

# Energy Week with KGI Securities

September 30, 2021



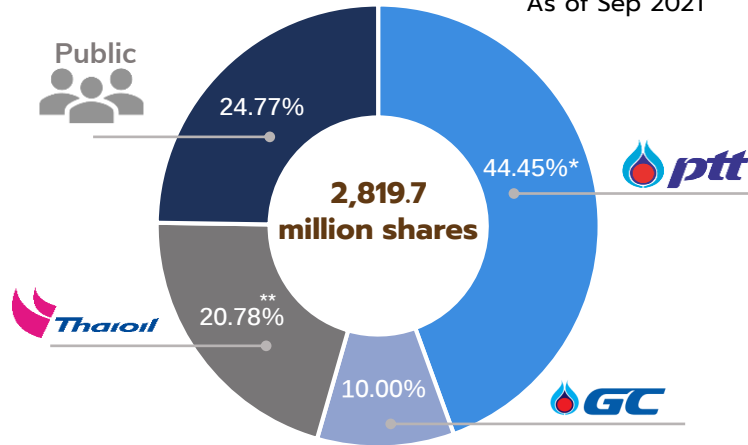


# The power and smart energy flagship of PTT Group

*"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 2021



\*\*TOP is under the process of regulatory work to divest not exceeding 10.8% of GPSC.

\* PTT stake includes 1.91% hold via SMH, a wholly-owned indirect subsidiary of PTT.

## COMPANY INFORMATION (as of Sep 17, 2021)

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

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

**Market Cap.** | THB 218,529 million

## CREDIT RATINGS

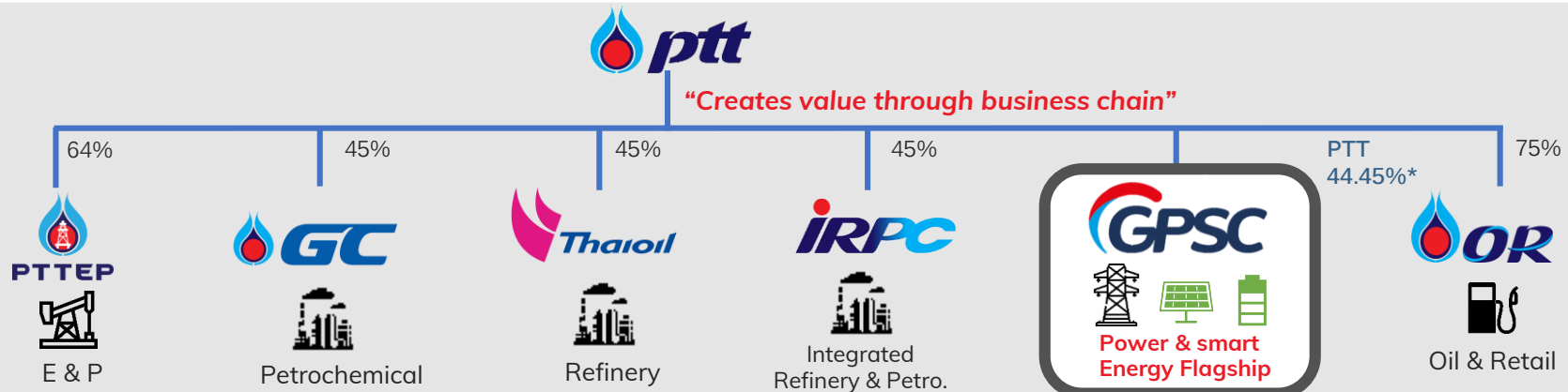
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A+(tha)

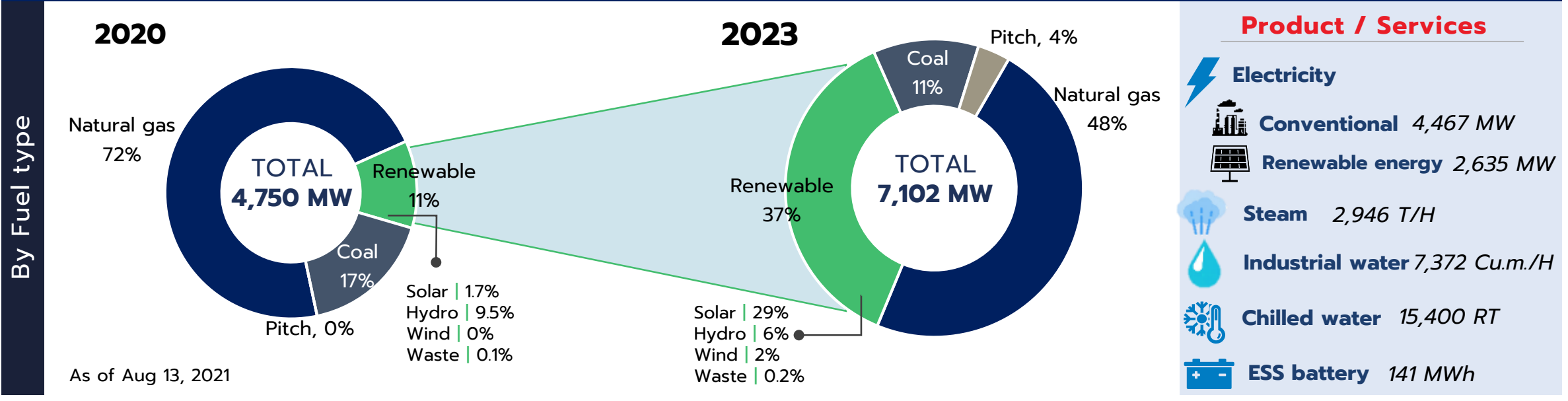
FitchRatings

## PTT Group's Business



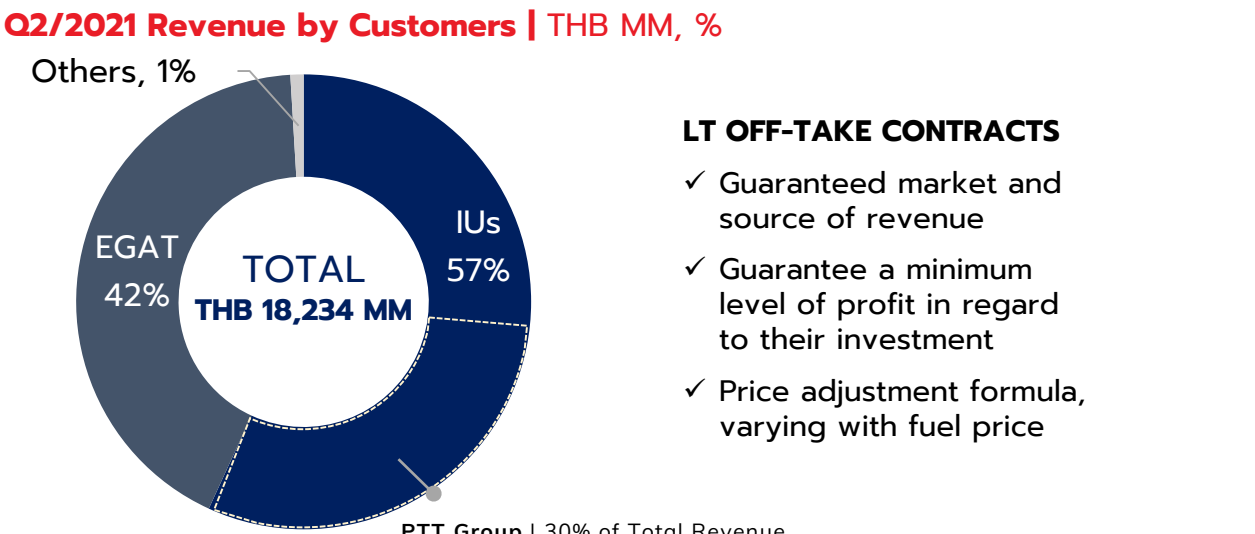
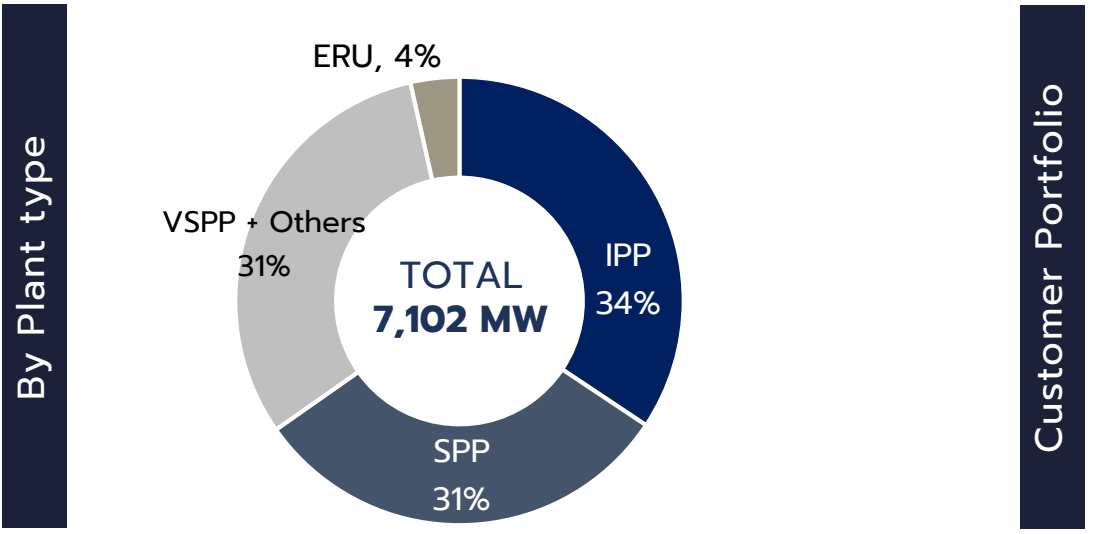
\* PTT stake includes 1.91% hold via SMH

**Total committed equity capacity**



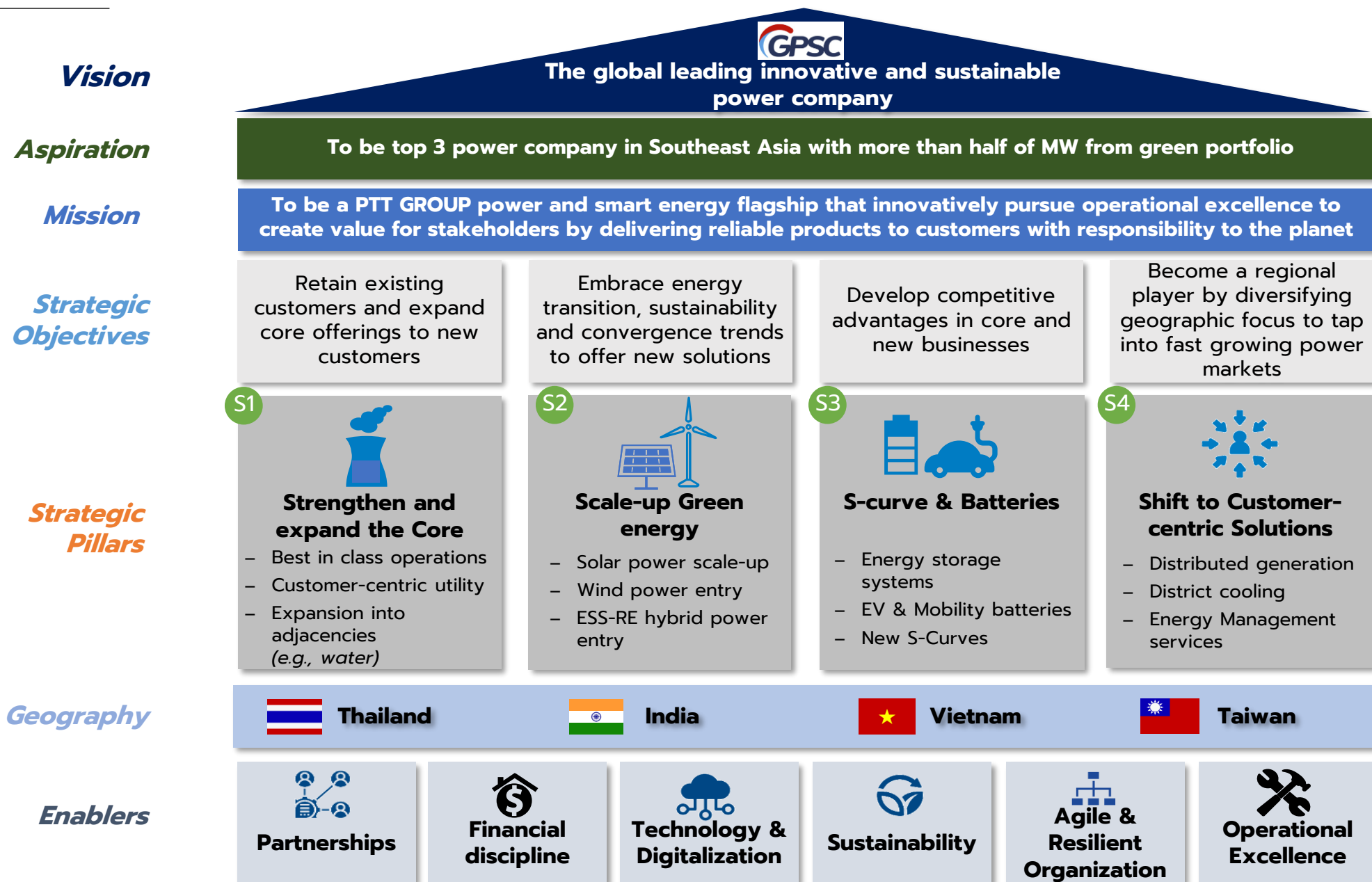
**Product / Services**

- Electricity**
  - Conventional 4,467 MW
  - Renewable energy 2,635 MW
- Steam 2,946 T/H
- Industrial water 7,372 Cu.m./H
- Chilled water 15,400 RT
- ESS battery 141 MWh



Note: Total equity capacity includes Solar Power Platform (Avaada) 1,897 MW and Offshore wind farm (CFXD) 149 MW.

# Corporate Strategy 2021 | Strategic house (2021 – 2030)





## Strategic Pillars

SI

**Strengthen and expand the Core**

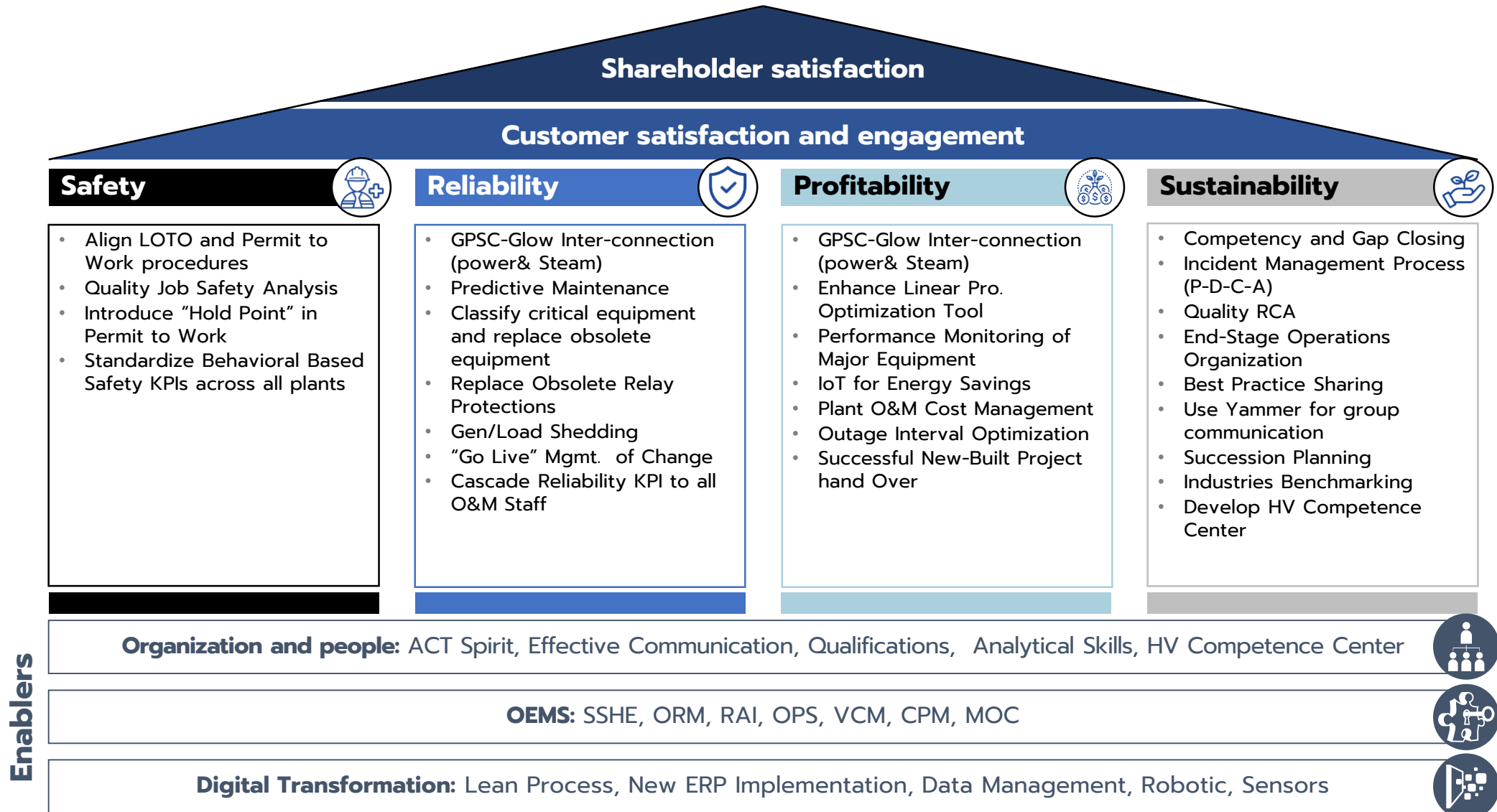
Scale-up Green energy

S-curve & Batteries

Shift to Customer-centric Solutions



To drive “Operational Excellence” across all assets of GPSC



Becoming a **customer centric utility** player will enable GPSC to become a competitive player by retaining existing and grow new customers

## Objective

- Apply strategy, techniques and technologies to understand unmet customer needs
- Retain and grow share of wallet of existing customers, and acquire new customers



1

### CRM strategy

- Identifying customer pain points, unmet needs and how to address them optimally
- Use digital tools to enable info. transparency and drive engagement with customers



2

### Solutions focused

- Product is commoditized, but knowledge and value-added offerings can be a differentiator
- E.g., energy analytics, energy optimization & management



3

### Organizational changes

- Independent key account management (KAM) teams to maintain and improve long-term customer relationships

**Expansion into adjacencies** by capturing new customers as well as expand services to capture greater share of wallet of existing customer



# Strategic Pillars

Strengthen and expand the Core

S2

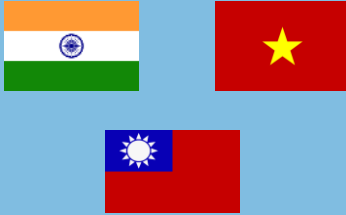
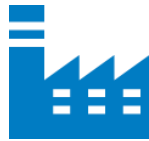
**Scale-up Green energy**

S-curve & Batteries

Shift to Customer-centric Solutions





**More focusing on platform growth****Priority  
2<sup>nd</sup> home market****Establish local  
base****Build and  
maintain local  
relationships****Separate  
organization  
structure****Build on  
ground  
capabilities****Solar power scale-up**

- Become a developer and operator of solar IPP assets in Thailand and target markets
- Selectively participate in EPC for solar floating assets in Thailand

**Wind power scale-up**

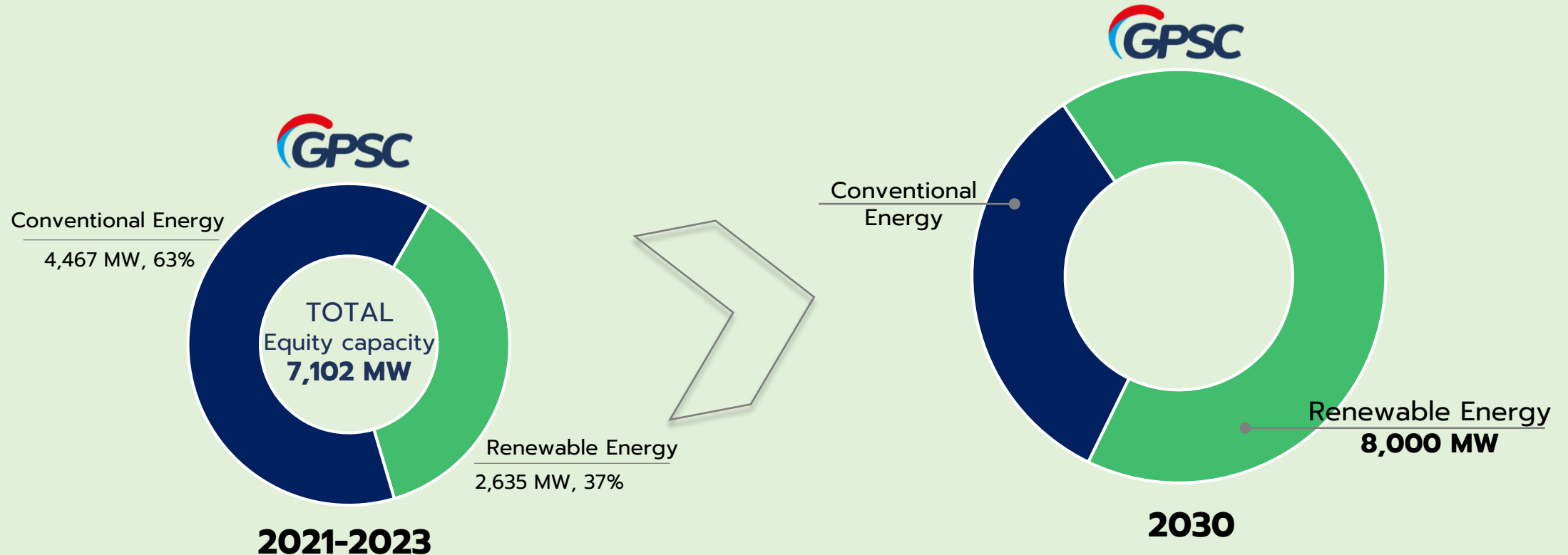
- Achieve scale by becoming developer and operator of wind assets in target markets

**ESS-RE hybrid power entry**

- Become a developer and operator of RE hybrid plants to increase power system efficiency and ensure a greater balance in energy supply

## Long-term target to align with PTT group strategy in 2030

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



## PTT group target in 2030



- Renewable Energy | 12,000 MW
- Conventional Energy | 8,000 MW

Moving towards **Low Carbon Utilities** by Reducing Carbon Equivalent Intensity **35%** by 2030

The route to net zero for utilities

INTERNAL

EXTERNAL



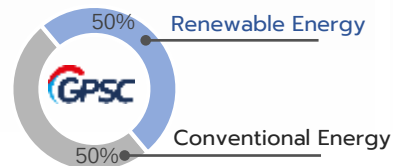
Reduce fossil fuel usage

- 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.



Note: ESS : Energy Storage System  
 EMS : Energy Management System  
 CCUS : Carbon Capture, Utilization and Storage



# Strategic Pillars

Strengthen and expand the Core

Scale-up Green energy

S3

**S-curve & Batteries**

Shift to Customer-centric Solutions



## GPSC will take lead in new S-Curve ventures pertaining to Renewables, Batteries and Digital power businesses

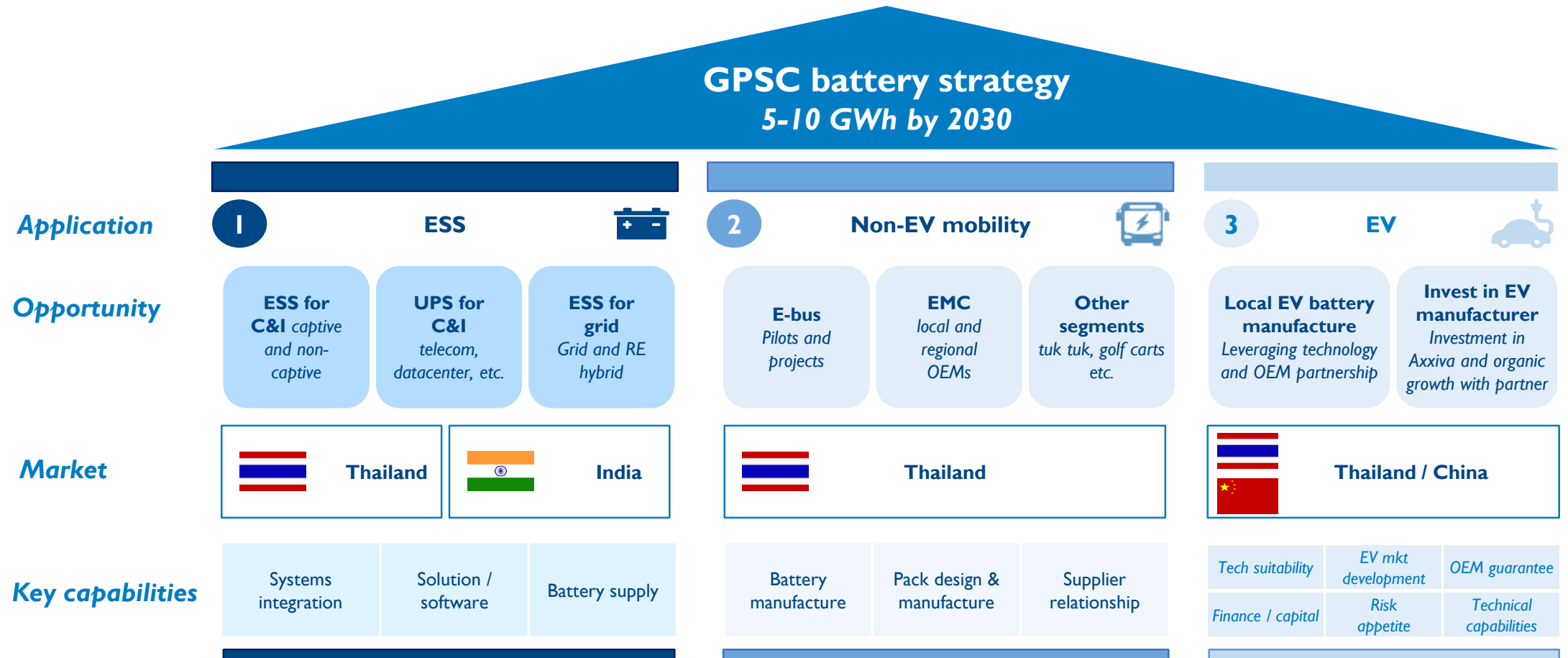


- Scale-up and Spin-out battery operations
- Build ESS and non-EV mobility battery business with current technology
- Enter EV battery business with additional partners

- Seek opportunistic investments and strategic partnerships with startups
- Devise business and commercial offering for Virtual Power Plant (VPP), P2P
- Propose trials with C&I clients e.g., MTP area

Energy storage systems  
 EV & Mobility batteries  
 New S-Curves

**GPSC battery strategy** focuses on 3 key pillars – ESS and Non-EV mobility will be main focus while EV pursued based on certain conditions





# Key Drivers

Government Incentive

## PTT Group Collaboration & Value Chain Development

EV Makers



EV Platform



EV Autonomous Pilot



Battery & Components



Battery Cell Technology



Giga-scale Capability



Local R&D



Infrastructure



Smart Station



EV Quick Charge



Charging Solution

Service



Digital Platform





## Strategic Pillars

Strengthen and expand the Core

Scale-up Green energy

S-curve & Batteries

S4

**Shift to Customer-centric Solutions**



**Shift to  
customer-centric  
solutions****Distributed generation**

- Provide captive renewable power through **distributed generation** solutions (rooftop solar, microgrids, etc.) to C&I customers
- Offer full range of installation and O&M incl. monitoring services
- **Bundle with BTM ESS** to enhance reliability and maximize RE power consumption

**District cooling**

- Provide **turnkey district cooling** development, operations and maintenance solutions
- Offer diverse selections of cooling systems suitable for different customers

**Energy Management services**

- Provide **all-round energy support**, incl. energy audits & digital tools
  - e.g., *Energy audits, real-time energy monitoring, remote mgmt. of C&H, energy efficiency equipment supply etc.*
- Bundle EMS with distributed generation & district cooling offerings



Distributed generation

District cooling

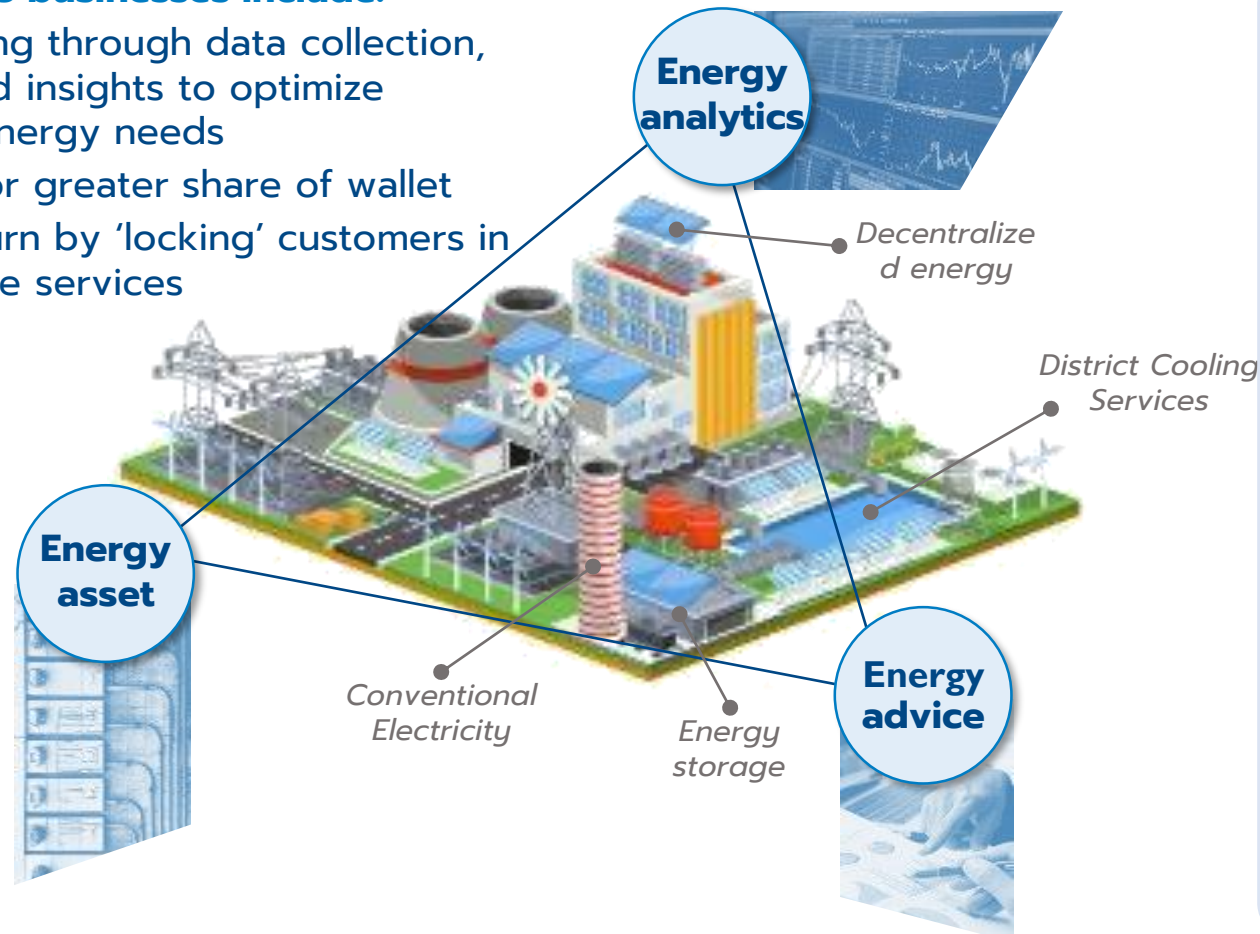
Energy Management services (EMS)

## Concept of Energy Management services

ILLUSTRATIVE

### Benefits of EMS businesses include:

- Value-adding through data collection, analysis and insights to optimize customer energy needs
- Upselling for greater share of wallet
- Reduce churn by 'locking' customers in with multiple services



VISTEC  
VIDYASIRIHEDI  
POWER & WATER SERVICES

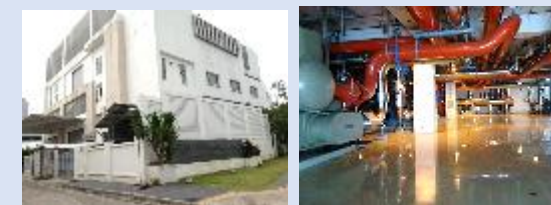


EECI  
ENERGY EFFICIENCY CONSULTING INSTITUTE

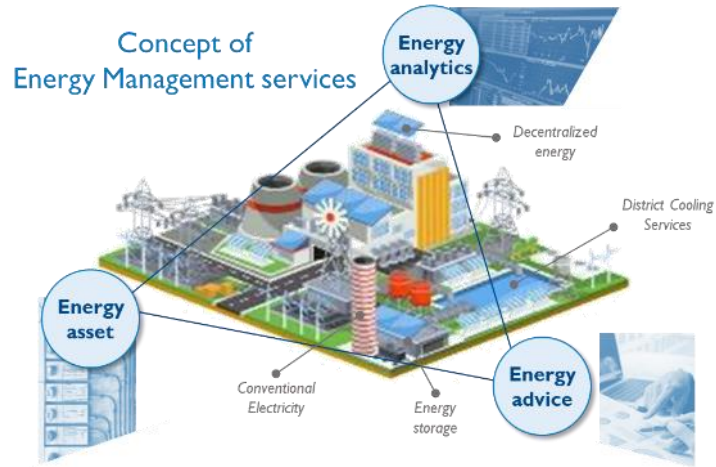


- Clean Energy Generation
- Flexibility Distributed Generation
- Cost Efficient No Clean Energy Shedding

CHPP District Cooling

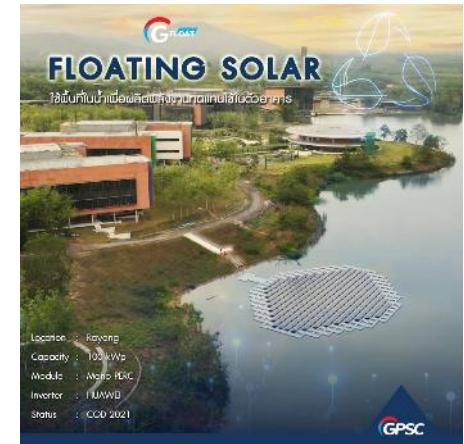
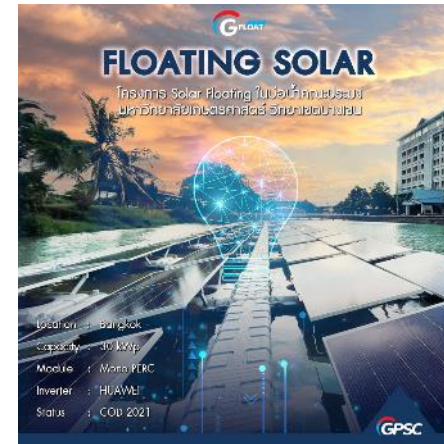
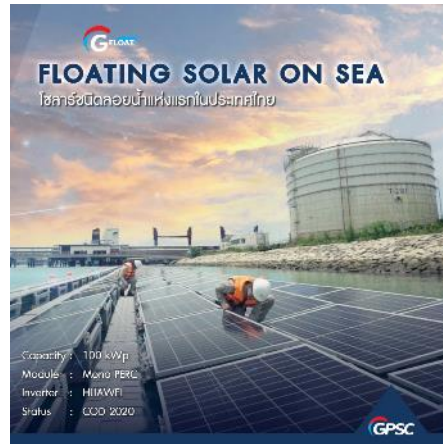
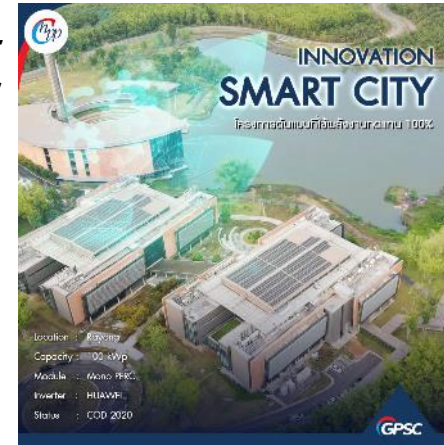


# CHPP's decentralized energy services



**GPSC emphasizes the customer-centric solutions through CHPP's decentralized energy services**

- Distributed generation
- District cooling
- Energy Management services
  - Energy Asset
  - Energy Advice
  - Energy Analytics





## Highlight in 2021





Q2/2021 Events & Highlights



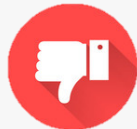
Higher demand from industrial customers



Strong performance from affiliates, especially XPCL



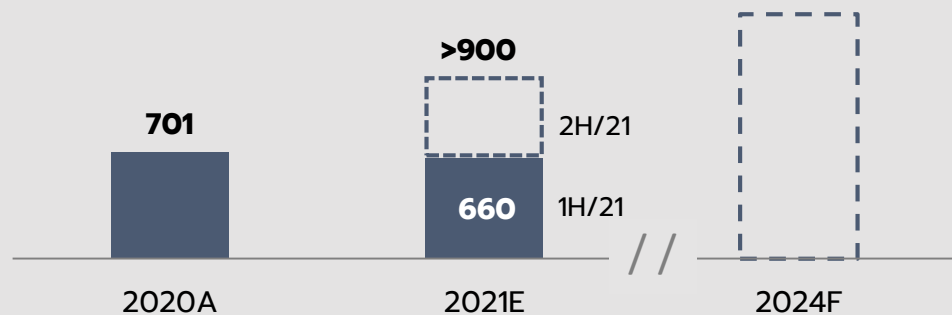
GLOW Energy Phase 5 Insurance claim THB 310 MM



Unplanned outage at GHECO-One and CFB3 in May 21

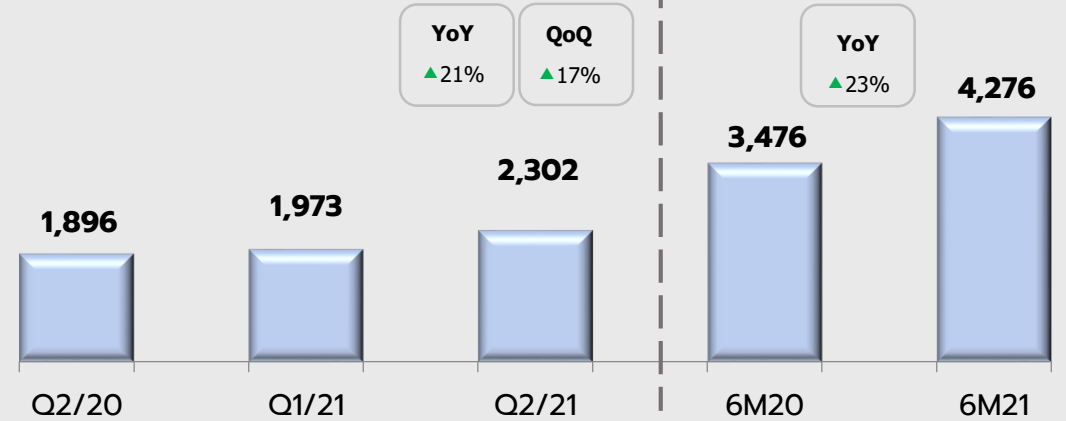
Realized Synergy Value (THB MM)

"THB 1,600 MM per year recurring synergy, gradually increase with full synergy value contribution by 2024"

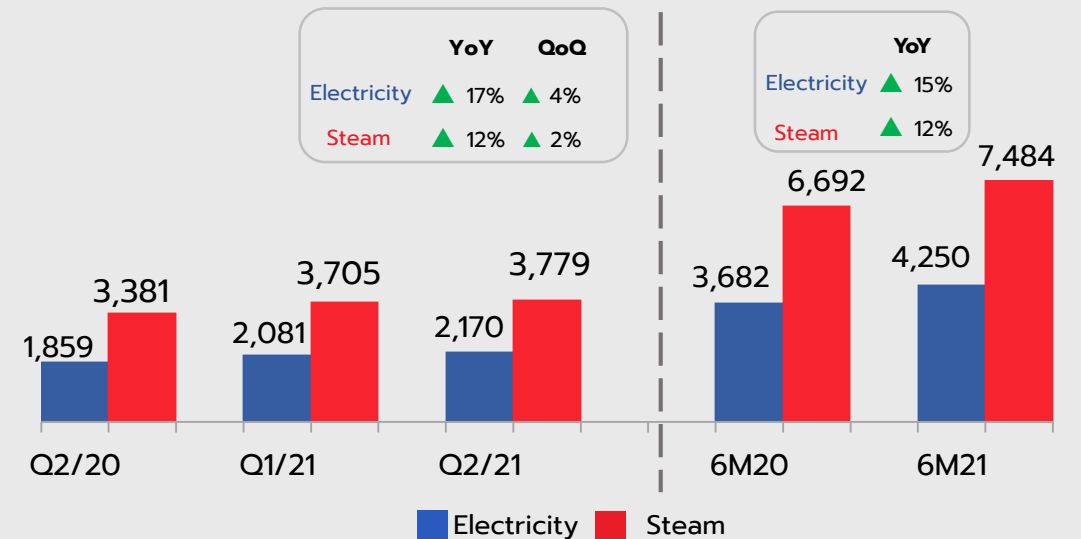


Q2/2021 Performance

Net Income (THB MM)



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





### Solar Power Platform in India



**Contracted Capacity | 4,560 MW**  
*(+816 MW from announcement date July 13, 2021)*



**GPSC Hold | 41.6% of shares**

*Increased 1,897 MW equity capacity to our portfolio*



### Offshore wind in Taiwan



**Contracted Capacity | 595 MW**



**GPSC Hold | 25% of shares**

*Increased 148.75 MW equity capacity to our portfolio*

### Project COD and Closing in 1H/2021



**Energy Storage Unit  
30 MWh p.a.**  
Start of regular production in June 2021



**Rayong Waste to Energy Project**  
COD on May 28, 2021



**Solar projects of 25 MW in Taiwan**  
Revenue recognition since May 28, 2021

# Q&A SESSION



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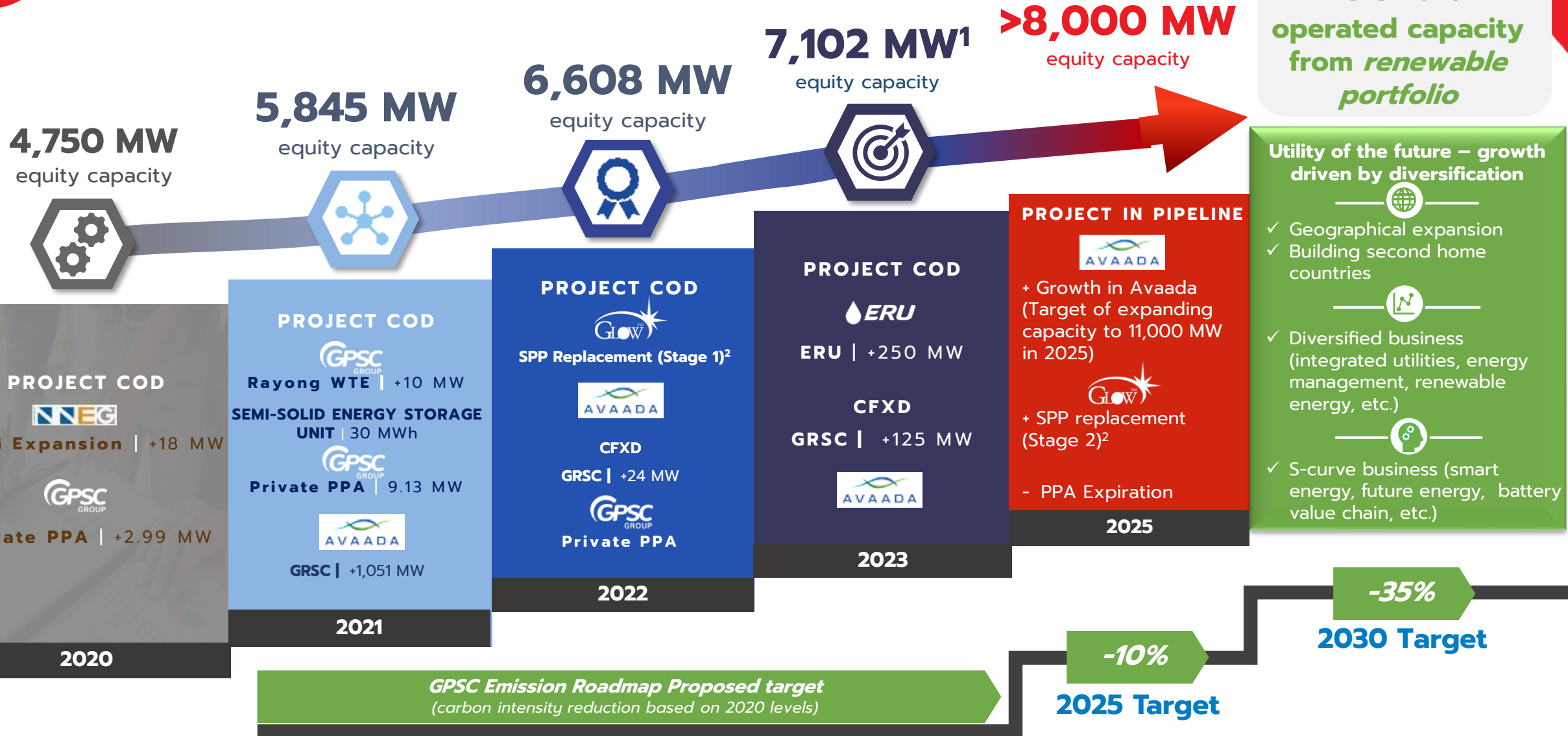
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# Appendix







Notes: 1. Maintain original capacity of Glow Cogeneration plants  
 2. **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.

# S-curve & Batteries | Battery value chain

GPSC has built capabilities across different segments of the value chain, with focus on stationary battery ESS and light duty EV battery pack



## G-CELL Core Values



- Safer
- Greener
- Reliable



## Semi-Solid Battery Unique Design



Shorter Process



Remove **40%** Inactive Material



**No** binder Needed



**Low Risk** of Contamination

## Application and Manufacture Development for Semi-Solid Energy Storage Unit (30 MWh p.a.)

### Energy Storage



### E-Mobility



### Target applications

- Commercial & Industrial**
  - Charging station
  - Industrial Estate
- Micro-Grid**
  - Remote Area
- Residential (RESS) and others**
  - Property Development
  - ESS Mobility and others
- E-Mobility**
  - Battery for EVs
  - Battery swapping



- Lead Acid Replacement
- EV-Bus
- ESS x EV Charger
- Battery Swapping & Car Charing
- Battery Pack for EV
- Energy Platform



# S-curve & Batteries | G-CELL and Applications



## SMART ENERGY MANAGEMENT

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



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

**1.74 MW  
Solar Rooftop**

**4.312 MW  
Floating Solar**

**100-200 kWh  
Lithium-ion BESS**

**AI &  
Smart Energy  
Platform**

- ✓ High efficiency BESS with management of solar power generation
- ✓ Blockchain-based smart grid and AI
- ✓ Cutting-edge innovation and smart energy platform



## @Wangchan Valley Smart Natural Innovation Platform



### SMART Energy Management

- ✓ Clean Energy Generation
- ✓ Flexibility Distributed Generation
- ✓ Cost Efficient No Clean Energy Shedding



## 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 installed capacity for seaside of PTT Tank



- ✓ **PTT Tank** : Cut the electricity cost and reduce carbon dioxide emission
- ✓ **GC** developed special plastic "InnoPlus HD8200B"
- ✓ **CHPP** designed and installed the floating solar system



**Manage energy of EV charging station**

- Reduce infrastructure modification
- Save electricity bill

**Sizing:**  
**100kW / 150kWh**



**ESS Digital Energy Platform for Smart Grid**



**ESS control and monitoring platform**

- Manage energy flow in the system by ESS mechanism



To be Listed in **DJSI 2022**  
 Aim to **NET ZERO**



Remark:  
 SDGs: The UN's Sustainable Development Goals



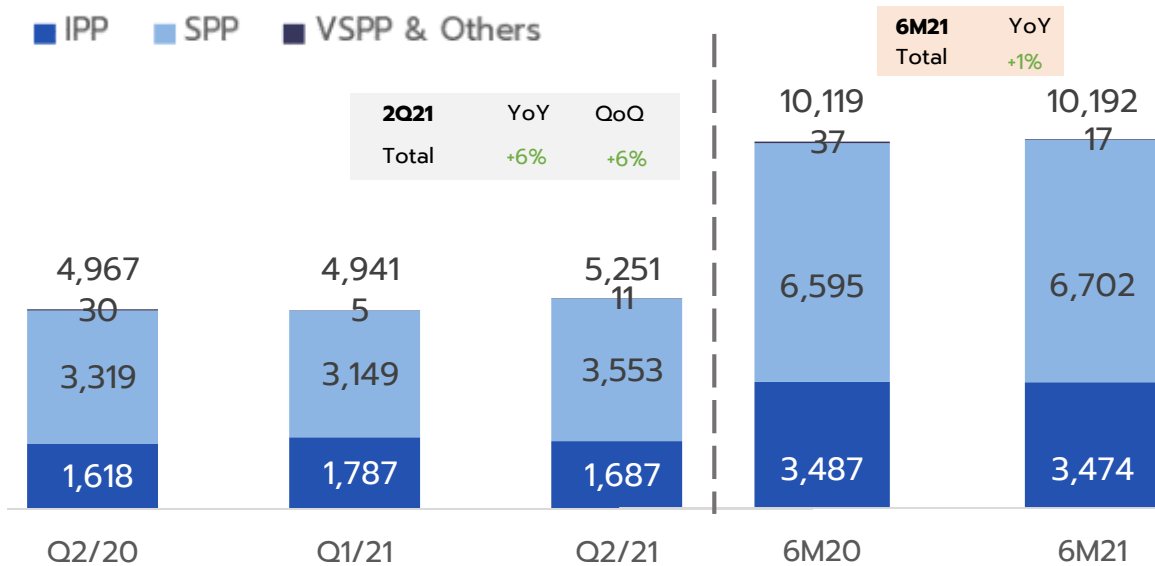
## Q2/2021 Operating Results

| Overall operating results of the Company and its subsidiaries<br>(unit: THB million) | Q2/20        | Q1/21        | Q2/21        | change +/-   |             | 6M/20         | 6M/21         | change +/-  |
|--|--------------|--------------|--------------|--------------|-------------|---------------|---------------|-------------|
|  |              |              |              | YoY          | QoQ         |               |               | YoY         |
| Operating revenue  | 18,138       | 16,624       | 18,234       | 1%           | 10%         | 36,446        | 34,858        | (4%)        |
| Cost of sales (excluding depreciation and amortization)                              | (12,488)     | (11,285)     | (12,748)     | 2%           | 13%         | (25,432)      | (24,033)      | (6%)        |
| <b>Gross profit</b>  | <b>5,650</b> | <b>5,339</b> | <b>5,486</b> | <b>(3%)</b>  | <b>3%</b>   | <b>11,014</b> | <b>10,825</b> | <b>(2%)</b> |
| Selling and administrative expenses  | (437)        | (434)        | (516)        | 18%          | 19%         | (855)         | (950)         | 11%         |
| Other operating income   | 5            | 5            | 5            | 1%           | (6%)        | 10            | 10            | 5%          |
| <b>EBITDA</b>  | <b>5,218</b> | <b>4,910</b> | <b>4,975</b> | <b>(5%)</b>  | <b>1%</b>   | <b>10,169</b> | <b>9,885</b>  | <b>(3%)</b> |
| Depreciation and amortization  | (2,098)      | (2,053)      | (2,172)      | 4%           | 6%          | (4,172)       | (4,226)       | 1%          |
| <b>EBIT</b>  | <b>3,120</b> | <b>2,856</b> | <b>2,803</b> | <b>(10%)</b> | <b>(2%)</b> | <b>5,997</b>  | <b>5,659</b>  | <b>(6%)</b> |
| Finance costs  | (991)        | (974)        | (987)        | (0%)         | 1%          | (2,032)       | (1,961)       | (4%)        |
| Other non-operating income and expenses  | 335          | 264          | 512          | 53%          | 94%         | 511           | 775           | 52%         |
| Dividend received and shares of profit of associates and joint ventures              | 113          | 297          | 522          | 362%         | 76%         | 42            | 819           | 1,850%      |
| Income tax expenses  | (284)        | (453)        | (348)        | 22%          | (23%)       | (537)         | (800)         | 49%         |
| <b>Profit before FX and extraordinary items</b>                                      | <b>2,293</b> | <b>1,990</b> | <b>2,502</b> | <b>9%</b>    | <b>26%</b>  | <b>3,981</b>  | <b>4,492</b>  | <b>13%</b>  |
| Net foreign exchange gain (loss)   | (5)          | 2            | (68)         | 1,261%       | (3,770%)    | (35)          | (66)          | 89%         |
| <b>Net profit</b>  | <b>2,288</b> | <b>1,992</b> | <b>2,434</b> | <b>6%</b>    | <b>22%</b>  | <b>3,946</b>  | <b>4,426</b>  | <b>12%</b>  |
| Non-controlling interests  | (392)        | (19)         | (132)        | (66%)        | 603%        | (470)         | (150)         | (68%)       |
| <b>Net profit for the Company</b>  | <b>1,896</b> | <b>1,973</b> | <b>2,302</b> | <b>21%</b>   | <b>17%</b>  | <b>3,476</b>  | <b>4,276</b>  | <b>23%</b>  |
| <b>Adjusted Net Income<sup>1</sup></b>   | <b>2,264</b> | <b>2,359</b> | <b>2,720</b> | <b>20%</b>   | <b>15%</b>  | <b>4,212</b>  | <b>5,079</b>  | <b>21%</b>  |
| Gross profit margin (%)  | 31%          | 32%          | 30%          | (1%)         | (2%)        | 30%           | 31%           | 1%          |
| Net profit margin (%)  | 10%          | 12%          | 13%          | 2%           | 1%          | 11%           | 12%           | 3%          |
| Adjusted Net Income margin (%)   | 12%          | 14%          | 15%          | 2%           | 1%          | 12%           | 15%           | 3%          |

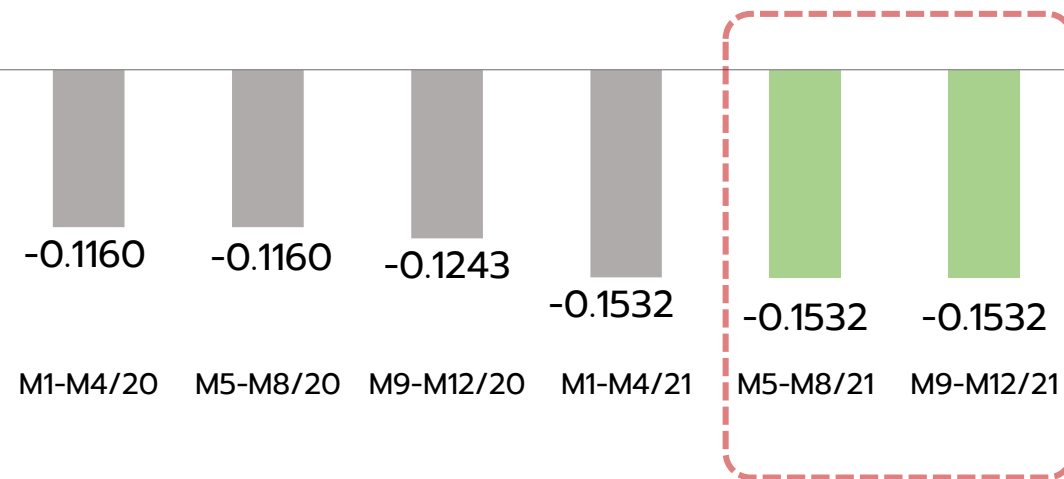
# Q2/2021 | Key Drivers

## Electricity Sales volume (GWh)

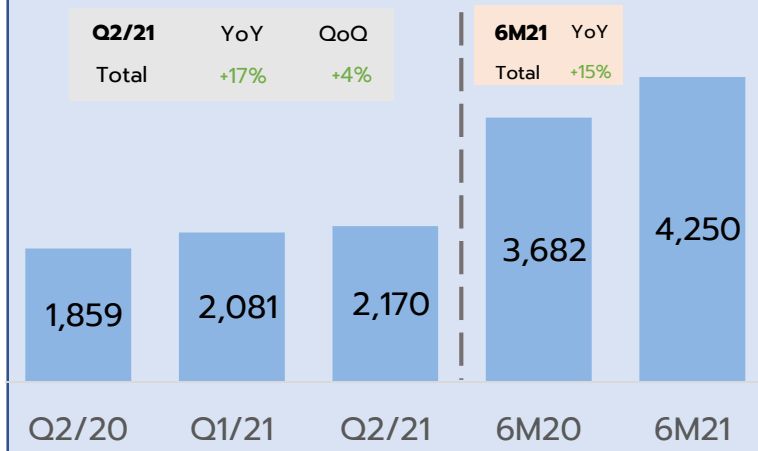
■ IPP ■ SPP ■ VSPP & Others



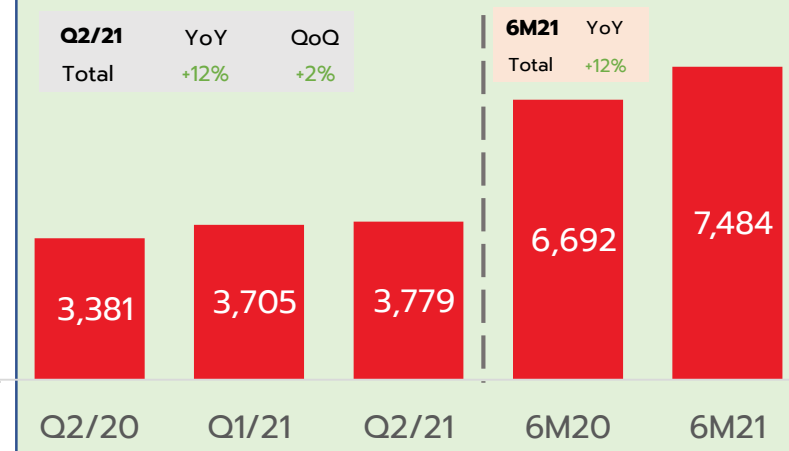
## Ft (THB/kWh)



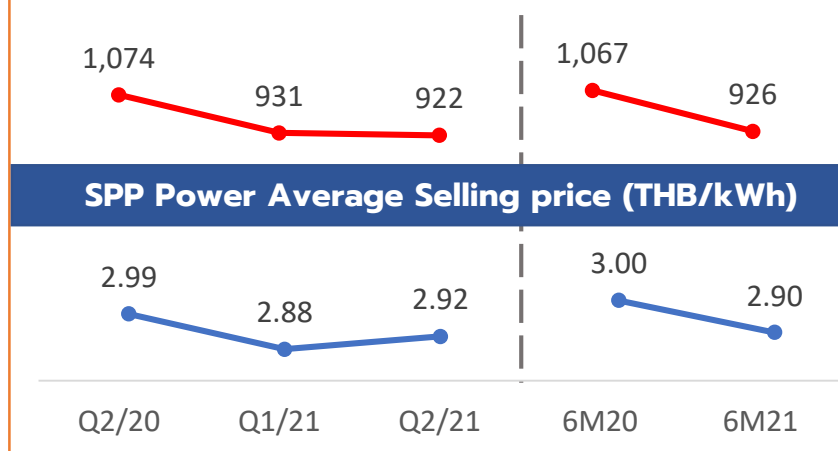
## IU Electricity Sales volume (GWh)



## IU Steam Sales volume ('000 tons)



## SPP Steam Average Selling price (THB/Ton)

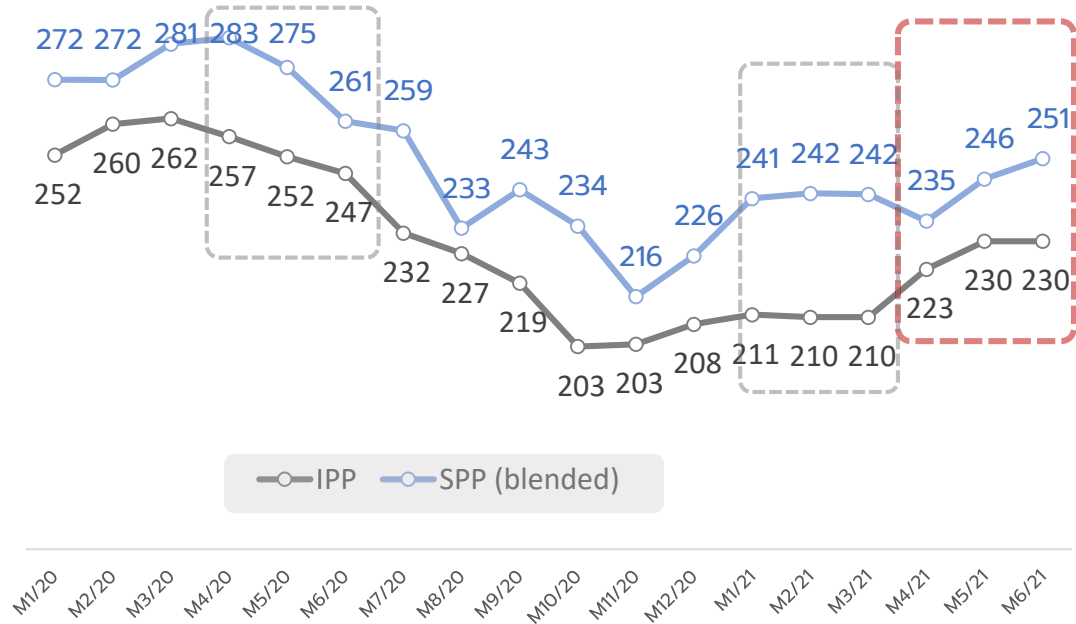


## SPP Power Average Selling price (THB/kWh)

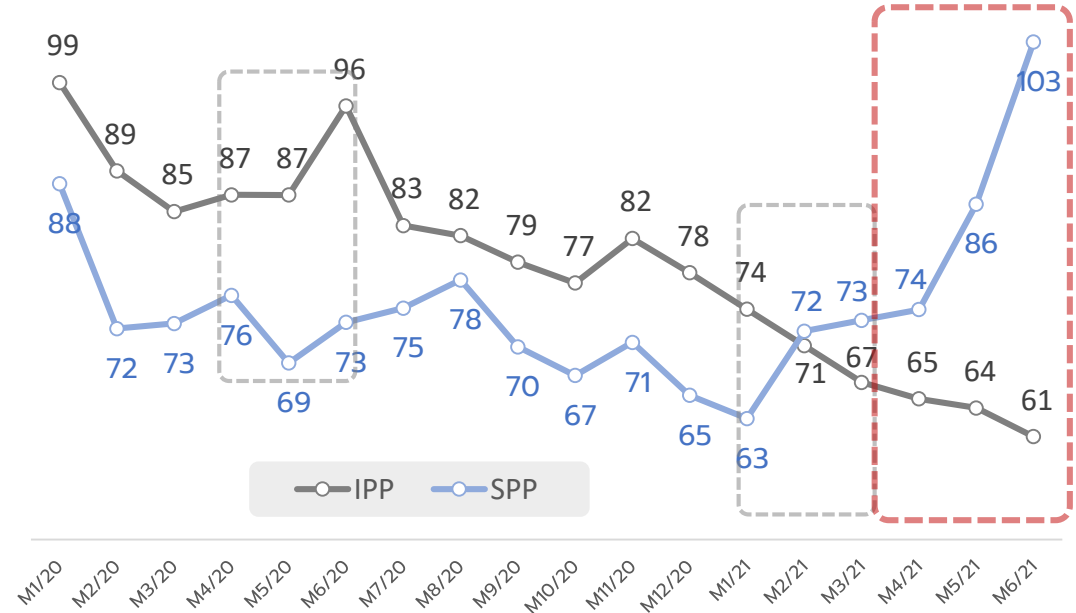


# Q2/2021 | Key Drivers

## Natural Gas Cost 2020 – Q2/2021 (THB/MMBTU)



## Coal Cost 2020 – Q2/2021 (USD/Ton JPU)



| IPP's Availability Rate (%) | Q2/20    |      | Q1/21  | Q2/21 | Change +/- |      | 6M20 | 6M21  | Change +/- |
|-----------------------------|----------|------|--------|-------|------------|------|------|-------|------------|
|                             | YoY      | QoQ  | YoY    | QoQ   |            |      |      |       |            |
|                             | Sriracha | 100% | 99.80% | 100%  | 0%         | 0%   | 100% | 100%  | 0%         |
| GIPP                        | 100%     | 76%  | 100%   | 0%    | 23%        | 100% | 88%  | (12%) |            |
| GHECO-One                   | 99%      | 59%  | 76%    | (23%) | 17%        | 98%  | 68%  | (30%) |            |

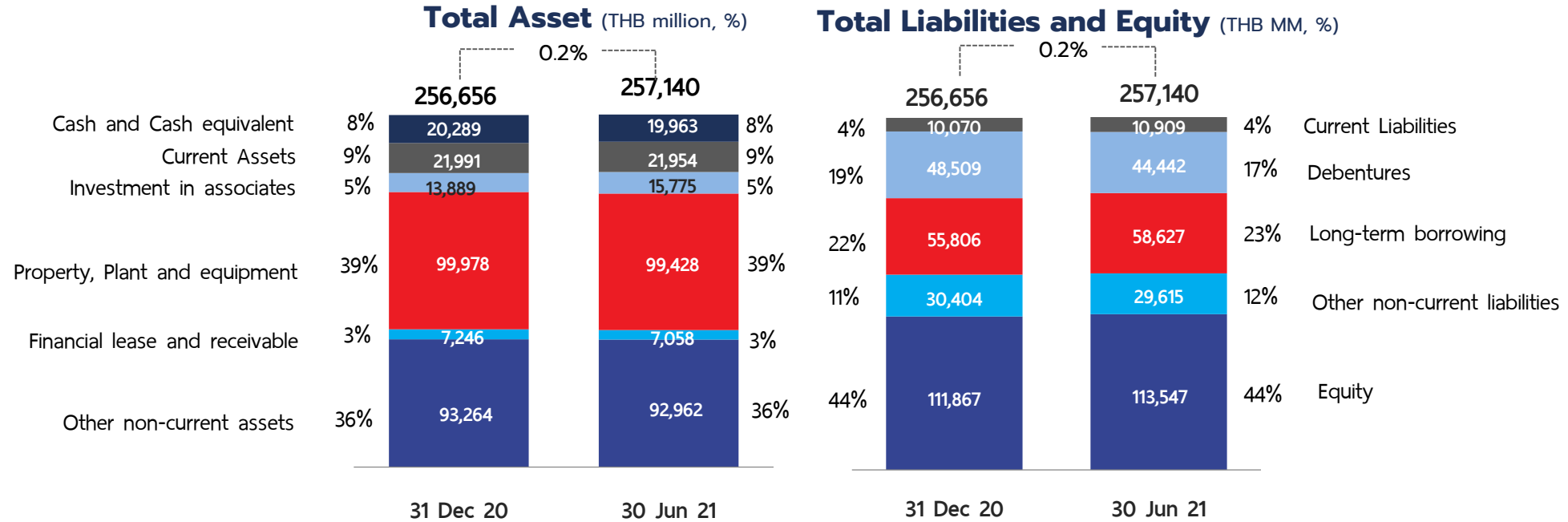
## End-month FX (USD/THB)

|             |              |       |              |       |              |
|-------------|--------------|-------|--------------|-------|--------------|
| Apr20       | 32.55        | Jan21 | 30.17        | Apr21 | 31.37        |
| May20       | 32.02        | Feb21 | 30.17        | May21 | 31.44        |
| Jun20       | 31.07        | Mar21 | 31.51        | Jun21 | 32.22        |
| <b>Avg.</b> | <b>31.88</b> |       | <b>30.62</b> |       | <b>31.68</b> |
| <b>Avg.</b> | <b>6M20</b>  |       | <b>31.92</b> |       |              |
| <b>Avg.</b> | <b>6M21</b>  |       | <b>31.15</b> |       |              |

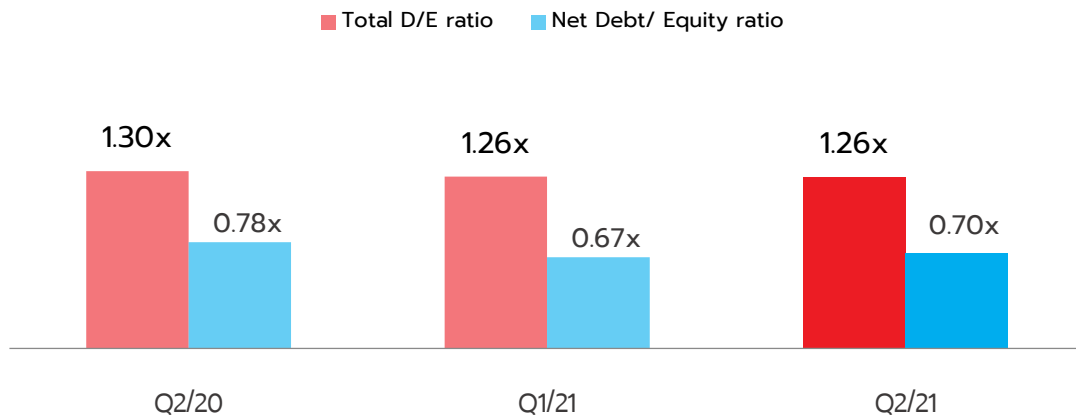


# Q2/2021 Operating Results (QoQ)

## Summary of Financial Position



### Total debt to equity and net debt to equity ratio | times



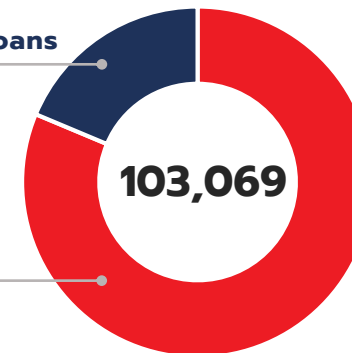
### Total Interest-Bearing Debt (THB MM)

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

THB 19,261 million | 19%

Non-current portion of  
long-term loans and debentures

THB 83,808 million | 81%

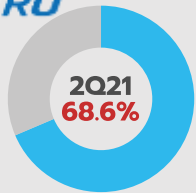


As of Q2/2021:  
- Avg. cost of debt: 3.06%  
- Avg. remaining tenor: 5.2 years

# Update of Projects

## Energy Recovery Unit (ERU)

SCOD | 2023



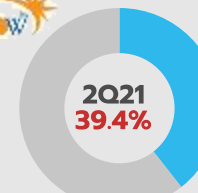
|                            |     |
|----------------------------|-----|
| <b>Electricity</b><br>(MW) | 250 |
| <b>Steam</b><br>(ton/hr.)  | 175 |

**Project updates:**

- Engineering design work: 98% progress
- Under construction: Major Equipment Foundation of CFB Boiler Stack, Pitch Solidification and Cooling Tower.
- Overall, the project has reached 68.6% which is on schedule and expect to COD in the year 2023.

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

SCOD | Q4/2022



|                            |     |
|----------------------------|-----|
| <b>Electricity</b><br>(MW) | 192 |
| <b>Steam</b><br>(ton/hr.)  | 300 |

**Project updates:**

The engineering design work, procurement and construction progress has been reached at 39.4% and on processing of foundation work for gas turbine, HRSG and Pipe Rack.



# Update of Projects

## Avaada : Solar Power Platform in India

### Operational Projects



### Under Construction Projects



Contracted Capacity  
**4,560 MW**

GPSC Hold  
**41.6%** of shares

| Project                             | MW    | COD                     |
|-------------------------------------|-------|-------------------------|
| Operating<br>(13 projects)          | 1,500 | Mar 2018 -<br>July 2021 |
| Under construction<br>(13 projects) | 3,060 | 2021-2022               |

## CFXD : Offshore wind in Taiwan

### Under Construction Projects



Contracted Capacity  
**595 MW**

GPSC Hold  
**25%** of shares

### Project Status

- Phase 1 : 96 MW, first power in 2022
- Phase 2 : 499 MW, first power in 2023

The project is expected to start full COD in the Q1/2024



# 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          |
| NNEG                     | SPP  | GPSC (30%)       | 125                 | 38                         | 38                                   | 9            | -                         | 2016 | 25          |
| NNEG Expansion           | SPP  | GPSC (30%)       | 60                  | 18                         | 18                                   | 3            | -                         | 2020 | 21          |
| 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>2,618</b>        | <b>2,196</b>               | <b>2,196</b>                         | <b>2,771</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>VSPPP and others</b>       |       |                  |                     |                            |                                      |              |                           |         |           |
| Rayong WTE                    | VSPPP | GPSC (100%)      | 9.8                 | 9.8                        | 9.8                                  | -            | -                         | 2021    | 18        |
| Glow Energy Solar Plant       | VSPPP | GLOW (100%)      | 1.55                | 1.55                       | 1.55                                 | -            | -                         | 2012    | 25        |
| CHPP                          | VSPPP | GPSC (100%)      | 5                   | 5                          | 5                                    | -            | -                         | 2008    | 30        |
| CHPP (Solar)                  | VSPPP | GPSC (100%)      | 5                   | 5                          | 5                                    | -            | -                         | 2016    | 25        |
| ISP1                          | Solar | GPSC (99%)       | 20.8                | 20.59                      | 20.59                                | -            | -                         | 2017    | 20        |
| GRP (NPS, WXA, PPS)           | VSPPP | GPSC (50%)       | 39.5                | 19.75                      | 19.75                                | -            | -                         | 2014-15 | 25        |
| GRP1 (Sheng Yang)             | Solar | GPSC (45%)       | 55.8                | 25.11                      | 25.11                                | -            | -                         | 2016-21 | 20        |
| Avaada (Solar Power Platform) | Solar | GPSC (41.6%)     | 4,560               | 1,897                      | 624                                  | -            | -                         | 2018-23 | 15-25     |
| TSR (SSE1)                    | VSPPP | GPSC (40%)       | 80                  | 32                         | 32                                   | -            | -                         | 2013    | 25        |
| NL1PC                         | Hydro | GPSC (40%)       | 65                  | 26                         | 26                                   | -            | -                         | 2019    | 24        |
| Chonburi Clean Energy (CCE)   | VSPPP | GLOW (33%)       | 8.6                 | 2.87                       | 2.87                                 | -            | -                         | 2019    | 20        |
| CFXD (Offshore wind farm)     | Wind  | GPSC (25%)       | 595                 | 149                        | -                                    | -            | -                         | 2022-24 | 20        |
| Private PPA                   | Solar | GPSC Gr. (100%)  | 23.40               | 23.40                      | 2.99                                 | -            | -                         | 2018-21 | Long-term |
| <b>Total VSPPP and others</b> |       |                  | <b>5,469</b>        | <b>2,217</b>               | <b>775</b>                           | <b>-</b>     | <b>-</b>                  |         |           |
| <b>ERU</b>                    |       |                  |                     |                            |                                      |              |                           |         |           |
| ERU (under construction)      | Cogen | GPSC (100%)      | 250                 | 250                        | -                                    | 175          | -                         | 2023    | 25        |
| <b>Total ERU</b>              |       |                  | <b>250</b>          | <b>250</b>                 | <b>-</b>                             | <b>175</b>   | <b>-</b>                  |         |           |
| <b>Total capacity</b>         |       |                  | <b>13,247</b>       | <b>7,102</b>               | <b>5,410</b>                         | <b>2,946</b> | <b>7,372</b>              |         |           |

**Note:**

- Total committed equity capacity as of 13 Aug 2021.
- Equity capacity includes 100% stake in GLOW, CFXD, Private PPA and ERU.

# 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           | 27 Days   |      |     |     |     |      | 12/7 | MI   | 2/8  |       | 17/10 | 1Y    | 22/10 |     |
|       | HRSG-13          | 22 Days   |      |     |     |     |      |      |      |      |       |       |       |       |     |
|       | GTG-12           | 20 Days   |      |     |     |     |      |      |      |      | 16/9  | RCIE  | 5/10  |       |     |
|       | GTG-16           | 3 Days    |      |     |     |     | 1/6  | 1Y   | 3/6  |      |       |       |       |       |     |
|       | GTG-14           | 5 Days    |      |     |     |     |      |      |      |      | 17/10 | 1Y    | 22/10 |       |     |
| CUP-2 | GTG-21           | 29 Days   |      |     | 2/3 | MI  | 31/3 |      | 12/7 | MI   | 2/8   |       |       |       |     |
|       | HRSG-21          | 29 Days   |      |     | 2/3 | 3Y  | 30/3 |      | 12/7 | 3Y   | 2/8   |       |       |       |     |
|       | GTG-22           | 5 Days    |      |     |     |     |      | 26/7 | 1Y   | 28/7 |       |       |       |       |     |
| CUP-4 | GTG-41           | 5 Days    |      |     |     |     |      |      |      |      |       |       | 29/12 | RMI   | 2/1 |
|       | HRSG-41          | 11 Days   |      |     |     |     |      | 27/6 | 1Y   | 7/7  |       |       |       |       |     |
| SRC   | HRSG#1           | 14 Days   |      |     |     |     |      |      |      |      |       | 15/11 | 3Y    | 28/11 |     |
|       | HRSG#2           | 14 Days   |      |     |     |     |      |      |      |      |       | 15/11 | 3Y    | 28/11 |     |
|       | Steam Turbine.10 | 25 Days   |      |     |     |     |      |      |      |      |       | 15/11 | CI    | 23/11 |     |
|       | GT-11            | 8.33 Days |      |     |     |     |      |      |      |      | 7     | MNI   | 13    |       |     |
| RDF   | BMH Machine      | 7 Days    |      |     |     |     |      |      |      |      |       |       |       |       |     |

### Notes: Rayong Site

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

### Notes: Sriracha Site

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



# 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 |
| <b>Block 1</b>     |             |          |      |     |     |     |     |     |     |     |     |     |     |     |
| CTG 21             | B           | 20 Days  |      |     |     | 20  |     |     |     |     |     |     |     |     |
| HRSR 21            | B           | 20 Days  |      |     |     | 20  |     |     |     |     |     |     |     |     |
| CTG 22             | B           | 20 Days  |      |     |     | 20  |     |     |     |     |     |     |     |     |
| HRSR 22            | B           | 20 Days  |      |     |     | 20  |     |     |     |     |     |     |     |     |
| STG 23             | MI          | 20 Days  |      |     |     | 20  |     |     |     |     |     |     |     |     |
| <b>Block 2</b>     |             |          |      |     |     |     |     |     |     |     |     |     |     |     |
| CTG 31             | B           | 20 Days  |      |     |     |     | 20  |     |     |     |     |     |     |     |
| HRSR 31            | B           | 20 Days  |      |     |     |     | 20  |     |     |     |     |     |     |     |
| CTG 32             | C           | 22 Days  |      |     |     |     |     |     |     | 22  |     |     |     |     |
| HRSR 32            | C           | 22 Days  |      |     |     |     |     |     |     | 22  |     |     |     |     |
| STG 33             | MI          | 20 Days  |      |     |     |     |     |     |     | 20  |     |     |     |     |
| <b>Aux. Boiler</b> | YI          | 15 Days  |      |     |     |     |     |     | 15  |     |     |     |     |     |

**Notes:**

- MI Major Inspection
- YI Yearly Inspection Aux Boiler 15 days
- B CTG/HRSR Inspection Level B 20 days
- C CTG /HRSR Inspection Level C 22 days
- Excluded 1 Day maintenance

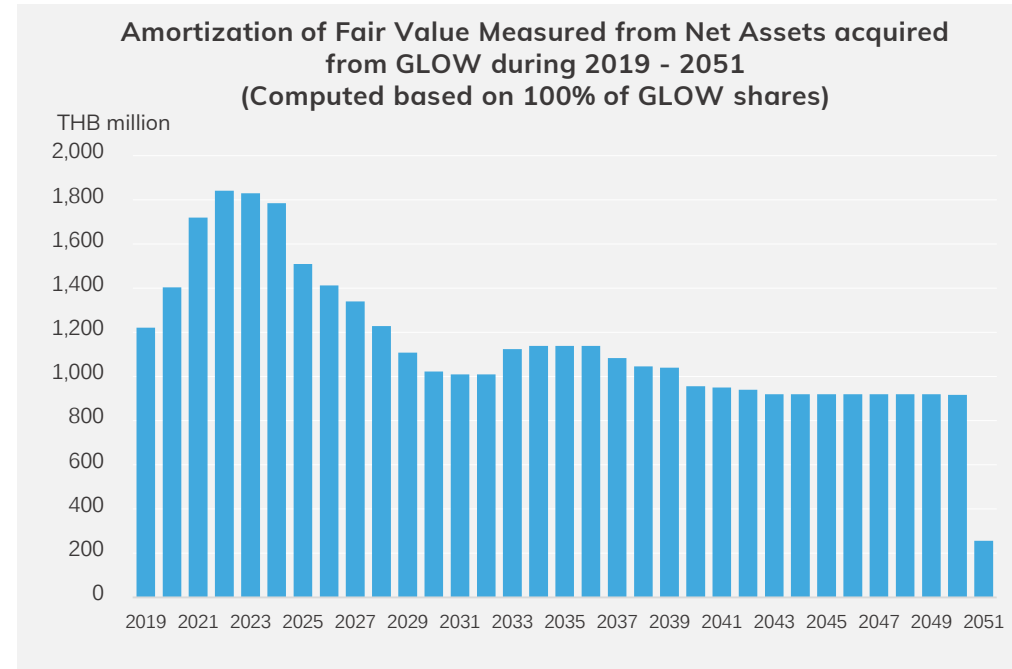
## 2021 Maintenance Schedule | GLOW's Main Units

|                    |                  |          | 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  | <b>2Y</b> | 6/2 |     |           |      |     |     |       |              |           |                 |
| GIPP: UNIT 1       | Minor Inspection | 5 Days   |      |           |     |     |           |      |     |     | 27/9  | <b>3Y</b>    | 1/10      |                 |
| GIPP: UNIT 2       | Minor Inspection | 5 Days   |      |           |     |     |           |      |     |     |       | 2/10         | <b>3Y</b> | 6/10            |
| CFB 3              | Minor Inspection | 21 Days  |      |           |     | 1/5 | <b>3Y</b> | 21/5 |     |     |       |              |           |                 |
| Phase 5            | Minor Inspection | 9 Days   |      |           |     |     |           |      |     |     | 17/10 | <b>GT-SA</b> | 25/10     |                 |
| GSP11<br>(Plant 2) | Minor Inspection | 14 Days  |      |           |     |     |           |      |     |     |       |              | 1/12      | <b>3Y</b> 14/12 |

## 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             |                    |



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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