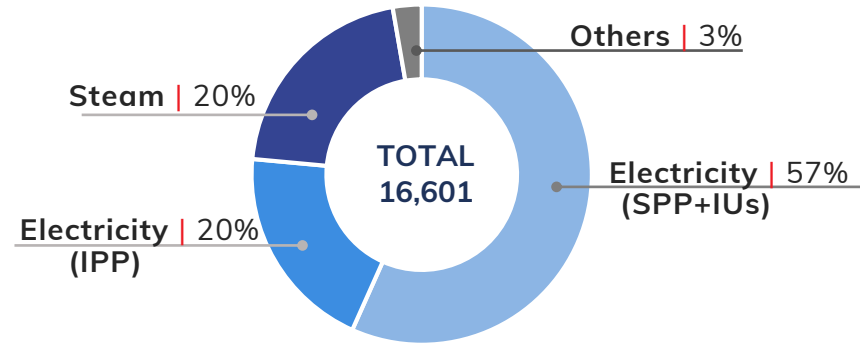
Note: Proportional consolidation method applied by allocating NCI to each business group.

Q3/2020 Revenue Breakdown | THB million, %

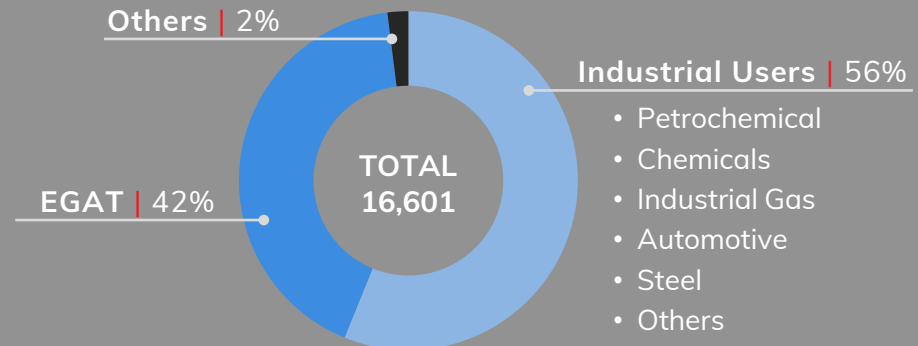
REVENUE BY TYPE OF POWER PLANT | THB million



Q3/2020 REVENUE BY PRODUCT | THB million, %



Q3/2020 REVENUE BY CUSTOMERS | THB million, %



LONG TERM OFF-TAKE CONTRACTS

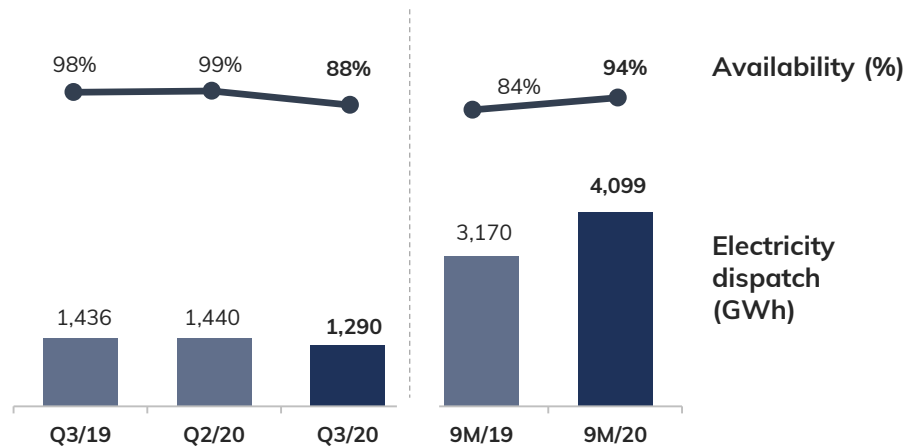
- ✓ Guaranteed market and source of revenue
- ✓ Guarantee a minimum level of profit in regards to their investment
- ✓ Price adjustment formula, varying with fuel price

Industrial Users Key Monitoring

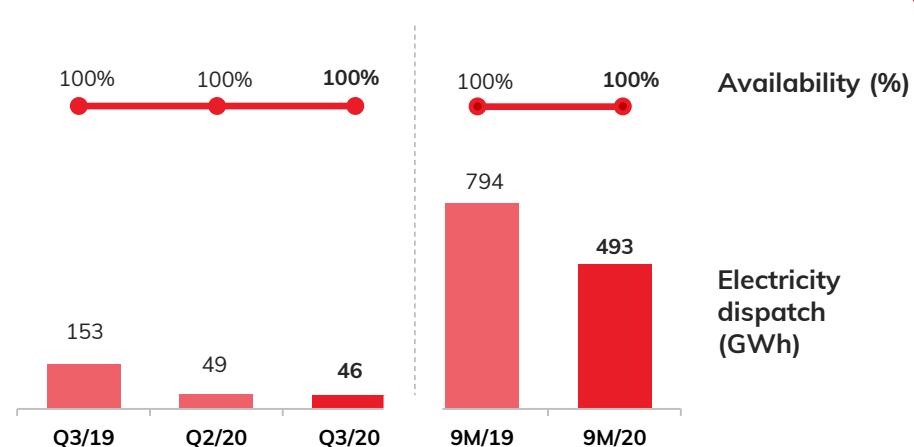
- + **Petrochemical**: most of factories continue to operate as planned.
- **Automotive**: some factories are recovering to its normal operation.

IPP Sales Volume and Availability

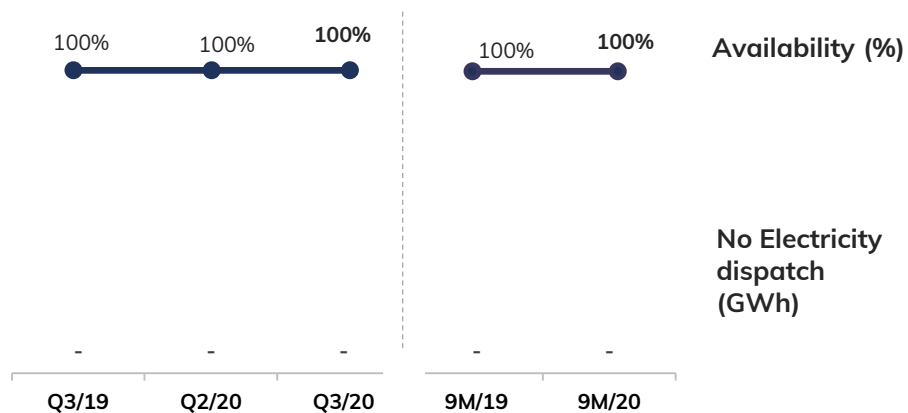
GHECO-One



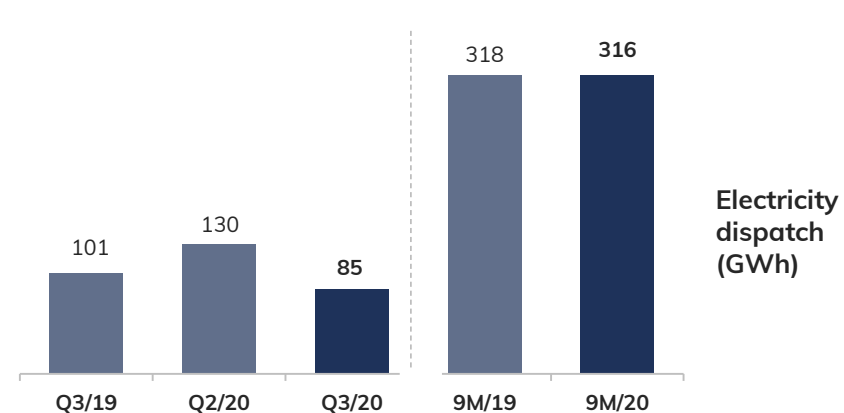
Sriracha



GIPP

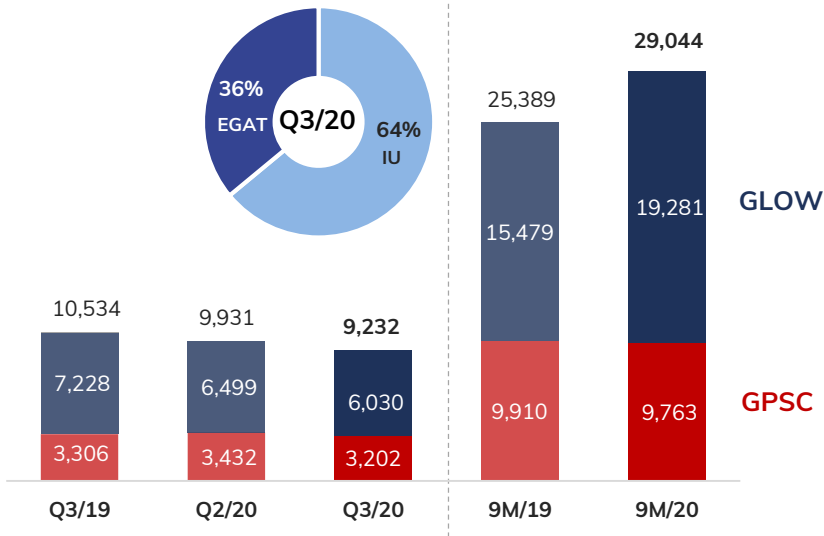


HHPC

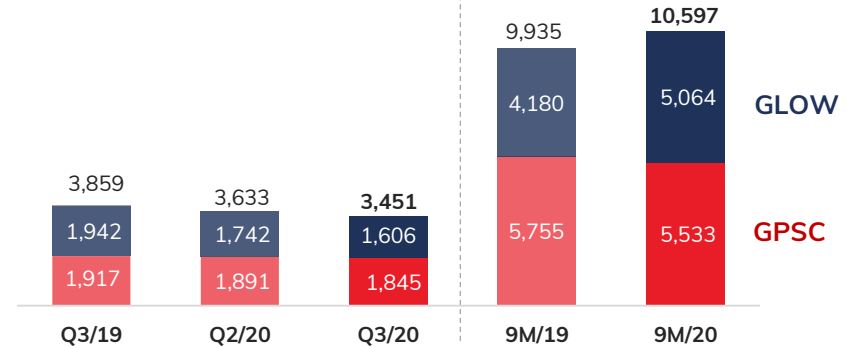


SPP Power and Steam Sales

POWER SALES | THB million

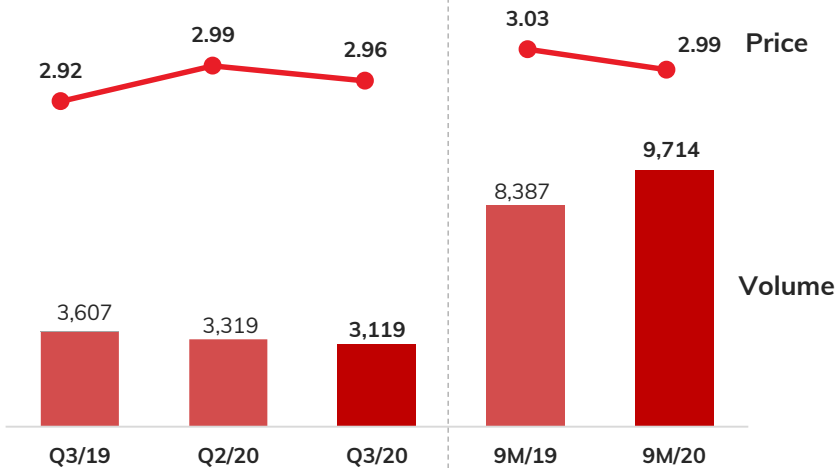


STEAM SALES | THB million



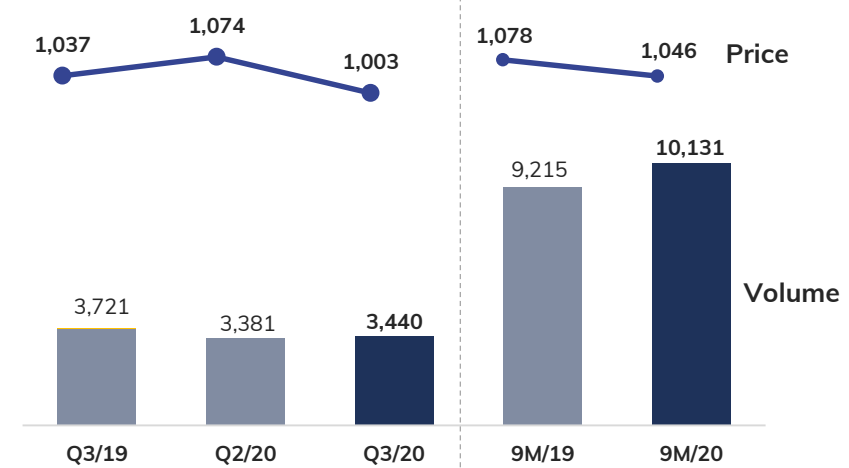
POWER SALES VOLUME | GWh

AVERAGE POWER SELLING PRICE | THB/kWh



STEAM SALES VOLUME | '000 tons

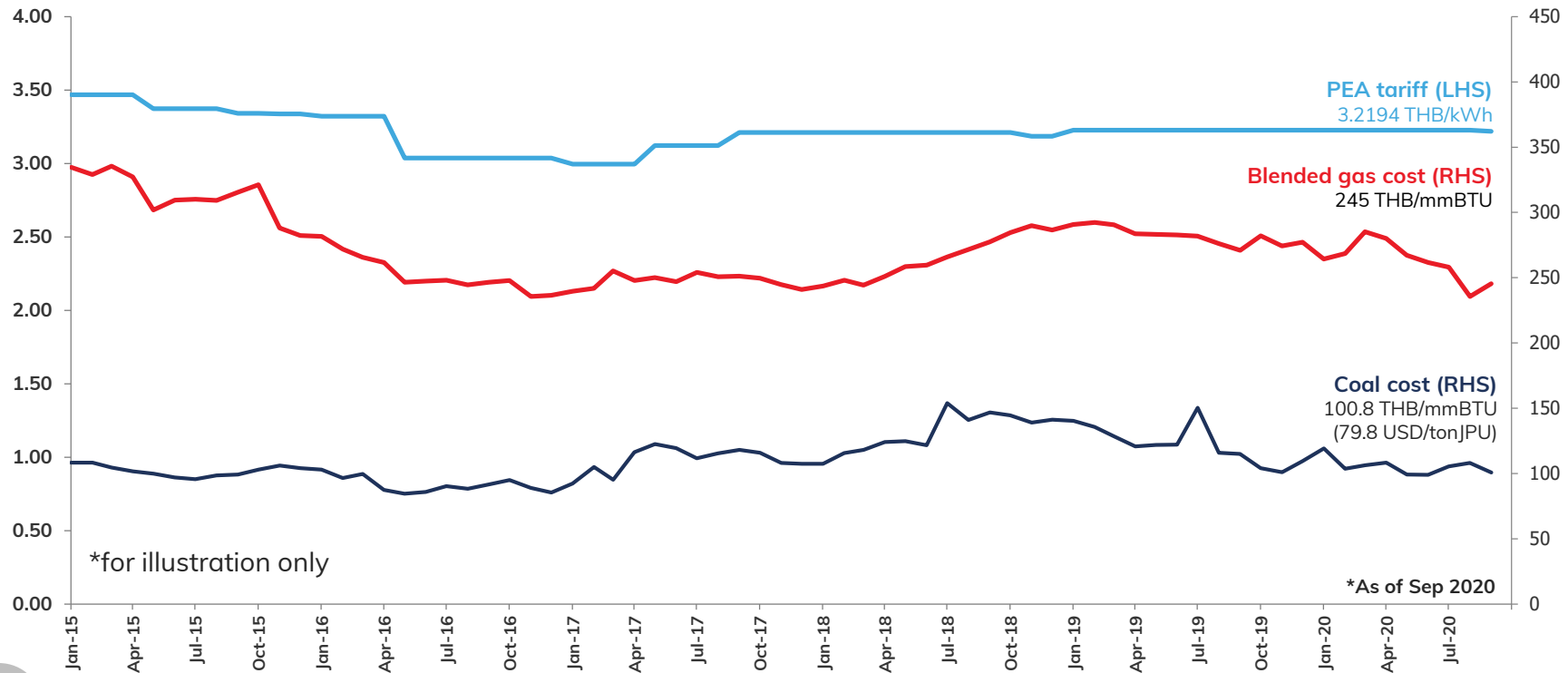
AVERAGE STEAM SELLING PRICE | THB/ton



PEA Tariff and Gas and Coal Cost Trend

PEA tariff (THB/kWh)

Gas and coal costs
(THB/mmBTU)



PEA tariff is a benchmark price of electricity sold to industrial customers. It comprises of Base tariff, Ft and others. Ft (Fuel adjustment charge) is adjusted every 4 months to cover deviation in fuel costs, power purchase costs and policy costs from assumptions in Base tariff. Cost of natural gas contributes approx. 70% of total fuel costs to produce electricity in Thailand. Changes in natural gas costs are thus reflected on Ft and PEA tariff.

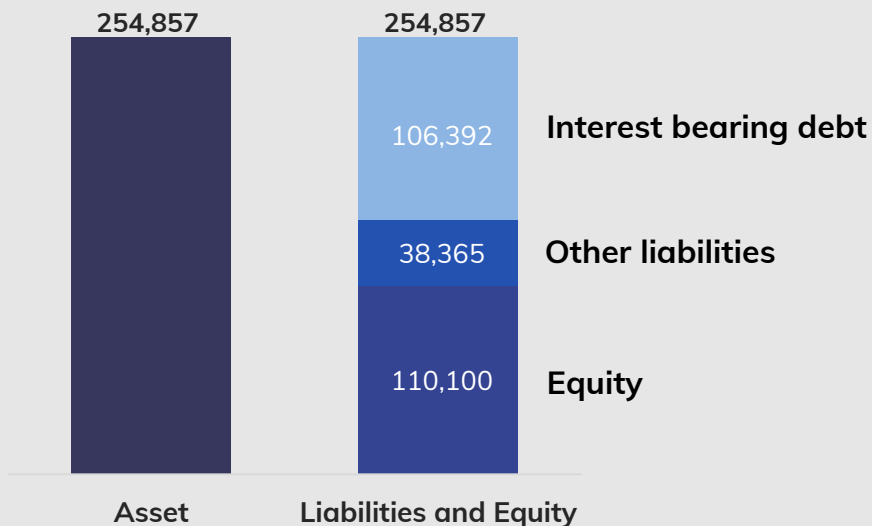
PEA tariff = Base tariff (simple average of >69 kV TOU 4.2 Energy charge peak and off-peak) + Ft
Sep 2020 Base Tariff = 3.3437 THB/kWh
Sep 2020 Ft = - 0.1243 THB/KWh

Blended Gas cost = Blended cost of SPP gas, cogeneration gas and industrial gas in THB/mmBTU

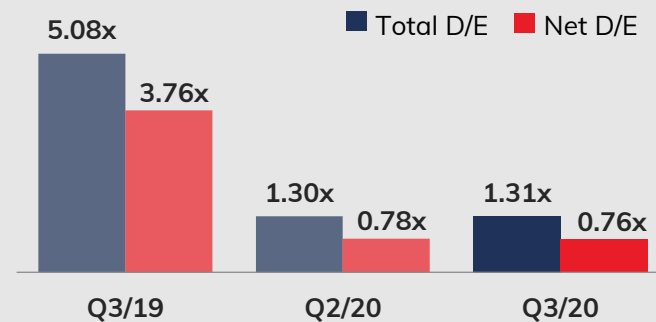
Coal Cost = Average FOB coal cost and freight cost in THB/mmBTU

Key Financial Information and Ratios

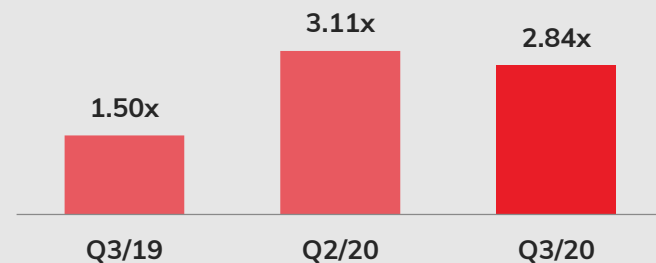
GPSC's Financial Positions | Q3/2020



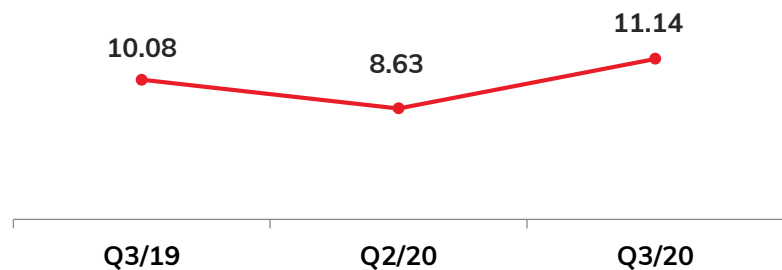
TOTAL D/E & NET D/E | times



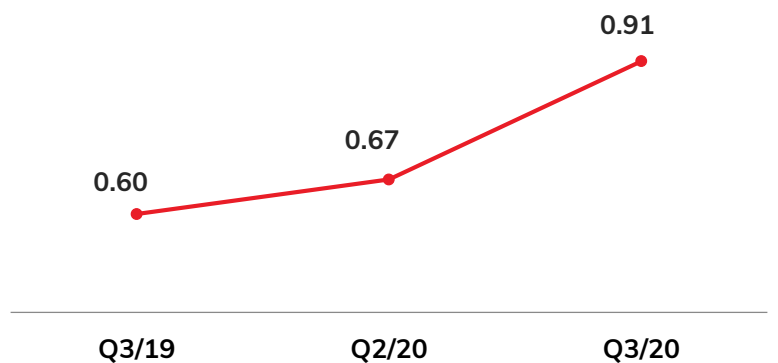
INTEREST COVERAGE RATIO | times



ROE | %

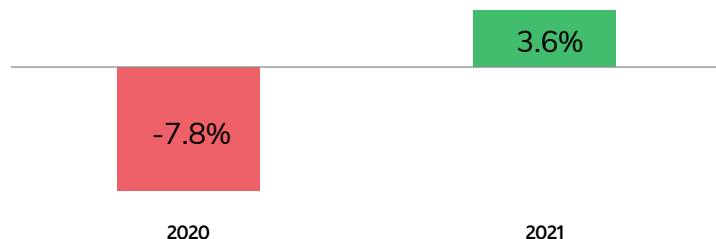


EARNING PER SHARE (EPS) | THB/share



2H/2020 Outlook

Thailand GDP Growth Outlook



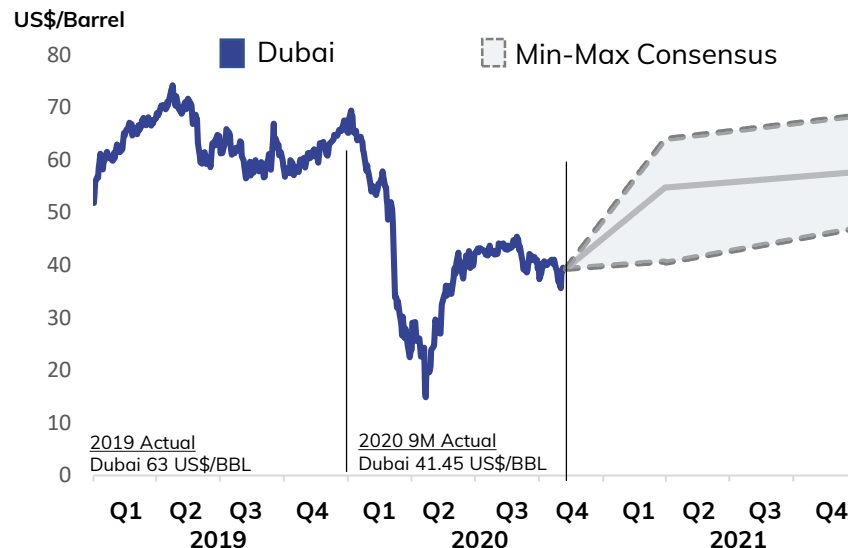
Source: Bank of Thailand September forecast

- Despite of fiscal stimulus with a historic relief package, the economic growth is projected to slowly rebound in 2H/2020

Performance Outlook

- ▼ Economic downturn from COVID-19 pandemic may continue impact to industrial customers in automotive, export, industries related to tourism and hospitality, petrochemical and industrial sector which expected to recover in next year
- ▲ Downward trend of **gas price** in 2H/2020 will positively impact results of the company in the short term
- ▲ As of end of 2020, **synergy value** from acquisition of GLOW is expected to be over THB 500 million.
- ▲ Hydro power plants in Laos: Entering wet season with higher water flow in 2H/2020.
- Gross profit of GLOW SPP returns to normal level as GLOW Energy Phase 5 Plant resumed normal operation since Oct 2020. Insurance payment claim is ongoing.

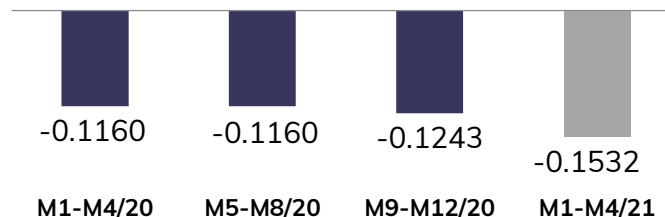
Key Assumptions



Source: Bloomberg analyst consensus as of 9 Nov 2020

- **Natural gas price** is forecasted to decrease in the same direction with crude oil with lag time 6 – 12 months.
- **Coal price** is forecasted to be in the range of US\$ 60-65 per ton (NewCastle) in Dec 2020 due to limited of demand of both China and India.

Ft



Recently announced Ft for M1-M4/2021 is -15.32 Satang/unit.

Q&A SESSION

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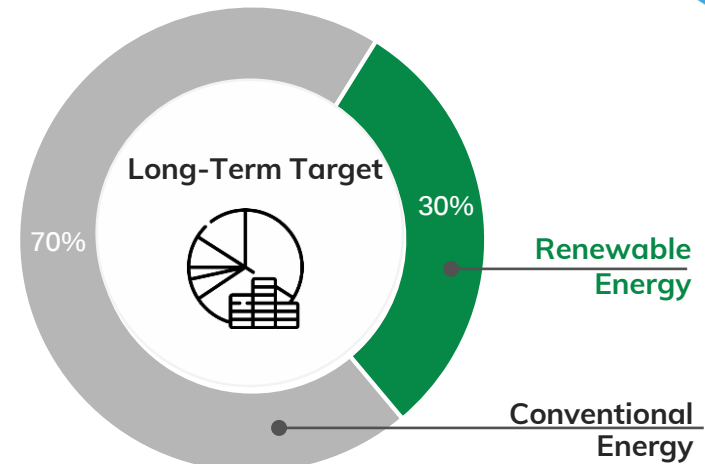


Sustainability at GPSC | Overview

- Sustainability is embedded in GPSC Strategic Direction and Growth Strategy,
3S Strategy | Selective Growth
 - ✓ To be listed in **DJSI by 2022**
 - ✓ Increasing renewable energy up to **30% of GPSC's installed capacity**
- GPSC has operated in line with its commitment to innovation development alongside social and environmental responsibilities, as sustainability business strategy, called **"Innovative & sustainable power for all"**, by employing the **sustainability management framework** and **3D Principles**.

GPSC's commitment to the Sustainable Development Goals (SDGs)

- GPSC has embraced six main goals of the UN's Sustainable Development Goals as guidelines for the company's sustainable development management and for the benefit of all stakeholders.
 - Goal 7: Affordable and Clean Energy;
 - Goal 8: Decent Work and Economic Growth;
 - Goal 9: Industry, Innovation, and Infrastructure;
 - Goal 12: Responsible Consumption and Production;
 - Goal 13: Climate Action; and
 - Goal 16: Peace and Justice Strong Institutions.



Sustainability at GPSC

Innovative and Sustainable Power for All

Sustainability Management Framework



Power Accessibility



Enhance stability of access by investing in Solar Rooftop and Solar floating



Quality of Life



Empower for a better living by providing occupational training program, light for a better life program and zero-waste village



Eco-system



Eco-system of driving clean energy, cultivating the circular economy concept, and easing environmental impacts



Sustainable Innovation



Sustainable Innovation for the corporation to drive improvement initiatives through Artificial Intelligence (AI) and Blockchain, innovation culture and young social innovator

Sustainability at GPSC | 3D Principles



Decentralize

Decentralization refers to the **decentralization of electricity from large power stations to small scale ones by harnessing renewable energy** such as solar power from solar rooftops integrates into microgrid and smart grid systems. To enable decentralization, two things need to be developed: software and batteries. GPSC recognizes the importance of batteries in enabling exceptional energy storage to expand the possibilities for our customers. Therefore, the company has collaborated with 24M Technologies, Inc. in establishing a lithium ion battery factory for business expansion.



Decarbonize

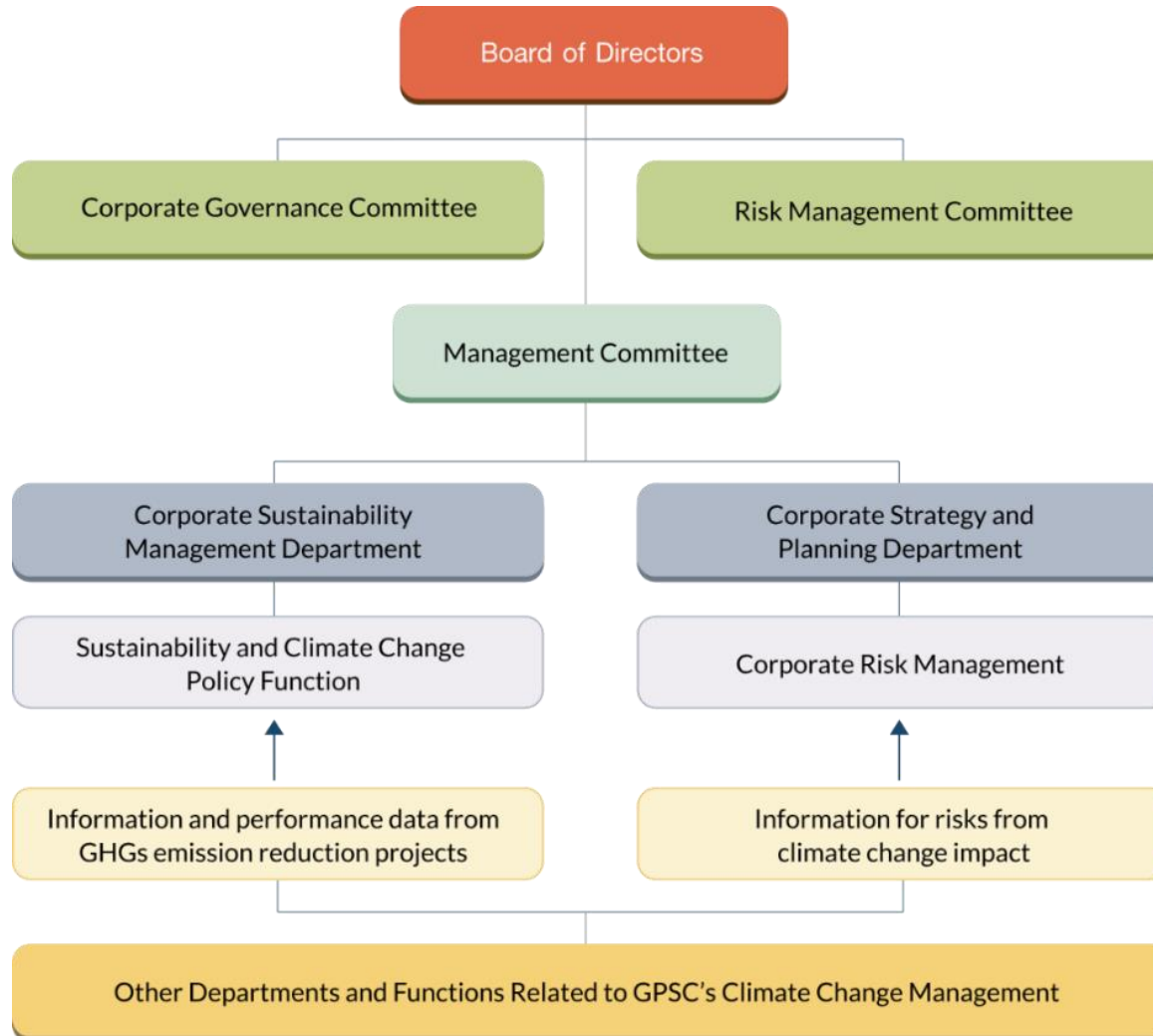
GPSC is committed to **reducing pollution and using green products** to reduce the impacts on the environment. The use of renewable energy is, therefore, pivotal in the company's operation. We are determined to develop batteries as renewable energy, embracing the future trend that gears towards renewable energy storage. Decarbonization is also in line with the ecological goals of Thailand's national integrated energy plan in terms of increasing power production from renewable energy and using advanced technologies to minimize impacts on the environment and communities.



Digitalize

GPSC **uses digital technologies to increase work efficiency**. Digital technologies enable us to cut unnecessary processes, reduce costs, transform businesses to technological societies and gain advantages in business competitiveness in this rapidly evolving world.

Sustainability at GPSC | Climate Change Management



Climate Change Governance Structure

GPSC recognizes the risk and potential impacts from climate change and global warming and is committed to provide our full support and collaborating enthusiastically with every sector to achieve the challenging goal of reducing greenhouse gas emissions by adopting a robust climate change policy and management approach. Climate change management at GPSC is under the supervision of the executive team led by the **Chief Executive Officer and with the CEO serving as president.**

COVID-19 Preventative Measures of GPSC Group

GPSC recognizes and gives priority to the **safety of all employees** and **strives for generating electricity and utilities** to continuously meet the customers' requirement

GPSC established **G-COVID Monitoring and Surveillance Center of GPSC Group** to monitoring the situation, defining plans and preventive measures, as well as providing and supporting necessary supplies

G-COVID Monitoring and Surveillance Center of GPSC Group



Monitor internal and external situations with PTT Group



Specifying measures and making plans to prevent the outbreak



Procure and support necessary resources



Performance report to the management



Establish a GPSC Group Communication Center



COVID-19 Preventative Measures of GPSC Group



Employee Care Measures

- Classify employees into surveillance groups
- Give advice on conduct
- Set travel abroad measures
- Implement work from home policy
- Travel measures across provincial areas
- Communication and counseling measures
- Provide COVID-19 life insurance for all employees
- Provide alcohol gel and masks



Workplace Management Measures

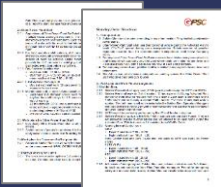
- Setting screening point in all areas with temperature checks at the entrance
- Make sure to clean all risk surfaces
- Measures for organizing rally activities
- Provide alcohol gel and necessary medical equipment
- Measures to take care of all workplaces and non-workplaces areas



Operation & Process Measures

- Identify the employees required for the operation "Golden Man" and manpower management
- Preparing special controlled workplaces or "safe houses" for Golden Man and necessary staffs
- Prohibit unauthorized persons enter into the production process areas and control rooms
- Manpower mobilization planning in case of an employee infected with COVID-19 virus
- Customer coordination plan and related parties in case of Safe Shutdown
- Medical check up for Golden Man staff

Plant Operation Standing Orders



Countermeasures against COVID-19



GPSC Power Plant Portfolio (1/2)

Name	Type	Total capacity (MW)	Equity Power capacity (MW)	Equity Operating Power capacity (MW)	Steam (T/H)	Industrial water (Cu.m/H)	Direct shareholding (%)	COD	Tenor
IPP									
Huay Ho	IPP	152	102	102	-	-	GLOW (67%)	1999	30
Sriracha	IPP	700	700	700	-	80	GPSC (100%)	2000	25/2025
Glow IPP	IPP	713	677	677	-	-	GLOW (95%)	2003	25
RPCL	IPP	1,400	210	210	-	-	GPSC (15%)	2008	25/2033
GHECO-One	IPP	660	429	429	-	-	GLOW (65%)	2012	25
XPCL	IPP	1,285	321	321	-	-	GPSC (25%)	2019	29/2048
Total IPP		4,910	2,439	2,439	-	80			
SPP									
Glow Energy Phase 1	SPP	-	-	-	250	1,340	GLOW (100%)	1994	-
Glow Energy Phase 2	SPP	281	281	281	300	1,180	GLOW (100%)	1996	3
Glow Energy Phase 4	SPP	77	77	77	137	2,050	GLOW (100%)	2005	25
Glow Energy Phase 5	SPP	328	328	328	160	-	GLOW (100%)	2011	-
Glow SPP 2/ GLOW SPP 3	SPP	513	513	513	190	150	GLOW (100%)	1999	25
Glow SPP 11 Phase 1	SPP	120	120	120	-	360	GLOW (100%)	2000	25
Glow SPP 11 Phase 3	SPP	42	42	42	-	-	GLOW (100%)	2006	-
Glow SPP 11 Phase 2	SPP	110	110	110	-	212	GLOW (100%)	2012	25
Glow Energy CFB 3	SPP	85	85	85	79	-	GLOW (100%)	2010	-
CUP-1	SPP	226	226	226	890	720	GPSC (100%)	2006	10-15/2021++
CUP-2	SPP	113	113	113	170	510	GPSC (100%)	2008	15/2022++
CUP-3	SPP	-	-	-	280	770	GPSC (100%)	2009	15/2023++
BIC-1	SPP	117	29.25	29.25	5	-	GPSC (25%)	2013	25/2038
BIC-2	SPP	117	29.25	29.25	5	-	GPSC (25%)	2017	25/2042
IRPC-CP Phase 1	SPP	45	23	23	86.7	-	GPSC (51%)	2015	25-27/2042
IRPC-CP Phase 2	SPP	195	99.4	99.4	66.3	-	GPSC (51%)	2017	25/2042

Note: Equity capacity includes 100% stake in GLOW and ERU

GPSC Power Plant Portfolio (2/2)

Name	Type	Total capacity (MW)	Equity Power capacity (MW)	Equity Operating Power capacity (MW)	Steam (T/H)	Industrial water (Cu.m/H)	Direct shareholding (%)	COD	Tenor
NNEG	SPP	125	38	38	9	-	GPSC (30%)	2016	25/2041
NNEG Expansion (COD: 31-Oct-2020)	SPP	60	18	18	3	-	GPSC (30%)	2020	2041
Rayong Expansion (CUP-3)	SPP	15	15	15	-	-	GPSC (100%)	2019	n/a
Rayong Expansion (CUP-4)	SPP	45	45	45	70	-	GPSC (100%)	2019	-
Total SPP		2,614	2,192	2,192	2,701	7,292			
VSPP and others									
CHPP	VSPP	5	5	5	-	-	GPSC (100%)	2008	30/2038
CHPP (Solar)	VSPP	5	5	5	-	-	GPSC (100%)	2016	2041
Glow Energy Solar Plant	VSPP	1.55	1.55	1.55	-	-	GLOW (100%)	2012	20-25
TSR (SSE1)	VSPP	80	32	32	-	-	GPSC (40%)	2013	25/2038
Glow Energy Solar PV Rooftop	VSPP	0.87	0.87	0.87	-	-	GLOW (100%)	2019	15
Glow Energy Solar PV Rooftop	VSPP	1	1	1	-	-	GLOW (100%)	2019	15
ISP1	Solar	20.8	20.59	20.59	-	-	GPSC (99%)	2017	20/2037
GRP	VSPP	39.5	19.75	19.75	-	-	GPSC (100%)	2014-15	2039/2040
GRP1 (not closing)	Solar	55.8	25.11	-	-	-	GPSC (90%)	2016-20	20
NL1PC	Hydro	65	26	26	-	-	GPSC (40%)	2019	27/2044
Chonburi Clean Energy (CCE)	VSPP	8.6	2.87	2.87	-	-	GLOW (33%)	2019	20
Rayong WTE (under construction)	VSPP	9.8	9.8	-	-	-	GPSC (100%)	2021	18/2039
Total VSPP and others		293	150	115	-	-			
ERU									
ERU (under construction)	Cogen	250	250	-	175	-	GPSC (100%)	2023	25/2048
Total ERU		250	250	-	175	-			
Total capacity		8,067	5,031	4,746	2,876	7,372			

Note: Equity capacity includes 100% stake in GLOW and ERU
Committed equity capacity which also based on GRP restructure shareholding to be completed on Q1/2021

2020 Maintenance Schedule | Sriracha and Rayong Plants

Site	Description	Duration	2020											
			Q1			Q2			Q3			Q4		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CUP-1	HRSG-11	8 Days					1Y							
	GTG16/HRSG16	14 Days	HGPI/3Y											
	HRSG14	8 Days	1Y											
	Aux. Boiler.11	8 Days			1Y									
	GTG12/HRSG12	22 Days				MI/3Y								
	HRSG13	8 Days						1Y						
	HRSG15	8 Days										1Y		
CUP-2	HRSG21	8 Days			1Y									
	GTG22/HRSG22	22 Days						MI/3Y						
	Aux. Boiler.21	8 Days						1Y						
	STG21	27 Days								2M				
CUP-3	Aux. Boiler.31	13 Days								3Y				
	Aux. Boiler.32	13 Days										3Y		
	Aux. Boiler.33	13 Days									3Y			
	Steam Turbine.31	-												
CUP-4	GTG41	5 Days												RM
	HRSG41	11 Days						1Y						
SRC	GT11	-												
	HRSG#1	8 Days											1Y	
	GT12	8.33 Days											1Y	
	HRSG#2	8 Days											1Y	
RDF	All Equipment	7 Days										1Y		

Notes: Rayong Site

GTG	Hot Gas Path Inspection for Gas Turbine	14 days	HRSG	One Year Inspection HRSG	11 days
HGPI	Major Inspection for Gas Turbine	22 days	3Y	Three Year Inspection HRSG	14 days
MI			Others		
STG	Minor Inspection for Steam Turbine	15 days	1Y	One Year Inspection NG Station Test	Online
Minor	2 nd Major Overhaul for Steam Turbine	23 days	5Y	Five Year Inspection NG Station (NDT)	Online
2MO	2 nd Major Overhaul for Steam Turbine	27 days	FO	Forced Outage	Depending on physical damage
AB					
1Y	One Year Inspection Aux. Boiler	11 days			
3Y	Three Year Inspection Aux. Boiler	13 days			

Notes: Sriracha Site

GTG	Combustion Inspection for Gas Turbine	8 days	HRSG		
CI			1Y	One Year Inspection HRSG	8 days
HGPI	Hot Gas Path Inspection for Gas Turbine	26	3Y	Three Year Inspection HRSG	33 days
days			Other		
MO	Major Overhaul for Gas Turbine	33	1Y	One Year Inspection NG Station Test Online	
days			5Y	Five Year Inspection NG Station (NDT) Online	
RCIE	Rotor and Casting Inspection Evaluation	49	FO	Forced Outage Depending on physical damage	
days					

2021 Maintenance Schedule | Sriracha and Rayong Plants

Site	Description	Duration	2021											
			Q1			Q2			Q3			Q4		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CUP-1	GTG-13	22 Days							12/7	MI	2/8			
	HRSR-13	22 Days							12/7	3Y	2/8			
CUP-2	GTG-21	22 Days		9	MI	30								
	HRSR-21	22 Days		9	3Y	30								
CUP-4	GTG-41	5 Days										15/11	RMI	9/12
	HRSR-41	11 Days						27/6	1Y	7/7				
SRC	HRSR#1	14 Days										15/11	3Y	28/11
	HRSR#2	14 Days										15/11	3Y	28/11
	Steam Turbine.10	25 Days												
	GT-11	8.33 Days										15/11	CI	23/11
RDF	BMH Machine	7 Days									7	MNI	13	

Notes: Rayong Site

GTG	Hot Gas Path Inspection for Gas Turbine	14 days	HRSR	1Y One Year Inspection HRSR	11 days
HGPI	Major Inspection for Gas Turbine	22 days	3Y	Three Year Inspection HRSR	14 days
MI			Others		
STG	Minor Inspection for Steam Turbine	15 days	1Y	One Year Inspection NG Station Test	Online
1MO	2nd Major Overhaul for Steam Turbine	23 days	5Y	Five Year Inspection NG Station (NDT)	Online
2MO	2nd Major Overhaul for Steam Turbine	27 days	FO	Forced Outage	Depending on physical damage
AB					
1Y	One Year Inspection Aux. Boiler	11 days			
3Y	Three Year Inspection Aux. Boiler	13 days			

Notes: Sriracha Site

GTG	Hot Gas Path Inspection for Gas Turbine	8 days	HRSR	1Y One Year Inspection HRSR	8 days
CI	Combustion Inspection for Gas Turbine	26	3Y	Three Year Inspection HRSR	33 days
HGPI	Major Inspection for Gas Turbine	33	Other		
MO	Major Overhaul for Gas Turbine	49	1Y	One Year Inspection NG Station Test Online	
RCIE	Rotor and Casting Inspection Evaluation		5Y	Five Year Inspection NG Station (NDT) Online	
			FO	Forced Outage Depending on physical damage	

2020 Maintenance Schedule | IRPC-CP

Plant	Unit	2020			
		Q1 (A)	Q2 (A)	Q3 (A)	Q4 (A)
IRPC-CP	<u>Block 1</u>				
	CTG 21	6	1	1	1
	HRSG 21	6	1	1	1
	CTG 22	6	1	1	1
	HRSG 22	6	1	1	1
	STG 23	6			
	<u>Block 2</u>				
	CTG 31	1	6	1	1
	HRSG 31	1	6	1	1
	CTG 32	1	1	1	6
	HRSG 32	1	1	1	6
	STG 33				6
	Aux. Boiler		7		

Notes:

YI Yearly Inspection 20 days
 YI Yearly Inspection Aux Boiler 15 days
 B CTG/HRSG Inspection Level B 20 days
 C CTG /HRSG Inspection Level C 22 days
 1 = 1 Day (24 hours)
 2 = 2 Days (72 hours)
 6 = 6 Days (144 hours)
 7 = 7 Days (168 hours)

2021 Maintenance Schedule | IRPC-CP

Main Unit	Description	Duration	2021											
			Q1			Q2			Q3			Q4		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Block 1														
CTG 21	B	20 Days				20								
HRSG 21	B	20 Days				20								
CTG 22	B	20 Days				20								
HRSG 22	B	20 Days				20								
STG 23	MI	20 Days				20								
Block 2														
CTG 31	B	20 Days					20							
HRSG 31	B	20 Days					20							
CTG 32	C	22 Days							22					
HRSG 32	C	22 Days							22					
STG 33	MI	20 Days							20					
Aux. Boiler	YI	15 Days						15						

Notes:

MI Major Inspection

YI Yearly Inspection Aux Boiler 15 days

B CTG/HRSG Inspection Level B 20 days

C CTG /HRSG Inspection Level C 22 days

Excluded 1 Day maintenance

2020 & 2021 Maintenance Schedule | GLOW's Main Units

Main Units	Planned Maintenance Duration (Days)							
	2017	2018	2019	2020	2020 by quarter			
					Q1	Q2	Q3	Q4
GHECO-One	36	-	39	-				
GIPP: Unit 1	-	-	-	-				
GIPP: Unit 2	-	-	-	-				
CFB 1	38	27	5	25				25
CFB 2	27	5	21	23	2			
CFB 3	7	26	45	3			3	
Phase 5	31	5	23	-				

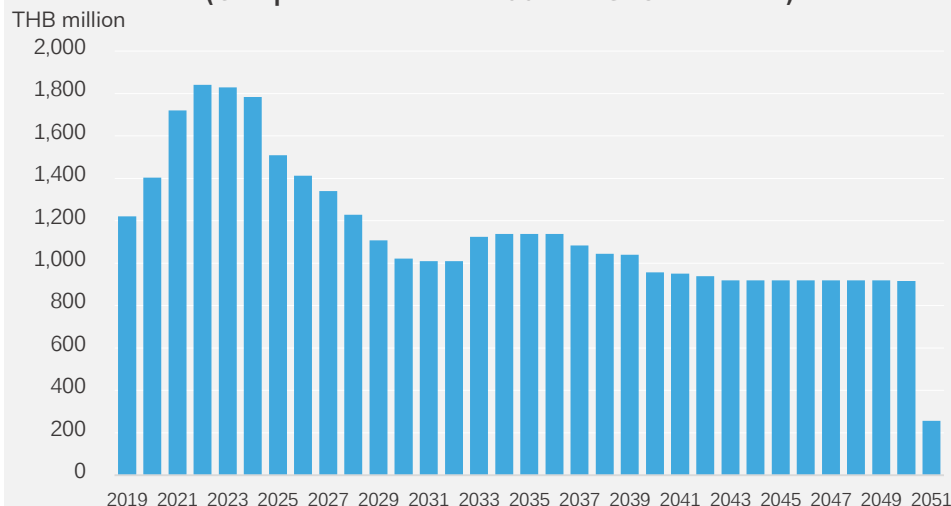
2021														
Main Units	Description	Duration	Q1			Q2			Q3			Q4		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GHECO-ONE	Minor Inspection	37 Days 1/1	2Y	6/2										
GIPP: UNIT 1	Minor Inspection	5 Days								27/9	3Y	1/10		
GIPP: UNIT 2	Minor Inspection	5 Days										10	3Y	14
CFB 3	Minor Inspection	7 Days				22/4	3Y	12/5						
Phase 5	Minor Inspection	5 Days			29/3	1.25	2/4							
GSPP11 (Plant 2)	Minor Inspection	14 Days							18	3Y	31			
GSPP11 (Plant 2)	Major Inspection	5 Days										10	5.7Y	14

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)
Net Assets of GLOW at 14 March 2019	51,409	89,003	37,594
Non-Controlling interests at 30.89%		(32,092)	
Total Net Asset obtained GLOW at 69.11%		56,911	
Goodwill		36,090	
Proportion of acquisition cost 69.11%		93,001	

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



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:

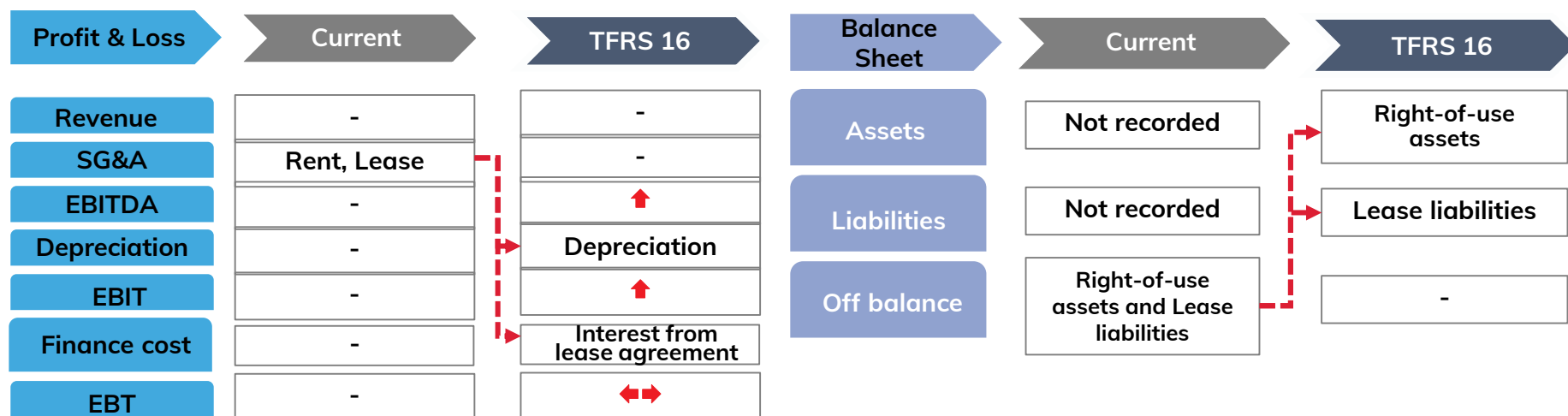
- The fair value uplift of THB 37,594 million from **Purchase Price Allocation (PPA)**
- **The fair value recognition of net assets** acquired from GLOW will be amortized yearly (based on the remaining period of the contract, 5 to 31 years).
- **Goodwill** will be subjected to an impairment test on a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

Accounting Impacts in 2020

TFRS 9

Assets	As-Is GPSC Policy	Impacts on TFRS 9
1. Derivatives (e.g. IRS ,CCS , FW)	<ul style="list-style-type: none"> Disclosed in the notes to the financial information 	<ul style="list-style-type: none"> Recorded at fair value
2. Other long-term investments (e.g. RPCL, 24M)	<ul style="list-style-type: none"> Recorded at cost Gain or loss on sale of assets are presented in the statement of income 	<ul style="list-style-type: none"> Recorded at fair value Gain or loss on sale of assets are not presented in the statement of income
3. Impairment of assets (e.g. receivables, loans)	<ul style="list-style-type: none"> Impairment from historical information 	<ul style="list-style-type: none"> Consider the future credit risk of the debtor which may cause impairment faster

TFRS 16 (Accounting for lessees)





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