



Thai Solar Energy Public Company Limited

# TSE PRESENTATION

## 2Q2022

(as of June 30, 2022)



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# AGENDA



- COMPANY OVERVIEW
- FINANCIAL HIGHLIGHTS OF 2Q2022
- OUTLOOK
- APPENDIX



## VISION & MISSION

### VISION

To become a world-class regional leader in providing renewable energy through reliable technologies to serve both commercial and social societies.

### MISSION

To establish a solid footprint in Thailand in the solar power industry and expand into other renewable energies as well as developing an international solar power business focusing in Asia & Oceania regions.

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# COMPANY OVERVIEW

Summary of Corporate Information



# COMPANY OVERVIEW



Thai Solar Energy Public Company Limited (“TSE”) was established in 2008 with a mission to establish a solid footprint in Thailand in the solar power industry and expand into other renewable energies as well as developing an international solar power business focusing in Asia and Oceania regions.

# COMPANY OVERVIEW

## Stock Information

Company: Thai Solar Energy PCL.

SET Symbol: **TSE**

Listed in: **MAI** on October 30, 2014  
 Moved to **SET** since May 14, 2019



Paid up Capital: THB 2,117 million

Sector: Energy & Utilities

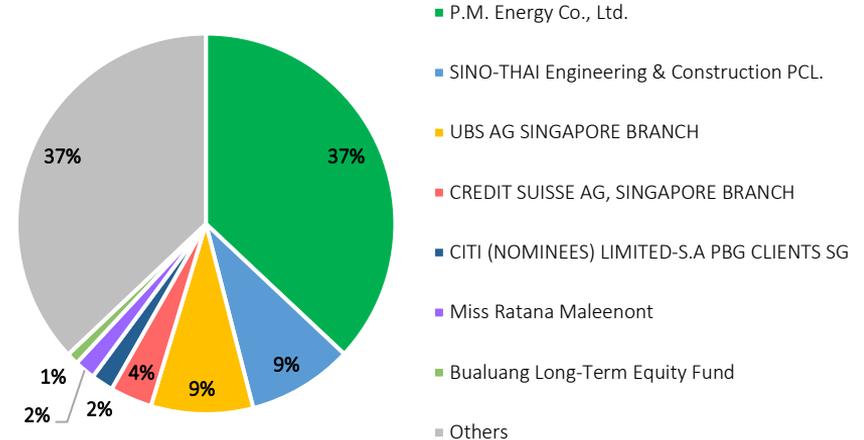
Industry: Resources

CG Rating: 

Credit Rating: BBB- stable

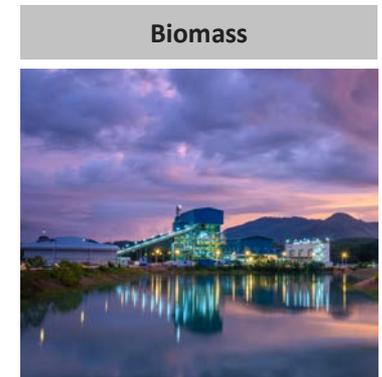
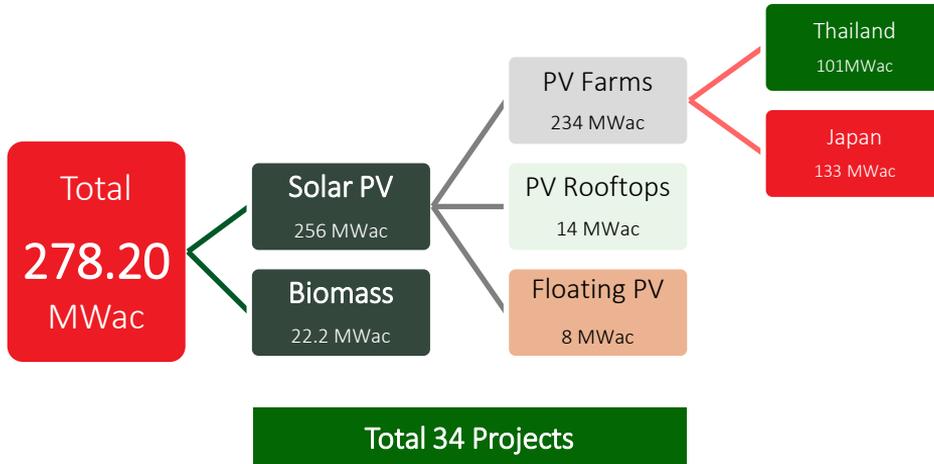
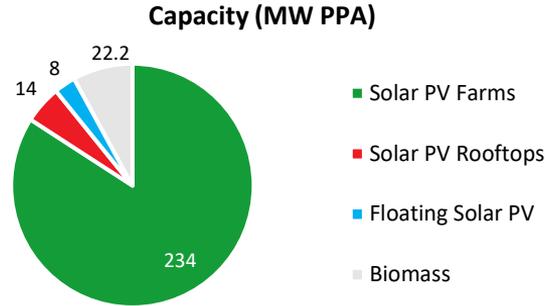
## Major Shareholders (as of March 10, 2022)

TSE Major Shareholders



# CORE BUSINESS

TSE and its subsidiaries (“the Group”) The Group’s core businesses are generation and distribution of electricity from solar power and biomass to government and private company in Thailand and Japan.



# MILESTONES

## 2008 – 2014

Solar Farms +  
Rooftops (TH)

- 2008:** > Established TSE 
- 2011:** > Majority owned by Dr. Cathleen Maleenont  
> COD Solar Thermal (4.5 MW)
- 2013:** > COD Solar PV TH 5 projects\* (40 MW)  
\*Partnership with GPSC (TSE 60%) 
- 2014:** > Listed in MAI on 30 OCT 2014
- > COD Solar PV TH 5 projects\* (40 MW)  
\*Partnership with GPSC (TSE 60%)  
> COD Solar Rooftop 5 Projects (5 MW)



## 2015 – 2017

Solar Farms (JP) +  
Biomass (TH)

- 2015:** > Expanded TSE's business operation in Japan ●
- > COD Solar PV JP 1 project (0.5 MW)  
> COD Solar Rooftop 9 projects (9 MW)
- 2016:** > COD Solar PV "SLC" 1 project (1 MW)  
> COD Solar PV JP 4 projects (6.49 MW)  
> Invested in Biomass 3 projects
- 2017:** > Large Investment in Japan "Onikoube" project (147 MWp) ●



## 2018 – 2019

Merger & Acquisition

- 2018:** > COD Biomass 3 projects (22.2 MW)  
> COD Solar PV JP: Jyoso (1.25 MW)  
> Acquired a new project "INS" in Ang Thong province (2.0 MW) in OCT 2018
- 2019:** > COD Solar PV JP: Hanamizuki (13.5 MW)  
> Fully Operate Biomass 3 projects (22.2 MW)   
> Moved to SET on 14 MAY 2019
- > Capital Increase to 2,117.7 MB. completely in OCT 2019.  
Note: TSR 212 million shares Total 530 MB.
- > Acquired:
1. "BSS" in Ayutthaya province (5 MW) in MAR 2019
  2. "BSE" in Udonrthani province (5 MW) in AUG 2019
  3. "SSP" in Ang Thong province (8 MW) in NOV 2019

## 2020 – 2021

Private PPA

- 2020:** > Start project "Onikoube" Construction and receive project loan from BBL
- > Invested in a Floating Solar PV farm project in Prachinburi province (8.0 MW) in JUN 2020
- > Acquired: "EES" in Krabi province (5.0 MW) in JUL 2020  
> Disposed: "BSE" in Udonrthani province (5.0 MW) in SEP 2020
- 2021** > COD Floating Solar PV project (8 MWp) since 25 May 2021
- > Disposed investment in 6 small Solar Farms in Japan (totaling 8.24 MW) in SEP 2021



## 2022 – onward

Exploring Investment  
Opportunity overseas  
+ Expanding Private PPA

- 2022:** > Divested in a solar farm "Hanamizuki" 13.5 MW in Japan in MAR 2022  
> Acquired a new project "SCT" Solar Tracking in Nakhonsawan province (8.0 MW) in JUN 2022. The acquisition process was completed in JUL 2022.



Ref. photo of  
"Onikoube" project

# BOARD OF DIRECTORS



**Dr. Prommin Lertsuridej**

Vice Chairman, Chairman of Nomination and Remuneration Committee, and Independent Director



**Mr. Prasert Patradhilok**

Independent Director and Chairman of Audit Committee



**Mr. Pala Sookawesh**

Independent Director, Audit Committee



**Dr. Praphan Subsang**

Independent Director, Audit Committee



**Cathleen Maleenont, Ed.D.**

Chairman of Board of Directors, CEO, Nomination and Remuneration Committee



**Mr. Somphop Prompanapitak**

Director, COO, Nomination and Remuneration Committee



**Mrs. Angkanee Rerksirisuk**

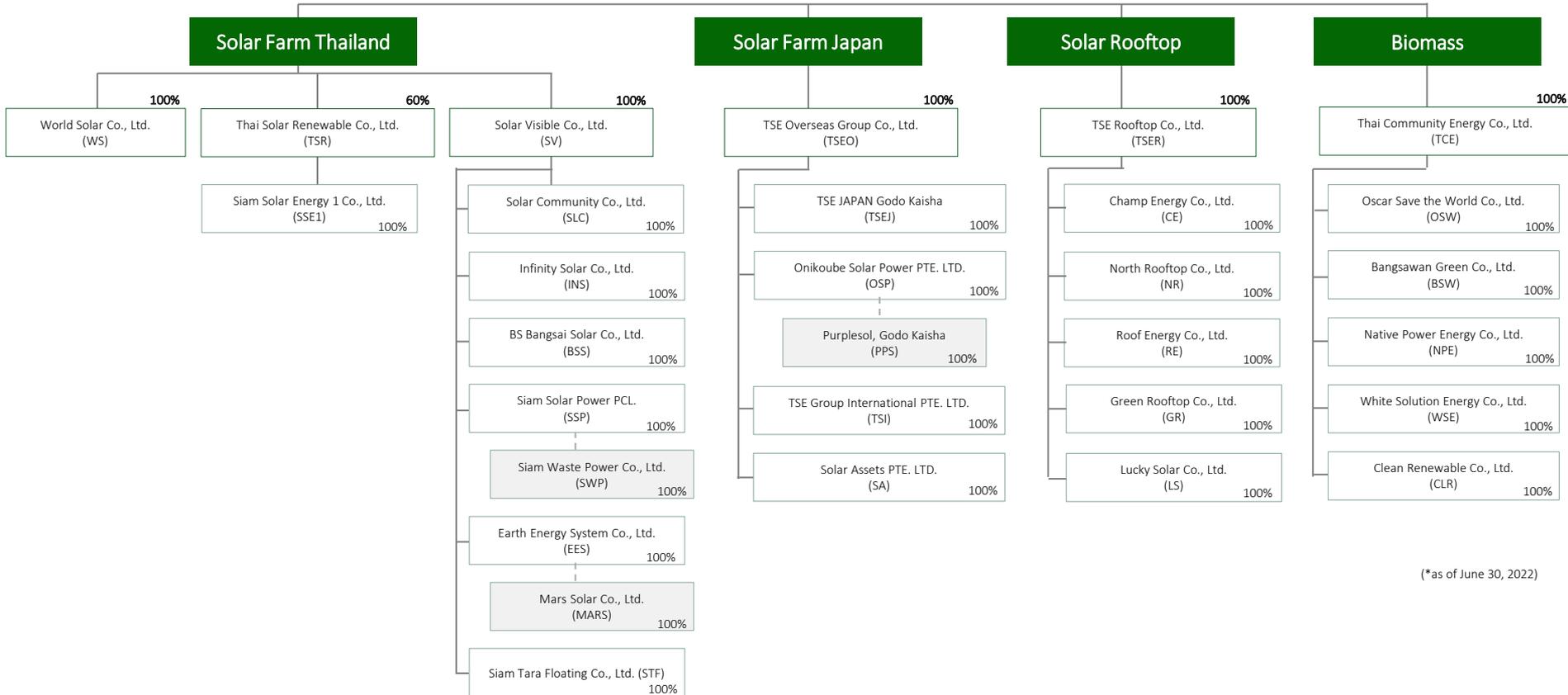
Director



**Mr. Masthawin Charnvirakul**

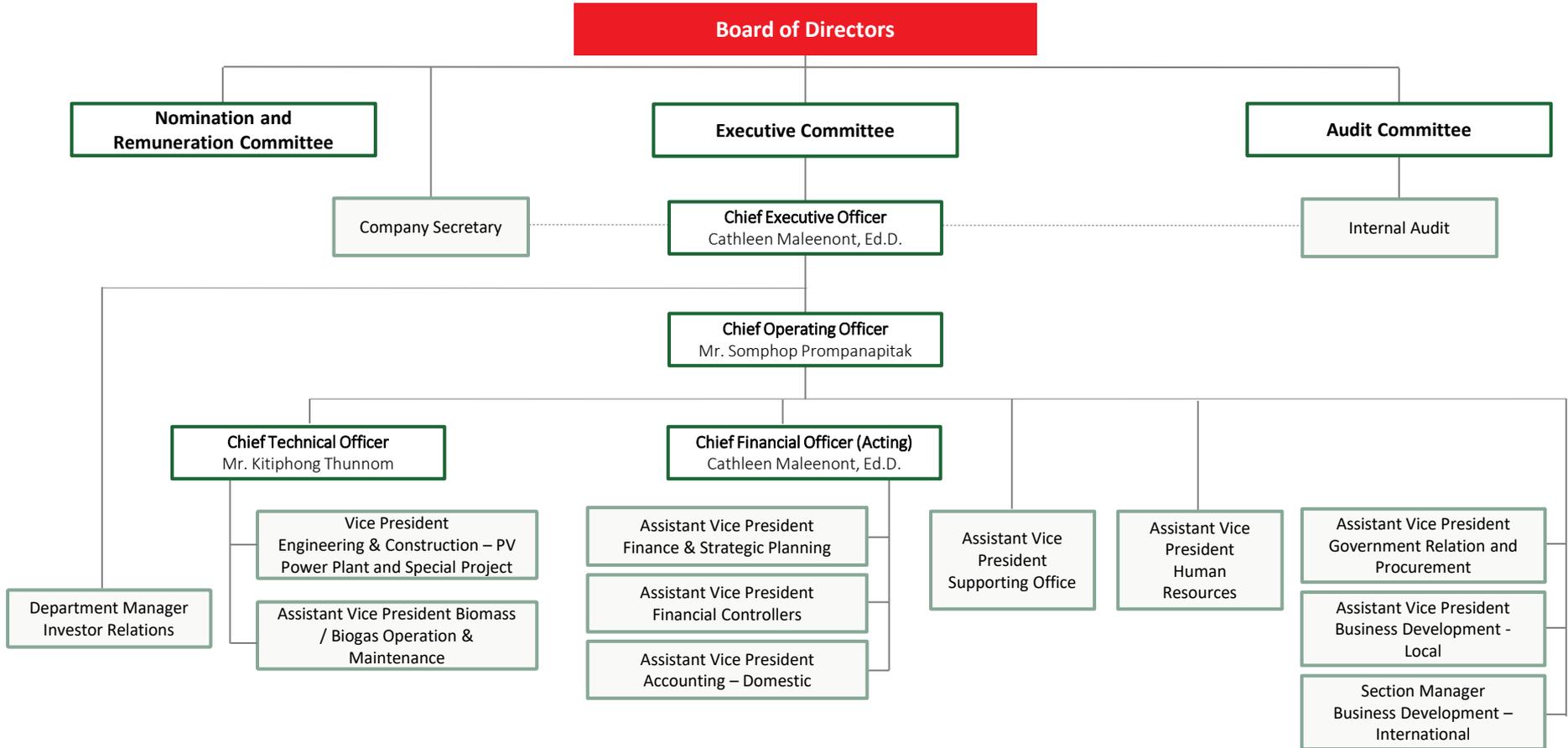
Director

# COMPANY STRUCTURE



(\*as of June 30, 2022)

# ORGANIZATION STRUCTURE



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## FINANCIAL HIGHLIGHTS OF 2Q2022

Summary of TSE's Financial Performance

# HIGHLIGHTS OF 2Q2022



## SOILCRETE (SCT) Project 8 MW

COD: DEC 2015  
 FIT: 5.66 THB/ kWh  
 Type: Solar Tracking

100% investment in Solar Farm “**Soilcrete**” (SCT) – Solar Tracking system with a total contract capacity of 8.0 MW (a total installed capacity of 8.0 MW) in Nakhonsawan Province.

PPA Period **25 years**.

The total investment was **THB 482 million**.

The acquisition was completed in July 2022.

# HIGHLIGHTS OF 2Q2022



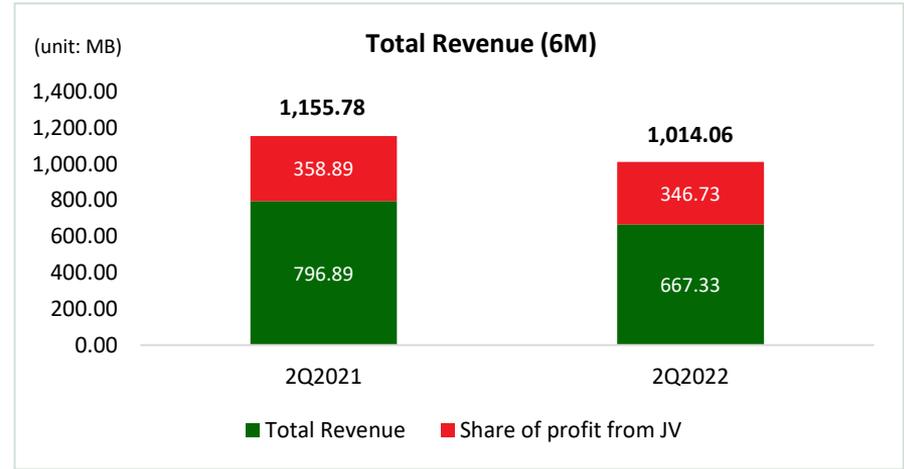
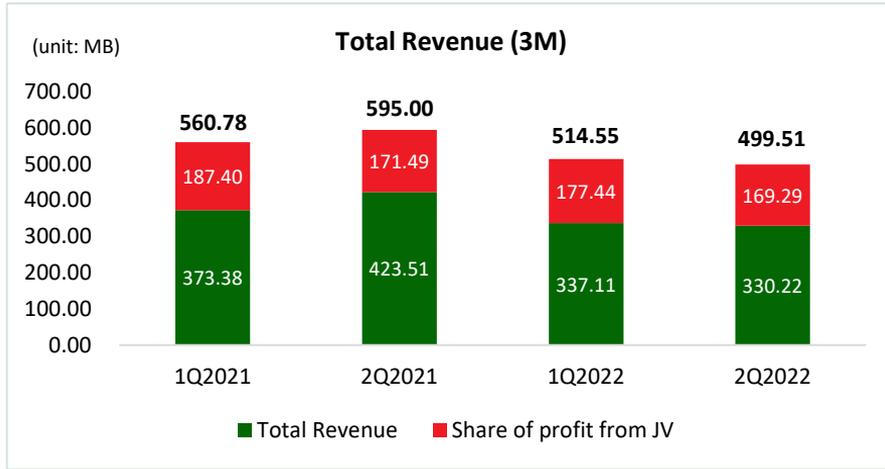
**SOILCRETE (SCT) Project 8 MW**  
 COD: DEC 2015  
 FiT: 5.66 THB/ kWh  
 Type: Solar Tracking

Summary of Project	
Installed Capacity (MWp):	8
Selling Capacity (MW):	8
Purchase Rate (FiT THB):	5.66 THB/kWh
Location:	Nakhonsawan Province, Thailand
Type of Solar Plant	Ground Mounted Solar Power Plant (Tracking)
Off-Taker:	Provincial Electricity Authority (PEA)
COD:	29 DEC 2015
PPA:	25 years
Operated By:	SV
BOI Privilege	0% 8 years

# INCOME STATEMENT 2Q2022

	Consolidated (Unit: Thousand Baht)					
	(3M)			(6M)		
	2Q2022	2Q2021	% Change	2Q2022	2Q2021	% Change
<b>Revenue</b>						
Electricity Sales	315,559	406,964	-22.46%	638,268	766,434	-16.72%
Management Fee	13,443	12,332	9.01%	25,974	24,266	7.04%
<b>Total Revenue</b>	<b>329,002</b>	<b>419,296</b>	<b>-21.53%</b>	<b>664,242</b>	<b>790,700</b>	<b>-15.99%</b>
COGs	(215,173)	(258,732)	-16.84%	(446,688)	(528,538)	-15.49%
<b>Gross Profit</b>	<b>113,829</b>	<b>160,564</b>	<b>-29.11%</b>	<b>217,554</b>	<b>262,162</b>	<b>-17.02%</b>
Other Income	1,216	4,217	-71.16%	3,086	6,192	-50.16%
Administrative Expenses	(42,630)	(38,252)	11.45%	(120,407)	(85,704)	40.49%
Other (losses) gains - net	5,257.00	(34,138)	-115.40%	220,400	9,772	2155.42%
Finance costs	(73,737)	(83,350)	-11.53%	(152,038)	(168,041)	-9.52%
Share of Profit from joint ventures	169,291	171,489	-1.28%	346,726	358,891	-3.39%
<b>Profit (Loss) before Income Tax</b>	<b>173,226</b>	<b>180,530</b>	<b>-4.05%</b>	<b>515,321</b>	<b>383,272</b>	<b>34.45%</b>
Income Tax	(2,560)	1,905	-234.38%	(5,713)	1,688	-438.45%
<b>Net Profit from Operation</b>	<b>170,666</b>	<b>182,435</b>	<b>-6.45%</b>	<b>509,608</b>	<b>384,960</b>	<b>32.38%</b>
Currency translation differences	(308,701)	141,941	-317.49%	(662,365)	(719)	92023.09%
Change in fair value of hedging derivatives		(13,880)	100.00%		(2,512)	100.00%
<b>Total Comprehensive Income</b>	<b>(138,035)</b>	<b>310,496</b>	<b>-144.46%</b>	<b>(152,757)</b>	<b>381,729</b>	<b>-140.02%</b>
<b>Profit Attributable to:</b>						
Owners of the Parent	170,666	182,115	-6.29%	509,608	384,680	32.48%
Non-Controlling Interests	-	320	100.00%	-	280	100.00%
	<u>170,666</u>	<u>182,435</u>	-6.45%	<u>509,608</u>	<u>384,960</u>	32.38%
<b>Total Comprehensive Income Attributable to:</b>						
Owners of the Parent	(138,035)	310,120	-144.51%	(152,757)	381,406	-140.05%
Non-Controlling Interests	-	376	100.00%	-	323	100.00%
	<u>(138,035)</u>	<u>310,496</u>	-144.46%	<u>(152,757)</u>	<u>381,729</u>	-140.02%

# TOTAL REVENUE 2Q2022



## TOTAL REVENUE (3-month period)

**-2.92% QoQ**

**-16.05% YoY**

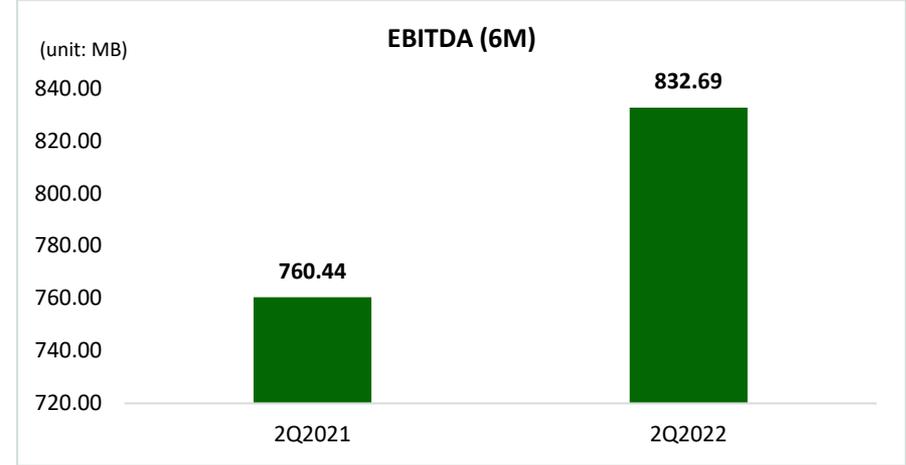
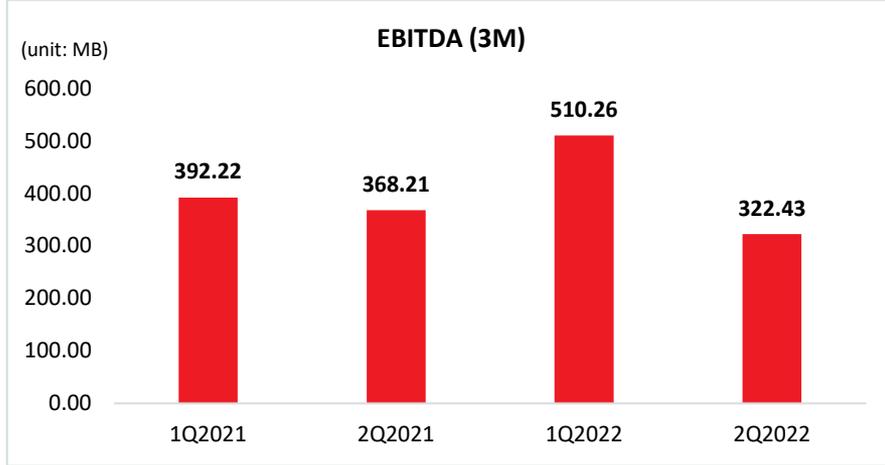
Total Revenue including share of profit from JV in 2Q2022 (3M) decreased to 499.51 MB or -16.05% (YoY) as compared to 2Q2021 (3M) of 595.00 MB. This was mainly due to the result of the divestment in 7 Solar PV Farm projects (totaling 21.74 MW) in Japan since 3Q2021 (6 projects) and 1Q2022 (1 project). In addition, the Company has revenue increased from a Floating Solar PV project (8MW) in Prachinburi Province, Thailand which started to COD since May, 2021.

## TOTAL REVENUE (6-month period)

**-12.26% YoY**

Total Revenue including share of profit from JV (6M) decreased to 1,014.06 MB or -12.26% (YoY) as compared to 2Q2021 (6M) of 1,155.78 MB. This was mainly due to the same reason of the divestment in 7 Solar PV Farm projects (totaling 21.74 MW) in Japan. In addition, the Company has revenue increased from a Floating Solar PV project (8MW) in Prachinburi Province, Thailand which started to COD since May, 2021.

# EBITDA 2Q2022



## EBITDA (3-month period)

**-36.81% QoQ**

**-12.43% YoY**

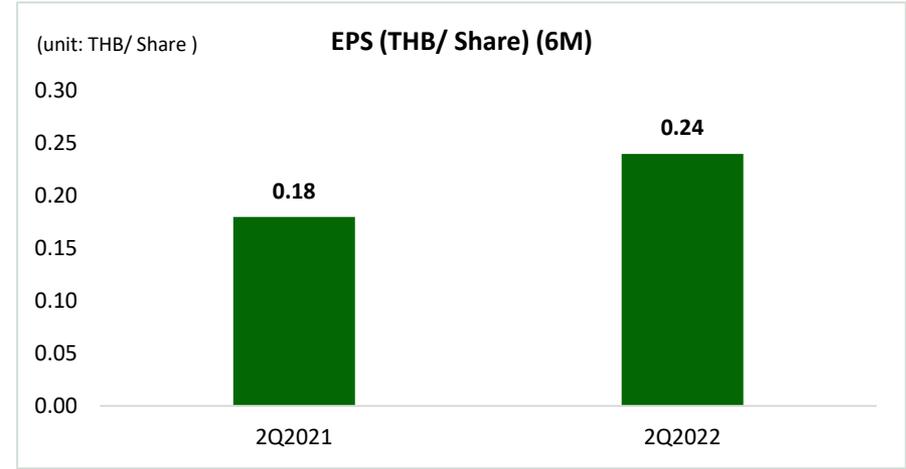
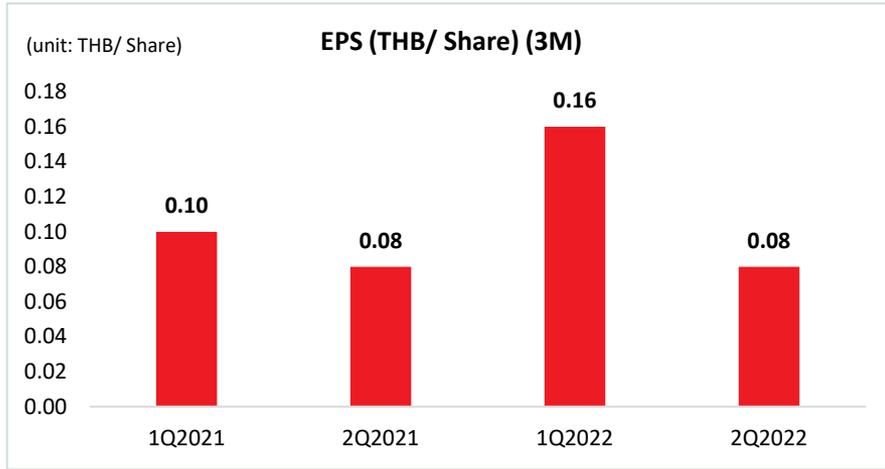
EBITDA in 2Q2022 (3M) decreased to 322.43 MB or -12.43% (YoY) as compared to 2Q2021 (3M) of 368.21 MB. This was due to the divestment in 7 Solar PV Farm projects (totaling 21.74 MW) in Japan. Meanwhile, the Company has revenue increased from a Floating Solar PV project (8MW) in Prachinburi province, Thailand which started to COD since May, 2021.

## EBITDA (6-month period)

**+9.50% YoY**

EBITDA in 2Q2022 (6M) increased to 832.69 MB or +9.50% (YoY) as compared to 2Q2021 (6M) of 760.44 MB. This was due to an increase in the other gains of divestment in 13.5 MW Solar PV Farm project (“Hanamizuki”) in Japan which recognized in 1Q2022.

# EPS 2Q2022



#### EPS (3-month period)

**-50.00% QoQ**

**-0.00% YoY**

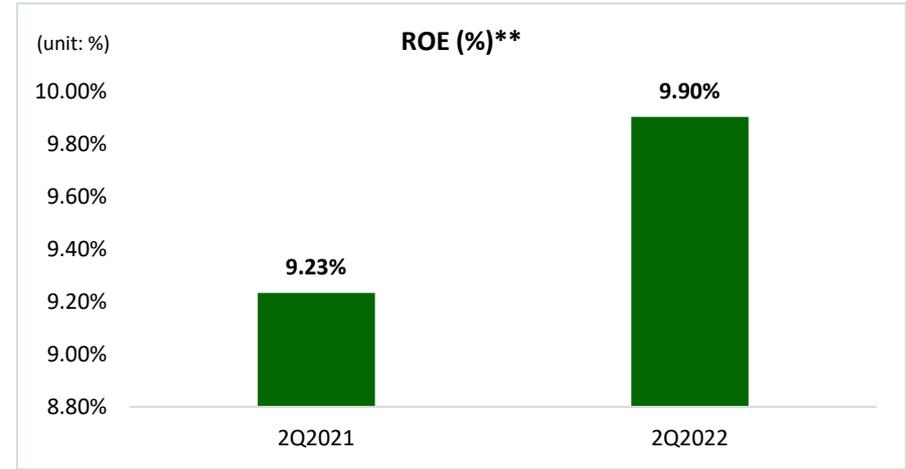
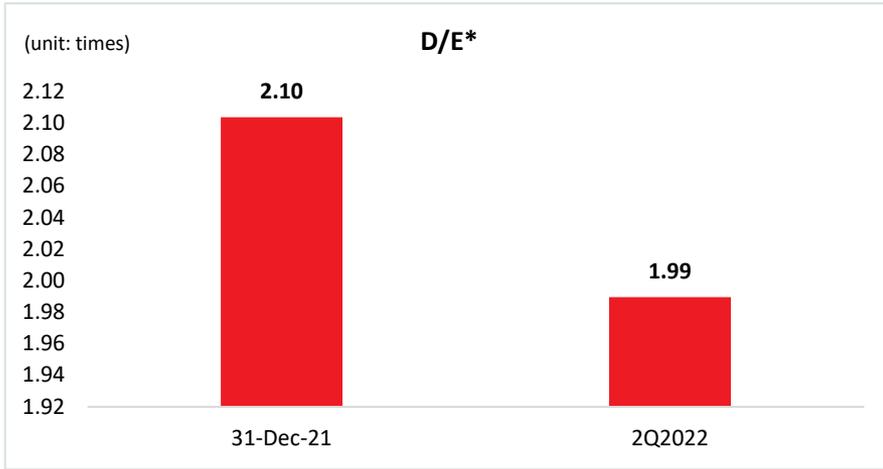
EPS in 2Q2022 (3M) was 0.08 Baht / share which equaled to EPS in 2Q2021 (3M). Meanwhile, EPS in 1Q2021 was 0.16 Baht / share which was a result of gain from sale of investment in subsidiaries in Japan.

#### EPS (6-month period)

**+33.33% YoY**

EPS in 2Q2022 (6M) increased to 0.24 Baht / share or +33.33% as compared to 2Q2021 (6M) of 0.18 Baht / share. This was primarily due to the other gains on exchange rate regarding divestment in subsidiaries in Japan significantly increased to 220.40 MB in 2Q2022 while the other gains in 2Q2021 were 9.77 MB. Besides, finance costs in 2Q2022 (6M) decreased from 168.04 MB to 152.04 MB or -9.52%.

# D/E RATIO and ROE 2Q2022



**D/E\***

**-5.24% YoY**

As of 30 June, 2022, D/E\* slightly decreased to 1.99 times or -5.24% as compared to 31 December, 2021 of 2.10 times. This was mainly due to a decrease of borrowings from financial institutions from divestment in subsidiaries in Japan, and a decrease in liabilities from normal loan repayment during this year.

**ROE\*\***

**+7.26% YoY**

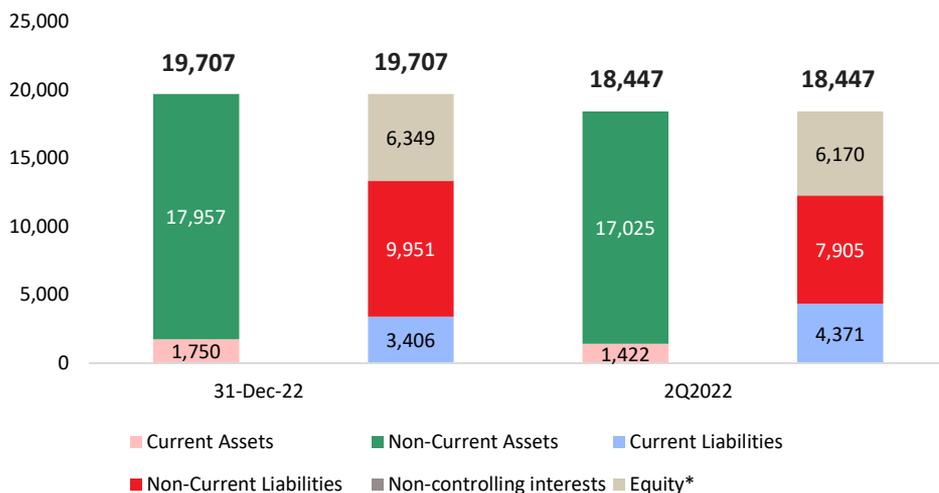
ROE\*\* in 2Q2022 slightly increased to 9.90% or +7.26% as compared to 2Q2021 of 9.23%. This was primarily due to the result of the divestment in subsidiaries in Japan during the year 2022 that improved in net profit and finance costs in 2Q2022 (6M) was decreased.

Note: \*Equity attributable to owners of the parent  
 \*\* Annualized: ROE

# FINANCIAL POSITION 30 JUNE 2022

Financial Position 31 DEC 2021 and 30 June 2022

(Unit: MB)



## Summary

### ▪ Total Assets:

Decreasing from 19,707 MB to 18,447 MB, or -6.39%.

### ▪ Total Liabilities:

Decreasing from 13,358 MB to 12,276 MB, or -8.10%.

### ▪ Equity Attributable to owners of the parent:

Decreasing from 6,349 MB to 6,170 MB or -2.82%.

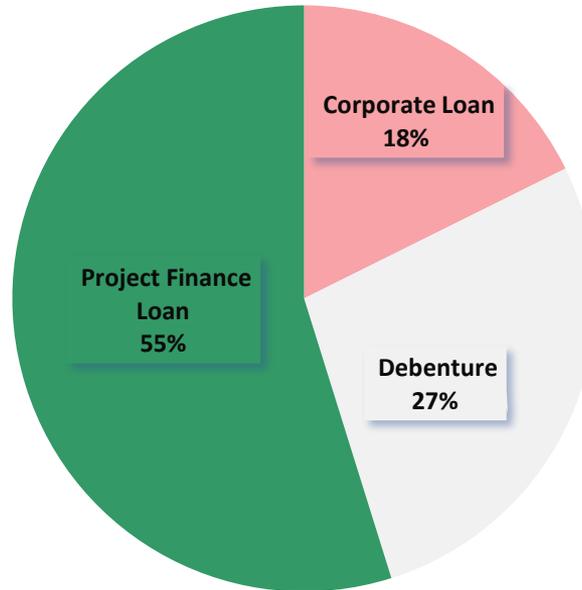
As of 30 June, 2022, total assets, total liabilities, and equity attributable to owners of the parent were decreased due to the result of the divestment of 7 Solar PV Farm projects in Japan since 3Q2021 (6 projects) and in 1Q2022 (1 project). However, the Company was able to improve the Group's power plants' efficiency, recognize new revenue from the floating solar farm project (8MW) in Prachinburi province since May, 2021, and decrease in finance costs.

FINANCIAL POSITION	31-Dec-21	2Q2022	+/- (%)
Assets	19,706.92	18,446.59	-6.39%
Liabilities	13,357.54	12,276.12	-8.10%
Equities*	6,349.38	6,170.47	-2.82%
D/E* Ratio (times)	2.10	1.99	-5.24%

# DEBT STRUCTURE 2Q2022

## Project Finance Loan

Most of interest bearing debt from Project Finance Loan for 55%, increased from Onikoube Project Finance Loan drawdown.



## Corporate Loan and Debenture

27% of Project Finance Loan from COD projects decreased accordingly from schedule repayment.

The remaining interest bearing debt from Corporate Loan and Debenture for 45% decreased from schedule repayment.

# CONSTRUCTION UPDATE



## Purchase Rate - FIT 36 JP¥

### Summary of "Onikoube" Project

Installed Capacity (MWp):	147
Selling Capacity (MWac):	133
Purchase Rate (FIT JP¥):	36
Location:	Miyagi Province, Japan
Off-taker:	Tohoku Utility
SCOD:	4Q2022
Status:	Under construction
Operated by:	OSP
Start Project Construction:	In April, 2020

### Project Components

EPC by:	TOSHIBA	
PV Module by:	Trina Solar	
Inverter by:	Huawei	

### Financing

Project Finance by:	BBL (THB 8.6 bn.)
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# CONSTRUCTION UPDATE



## As of June, 2022

The project construction progress has achieved 82.3% as of June 2022. The EPC still focuses on piling and module installation toward the COD.

The delivery of major equipment is complete. The grid connection is expected to be achieved in early of October, which is a positive sign for our COD schedule in Q42022.

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## OUTLOOK

Summary of TSE's Business Outlook And Investment Plan

# OUTLOOK

Total approx. **100 – 200 MW\***  
within the next 5 years

## THAILAND

- Acquiring New Projects
- Penetrating Private PPA in Solar PV Farms
- Expanding into Waste to Energy

Totaling approx.

50 MW PPA

## OVERSEAS

- Exploring new opportunities in renewable energy projects (i.e. Wind and Solar Farms) overseas

Totaling approx.

50 – 100 MW PPA



Note: \*The plan is subject to change depending on various factors.

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## APPENDIX

### Summary of TSE's Projects

# TSE's PROJECTS

**TOTAL**  
**278.20 MWac**  
**34 Projects**

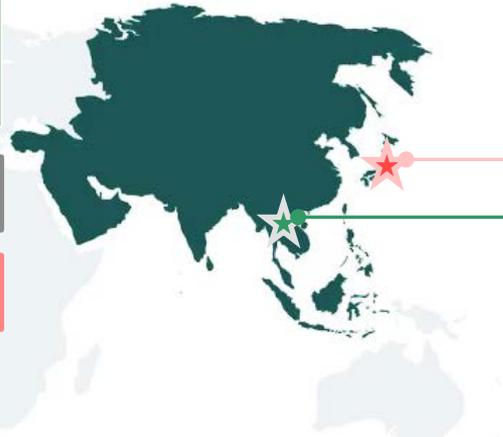
**THAILAND**      **145.20 MWac**  
**33 Projects**

**JAPAN**            **133 MWac**  
**1 Project**

(As of 30 June, 2022)

Note: \*101 MW (69 MWe) > 10 projects - Partnership with GPSC (TSE 60%)

\*\* 278.20 MW      > 33 projects (145.20 MWac) are in operation.  
> 1 project (133 MWac) is under construction.



**Solar PV Farms**

101 MWac – 15 Farms  
8 MWac – 1 Floating



**Solar PV Rooftops**

14 MWac – 14 Rooftops



**Biomass**

22.2 MWac – 3 Plants



**Solar PV Farm**

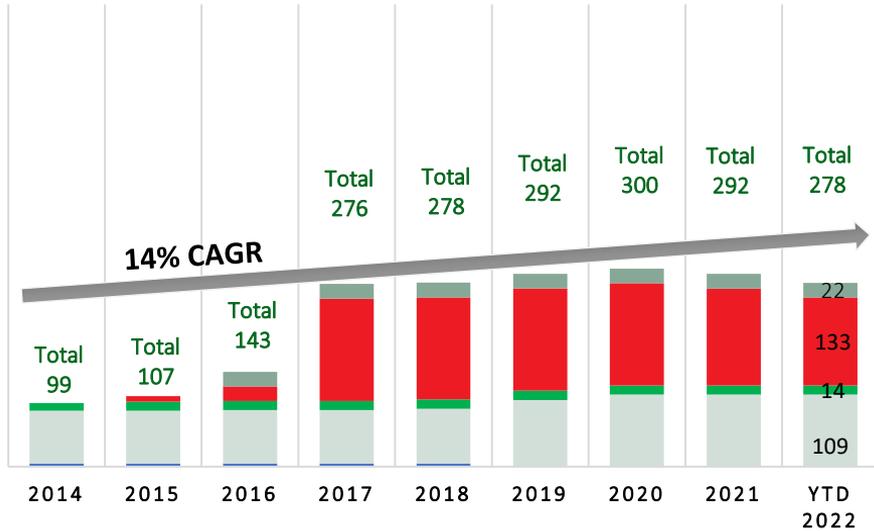
133 MWac – 1 Farm  
(under construction)



# CAPACITY GROWTH

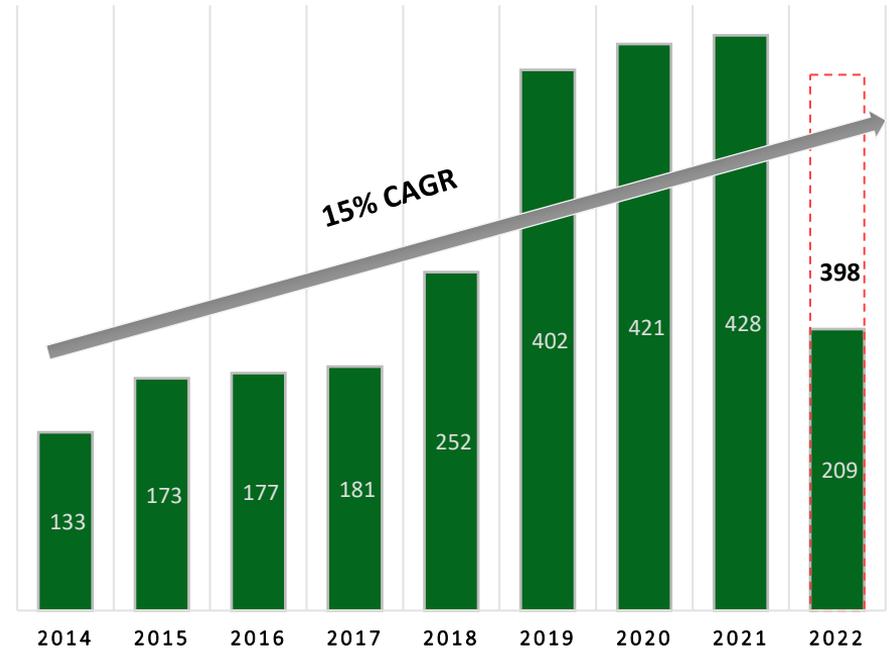
## ACQUIRE CAPACITY (MW PPA)

- Thermal
- Solar Farms
- Solar Rooftops
- Japan Solar Farms
- Biomass
- Total

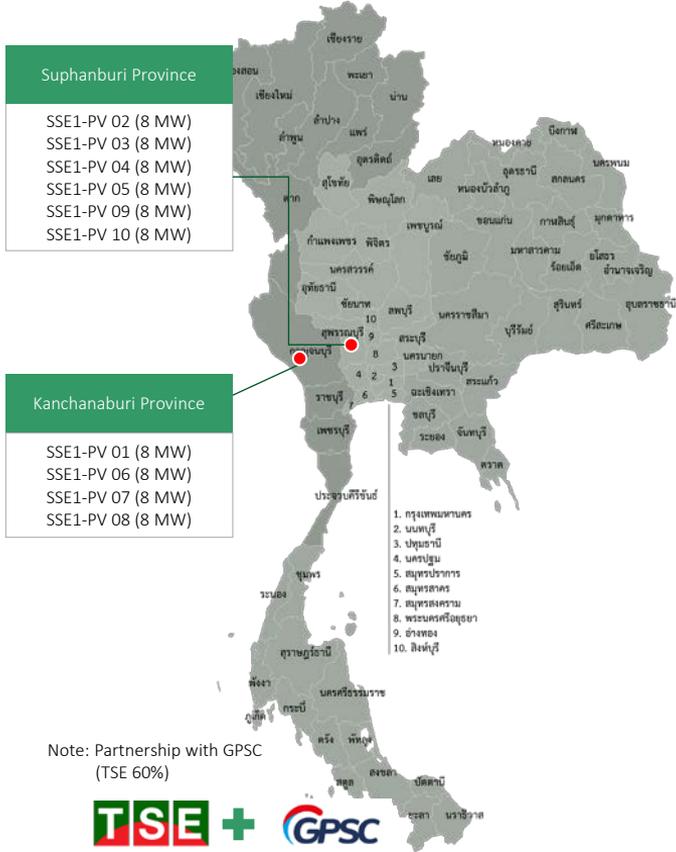


## POWER OUTPUT PRODUCTION (MIL KWH)

- Actual
- Forecast



# SOLAR PV FARMS (THAILAND) : 10 Projects (80 MWac) with GPSC



Note: Partnership with GPSC (TSE 60%)

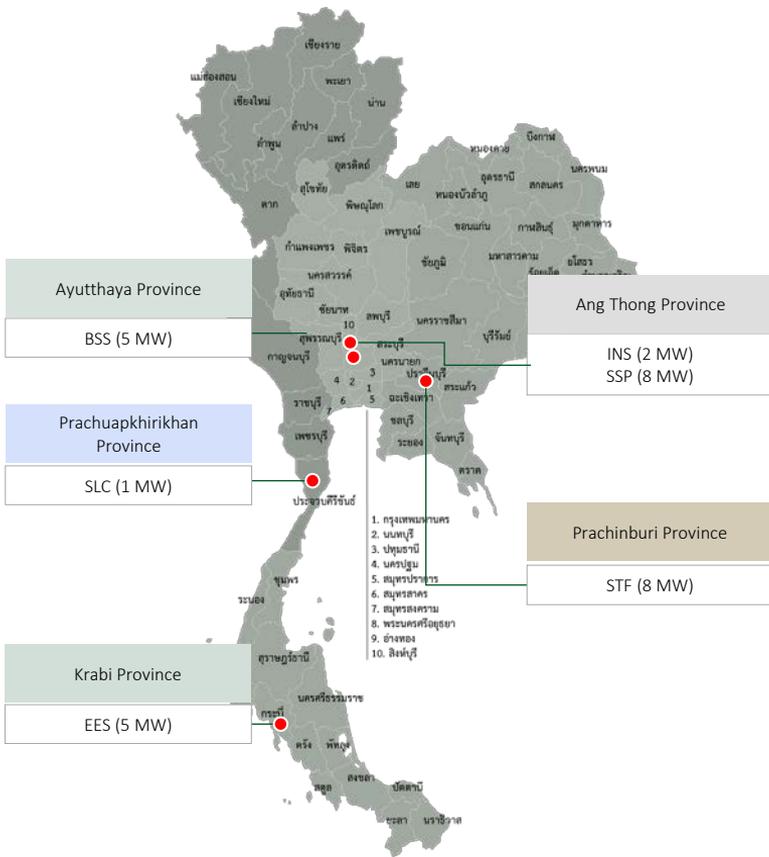


**Adder 6.5 THB/kWh**

Project	Selling Capacity (MW)	COD	Province
SSE1-PV01	8	4-Sep-13	Kanchanaburi
SSE1-PV02	8	17-Jul-13	Suphanburi
SSE1-PV03	8	28-Oct-13	Suphanburi
SSE1-PV04	8	21-Nov-13	Suphanburi
SSE1-PV05	8	21-Nov-13	Suphanburi
SSE1-PV06	8	6-Jun-14	Kanchanaburi
SSE1-PV07	8	20-Mar-14	Kanchanaburi
SSE1-PV08	8	6-Jun-14	Kanchanaburi
SSE1-PV09	8	4-Apr-14	Suphanburi
SSE1-PV10	8	30-May-14	Suphanburi



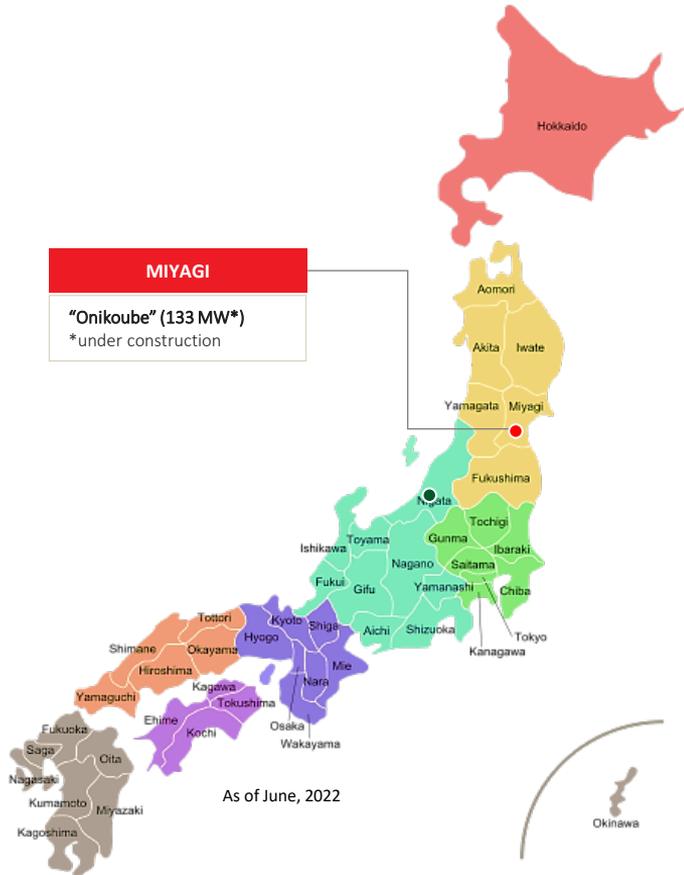
# SOLAR PV FARMS (THAILAND) : 6 Projects (29 MWac)



Project	Selling Capacity (MW)	COD	Province	Power Purchase Rate
SLC	1	Dec-16	Prachuap Kirikhan	FiT 5.66 THB/ kWh
INS	2	Dec-15	Ang Thong	FiT 5.66 THB/ kWh
BSS	5	Dec-16	Ayutthaya	FiT 4.12 THB/ kWh
EES	5	Dec-18	Krabi	FiT 4.12 THB/ kWh
SSP	8	Mar-13	Ang Thong	Adder 8.0 THB/ kWh
STF	8	May-21	Prachinburi	Private PPA



# SOLAR PV FARMS (JAPAN) : 1 Project (133 MWac)



Project	Selling Capacity (MW)	COD	Province	Power Purchase Rate
ONIKOUBE	133	4Q2022	Miyagi	FiT 36 JP¥/ kWh



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# FLOATING SOLAR PV FARM (THAILAND) : 8 MWac



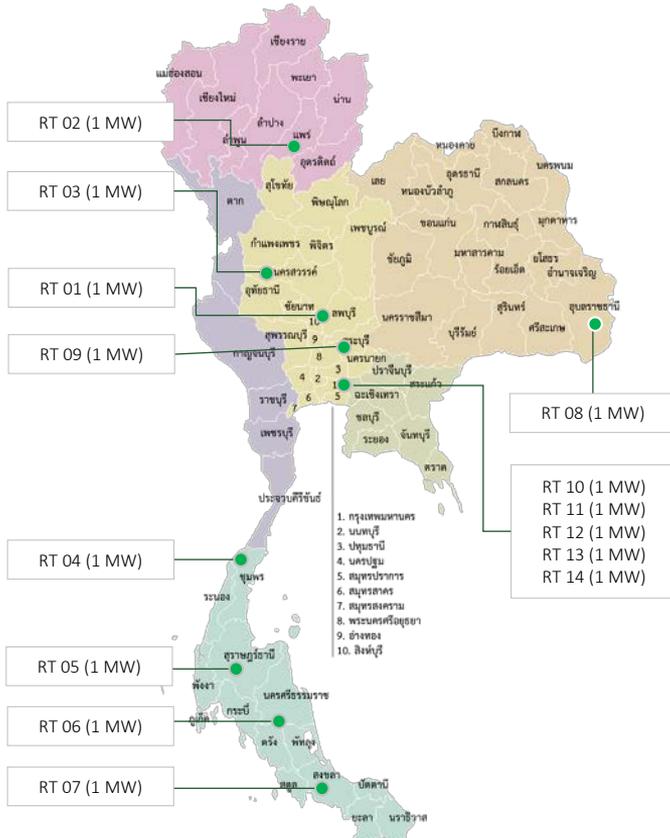
## Private PPA 25 Years

Summary of "Siam Tara Floating" 8 MWp Project	
Installed Capacity (MWp):	8
Selling Capacity (MWac):	8
PPA Type:	Private PPA
PPA Period:	25 years
Location:	Kabinburi Industrial Zone (KIZ), in Prachinburi Province
Off-Taker:	Arcelik Hitachi Home Appliances (Thailand) Ltd.
COD:	25 MAY 2021
Operated By:	SV (TSE's subsidiary)
Investment:	June, 2020

## Project Components

PV Module by:	Trina Solar	
Floating material and Mounting structure:	SCG Thailand	
Inverter by:	String type - Huawei	
Electrical apparatus:	Switchgear - Siemens, Transformer – Ekarat	 

# SOLAR PV ROOFTOPS (THAILAND): 14 Projects (14 MWac)



FIT 6.16 THB/kWh			
Project	Selling Capacity (MW)	COD	Province
TSER-RT01	1	Sep-14	Lopburi
TSER-RT02	1	Feb-15	Phrae
TSER-RT03	1	Jun-15	Nakhonsawan
TSER-RT04	1	Sep-14	Chumporn
TSER-RT05	1	Dec-14	Surat Thani
TSER-RT06	1	Jul-15	Nakhon Si Thammarat
TSER-RT07	1	Oct-15	Hat Yai
TSER-RT08	1	Mar-15	Ubon Ratchathanee
TSER-RT09	1	Nov-14	Khao Yai
TSER-RT10	1	Feb-15	Ekamai – Ramindra, Bangkok
TSER-RT11	1	Nov-14	Ratchapruek, Bangkok
TSER-RT12	1	Jul-15	Thapra, Bangkok
TSER-RT13	1	Jul-15	Bangkapi, Bangkok
TSER-RT14	1	Oct-15	Ngamwongwan, Bangkok



Note: Partnership with  
The Mall + HomePro



# SOLAR PV ROOFTOPS (THAILAND): 14 Projects (14 MWac)



**RT-01** Lopburi  
COD SEP 2014



**RT-02** Phrae  
COD FEB 2015



**RT-03** Nakorn Sawan  
COD JUN 2015



**RT-04** Chumporn  
COD SEP 2014



**RT-05** Surat Thani  
COD DEC 2014



**RT-06** Nakhon Si Thammarat  
COD JUL 2015



**RT-07** Hat Yai  
COD OCT 2015



**RT-08** Ubon Ratchathanee  
COD MAR 2015



**RT-09** Khao Yai  
COD NOV 2014



**RT-10** Ekamai-Ramindra  
COD FEB 2015



**RT-11** Ratchapruok  
COD NOV 2014



**RT-12** Thapra  
COD JUL 2015



**RT-13** Bangkok  
COD JUL 2015



**RT-14** Ngamwongwan  
COD AUG 2015

# BIOMASS (THAILAND): 3 Projects (22.2 MWac)



## FiT 4.24 Baht + Premium 0.30 THB (8 years)

Project	Selling Capacity (MW)	COD	Province
BSW	4.6	Mar-18	Surat Thani
OSW 1	8.8	Aug-18	Nakhon Si Thammarat
OSW 2	8.8	Oct-18	Nakhon Si Thammarat





# THANK YOU

**THAI SOLAR ENERGY PUBLIC COMPANY LIMITED**

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