

Thai Solar Energy Public Company Limited

# OPPORTUNITY DAY FY2022

March 21, 2023



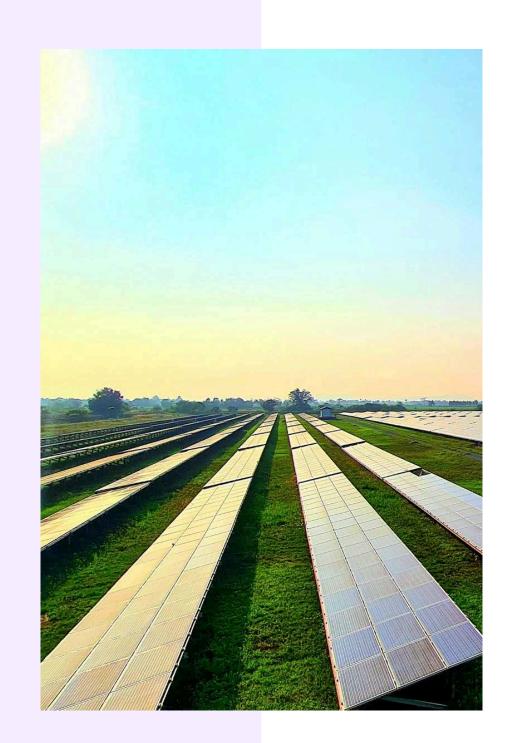
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# **AGENDA**





01 COMPANY OVERVIEW

02 FINANCIAL HIGHLIGHTS OF FY2022

O3 OUTLOOK

O4 TSE's OPERATING ASSETS

### VISION AND 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.



# 01 COMPANY OVERVIEW

Summary of Corporate Information

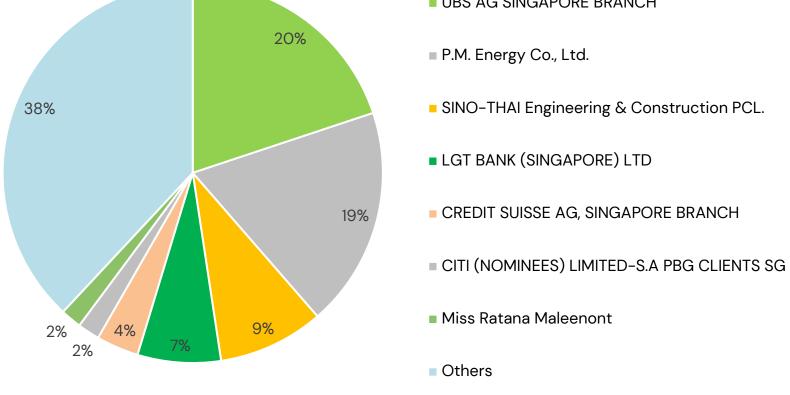


### COMPANY OVERVIEW



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.

# TSE Major Shareholders RD 30 December 2022 - UBS AG SINGAPORE BRANCH 20% - P.M. Energy Co., Ltd.



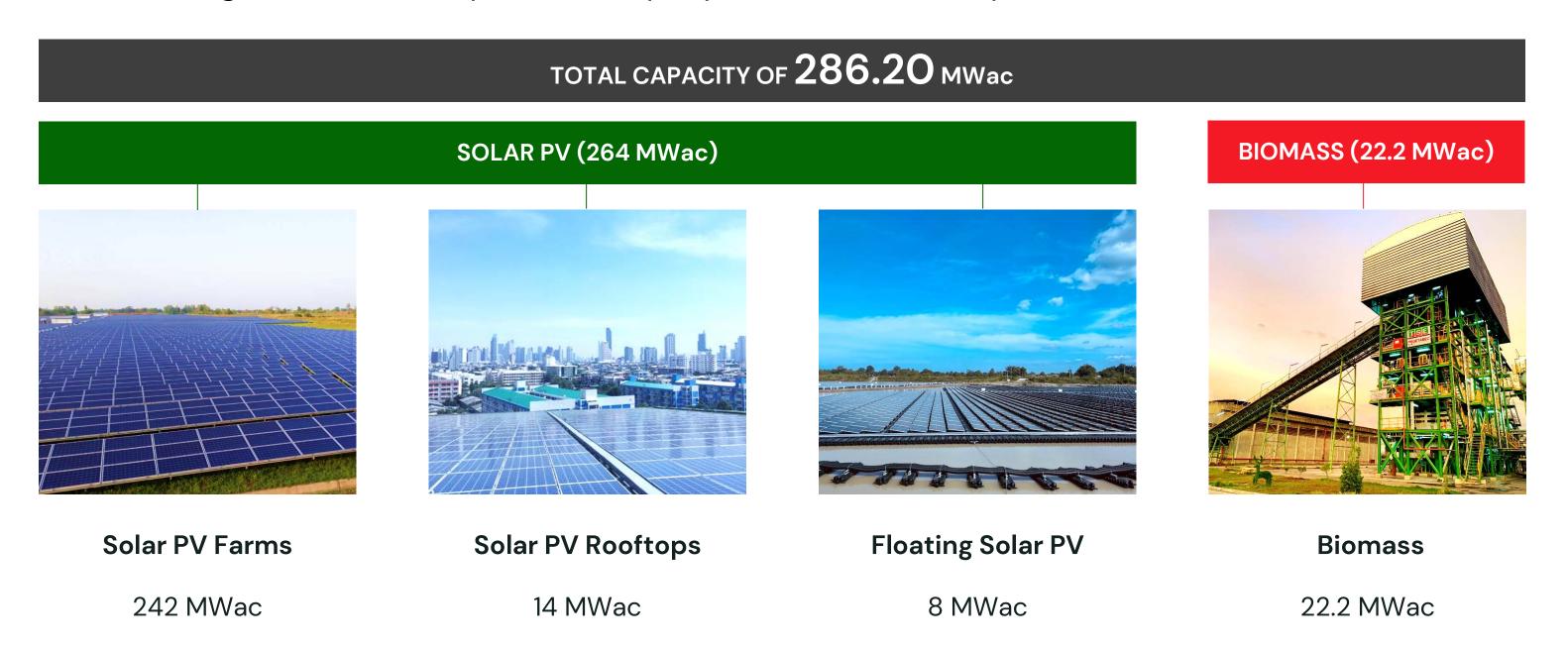
Stock Information			
Company:	Thai Solar Energy Public Company Limited		
SET Symbol:	TSE		
Listed in:	MAI on October 30, 2014 Moved to SET since May 14, 2019		
Paid up Capital:	THB 2,117 million		
Sector:	Energy & Utilities		
Industry:	Resources		
CG Rating:	THE PROPERTY OF THE PROPERTY O		
Credit Rating:	BBB- stable		

### 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	2015 – 2017	2018 – 2019	2020 – 2021	2022 – onward
Solar Farms + Rooftops (TH)	Solar Farms (JP) + Biomass (TH)	Merger & Acquisition	Private PPA	Exploring Investment Opportunity overseas + Expanding Private PPA
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: > Expanded TSE's busines: 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 Japar "Onikoube" project (147 MWp)	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 Udornthani province (5 MW) in AUG 2019 3. "SSP" in Ang Thong province (8 MW) in NOV 2019	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 Udornthani 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	<ul> <li>2022: &gt; Divested in a solar farm "Hanamizuki" 13.5 MW in Japan in MAR 2022</li> <li>&gt; Acquired a new project "SCT" Solar Tracking in Nakhonsawan province (8.0 MW) in JUN 2022. The acquisition process was completed in JUL 2022.</li> <li>2023: &gt; Acquiring New Solar Projects in FiT format under PDP Plan</li> <li>&gt; SCOD "Onikoube" project (147 MWp) 2Q2023</li> </ul>

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



Mr. Aran Apichari

Independent Director



Mr. Somphop Prompanapitak

Director, COO, Nomination and Remuneration Committee



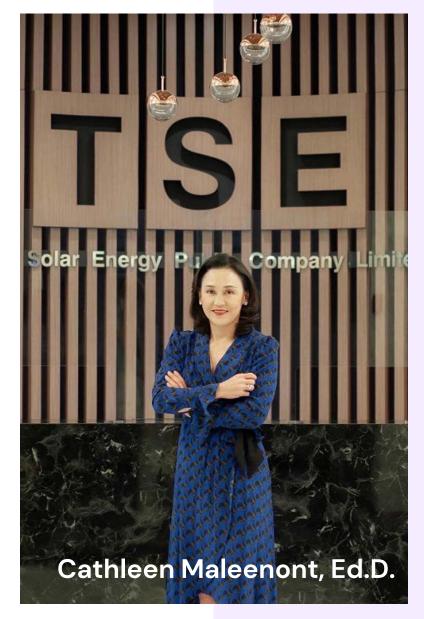
Mrs. Angkanee Rerksirisuk

Director and CFO



Mr. Masthawin Charnvirakul

Director

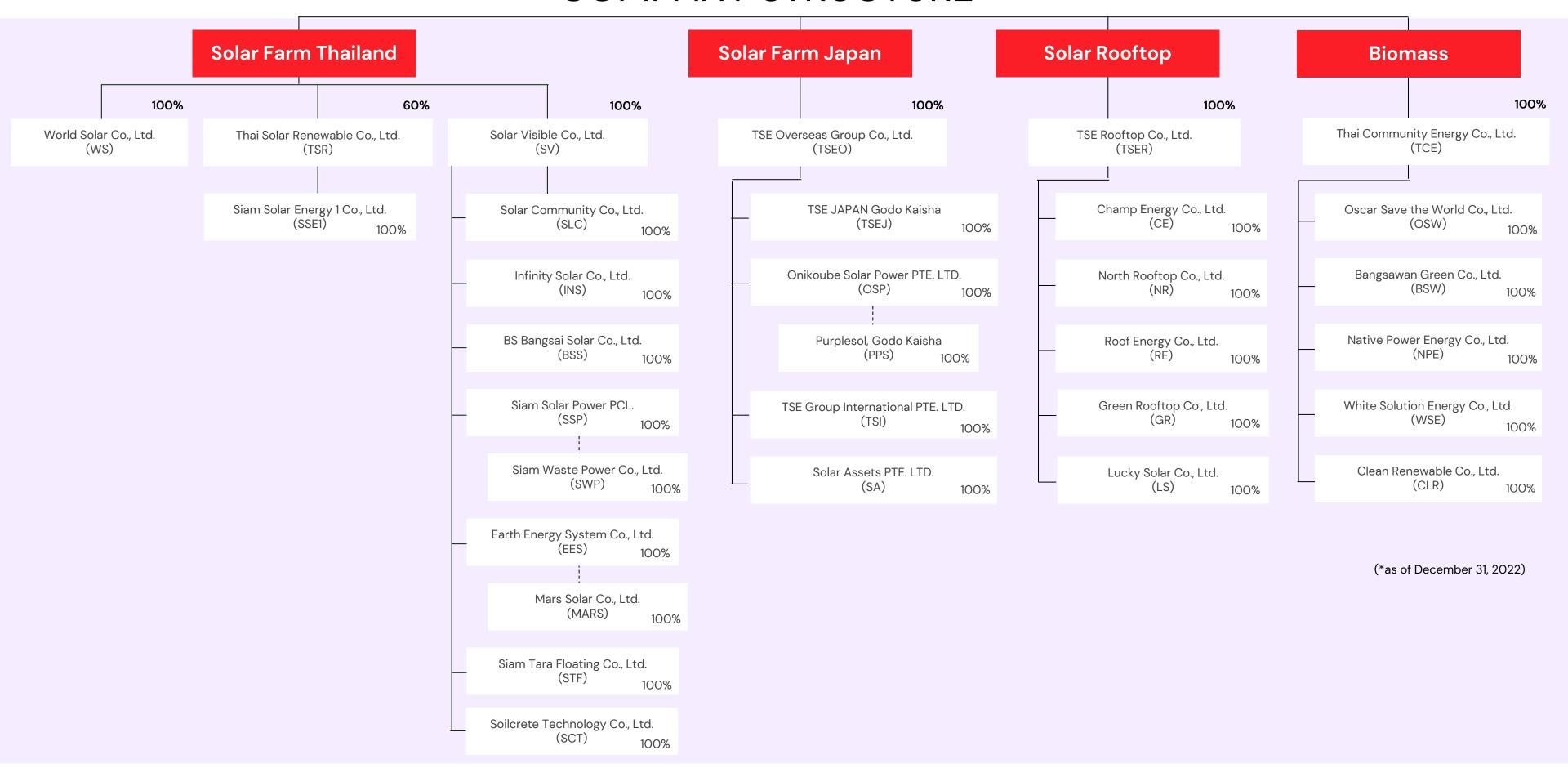


Chairman of Board of Directors, CEO, Nomination and Remuneration Committee

(as of December 31, 2022)

## COMPANY STRUCTURE







# O2 FINANCIAL HIGHLIGHTS OF FY2O22

Summary of TSE's Financial Performance



### HIGHLIGHTS OF THE YEAR 2022



### 1Q2022

100% divestment of "Hanamizuki" with a total contract capacity of 13.5 MW (a total installed capacity of 18.1 MW) in Japan.

The Company recorded gains from divestment amount of 234.44 MB.

### 3Q2O22

Acquired a new project "Soilcrete" (SCT) – Solar Tracking in Nakhonsawan province (8.0 MW) in June, 2022.

The acquisition process was completed in July, 2022, and the Company has recognized the revenue from Soilcrete project since 3Q2022.

FiT – 5.66 THB/kWh

# PROJECT "SOILCRETE" 8 MW





### Summary of "Soilcrete" Project

Installed Capacity (MWp): Selling Capacity (MWac):	8.0 8.0
Location:	Nakhonsawan Province
Type of Solar Plant:	Ground Mounted Solar Power Plant (Tracking)
Contract parties:	Provincial Electricity Authority (PEA)
Contract period: BOI Privilege:	25 years 0% 8 years
Type of PPA:	FiT – 5.66 THB/kWh TOU – 2.90 THB/kWh
COD:	29 December 2015

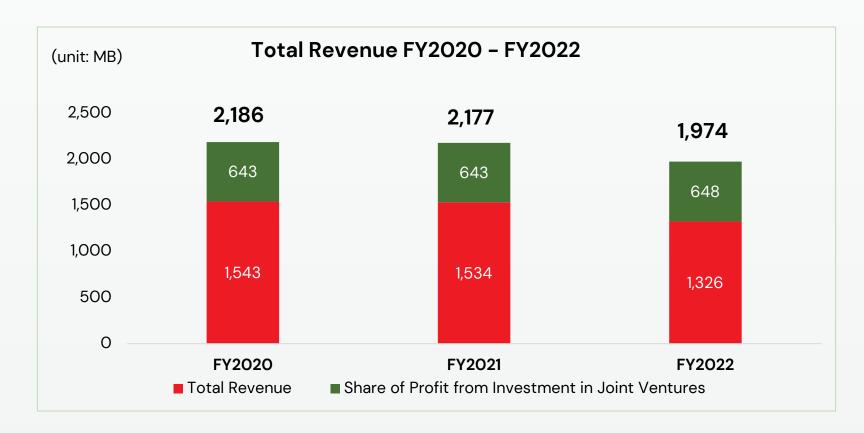
# **INCOME STATEMENT FY2022**



Statement of Comprehensive Income	Consolidate	Consolidated (Unit: million Baht)		
	FY2022	FY2021	% Change	
Revenue				
Electricity Sales	1,259.33	1,474.75	-15%	
Management Fee	55.26	49.33	12%	
Total Revenue	1,314.59	1,524.08	-14%	
COGS	(892.94)	(1,075.24)	-17%	
Gross Profit	421.65	448.84	-6%	
Other Income	11.78	9.87	19%	
Administrative Expenses	(227.09)	(348.78)	-35%	
Other Gains (Losses)	213.02	87.09	145%	
Profit (loss) before Interest expense and Income Tax	419.35	197.02	113%	
Finance Costs	(327.96)	(338.32)	-3%	
Profit (loss) before Income Tax	91.40	(141.30)	-165%	
Share of Profit from Joint Ventures	647.70	642.92	1%	
Income Tax Expenses	(15.33)	(8.64)	77%	
Net Profit from Operation	723.77	492.99	47%	
Currency Translation Differences	(606.70)	14.29	-4347%	
Change in fair value of hedge derivatives	_	8.01	-100%	
Remeasurement of post-employment benefit	2.44	_	100%	
Total Comprehensive Income	119.51	515.28	-77%	
Profit Attributable to:				
Owners of the Parent	723.77	492.71	47%	
Non-Controlling Interests	, 20., 7	0.28	-100%	
	<u>723.77</u>	<u>492.99</u>	47%	
Total Comprehensive Income Attributable to:				
Owners of the Parent	110 51	514.06	_770/	
	119.51	514.96	-77% -100%	
Non-Controlling Interests	119.51	0.32 <b>515.28</b>	-100% -77%	
	<u>119.51</u>	<u>515.20</u>	-///	

### **REVENUE and EBITDA FY2022**







# Total Revenue -14% YoY

Total revenue in the year 2022 was decreased to 1,326 MB. or -14% (YoY) as compared to the year 2021 of 1,534 MB. This was primarily due to the divestment in 7 Solar PV Farm projects (capacity totaling of 21.74 MW) in Japan since 3Q2021 (6 projects) and 1Q2022 (1 project), and the effect of heavy rain through the year 2022.

However, the Company has revenue increased from a new Solar PV project "Soilcrete" (8MW) in Nakhonsawan province that completely acquired in 3Q2022, and from a Floating Solar PV project "STF" (8MW) in Prachinburi Province that was started to COD in May, 2021.

### Share of Profit from Investment in Joint Ventures +1% YoY

Share of Profit from Investment in Joint Ventures in the year 2022 was slightly increased to 648 MB. or +1% as compared to the year 2021 of 643 MB.

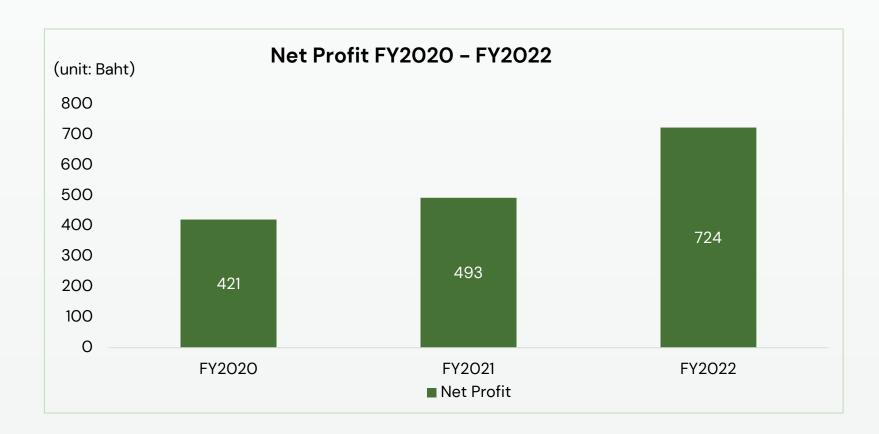
### EBITDA +10% YoY

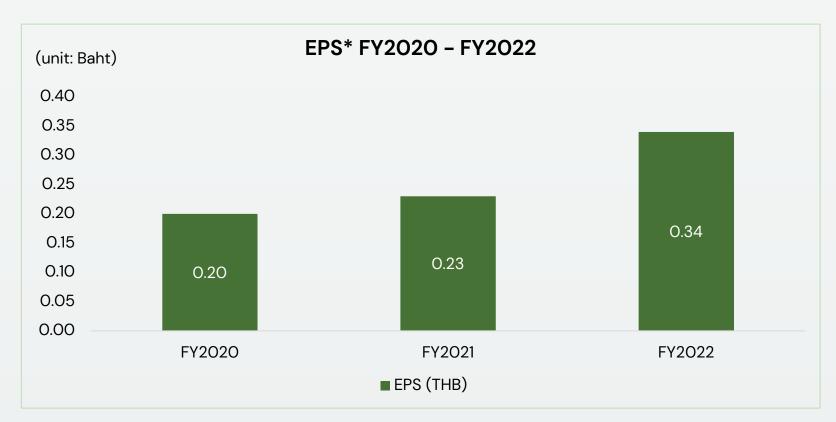
EBITDA in the year 2022 was increased to 1,402 MB. or +10% as compared to the year 2021 of 1,271 MB. This was due to the Company has revenue increased from 8MW Solar PV Farm "Soilcrete" (8MW) since 3Q2022. Besides, the Company was able to manage and control costs of raw materials for Biomass Projects efficiently. Moreover, it caused an increase in gross profit margin which was 32% in the year 2022 as compared to last year of 29%.

In addition, there was no impairment of the thermal project in this year because it was already recorded in the year 2021.

### NET PROFIT and EPS FY2022







# Net Profit +47% YoY

Net Profit in the year 2022 was increased to 724 MB. or +47% (YoY) as compared to the year 2021 of 493 MB. This was primarily due to:

- 1) a gain from divestment in a Solar PV Farm project (capacity of 13.5 MW) in Japan since 1Q2022.
- 2) an increase in revenue from 8MW Solar PV Farm "Soilcrete" that the Company acquired and was able to record the revenue since 3Q2022.
- 3) no impairment of the thermal project in the year 2022 because it was already recorded in the year 2021.

Besides, the Company was able to manage COGS in the year 2022, hence it was decreased to 892.94 MB. or -17% as compared to last year.

# **EPS** +48% YoY

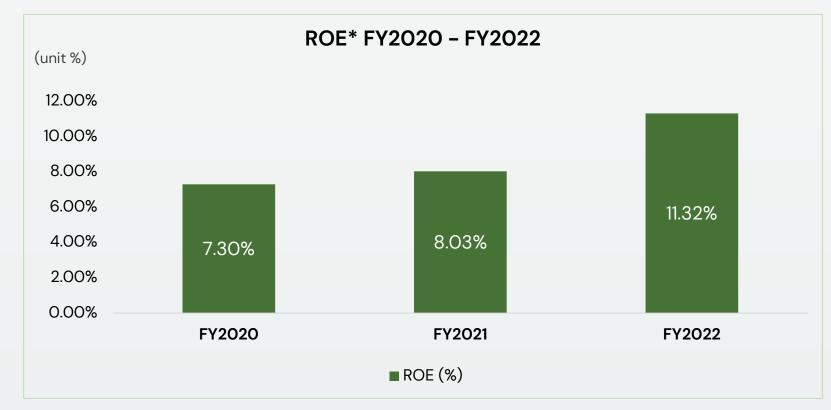
EPS was significantly increased as a result of the Net Profit in the year 2022 of 724 MB or +47% as compared to last year of 493 MB.

# D/E\* RATIO and ROE\* FY2022





Note: \*Average Equity attributable to owners of the parent



Note: \* Annualized: ROE

### D/E\* Ratio +4% YoY

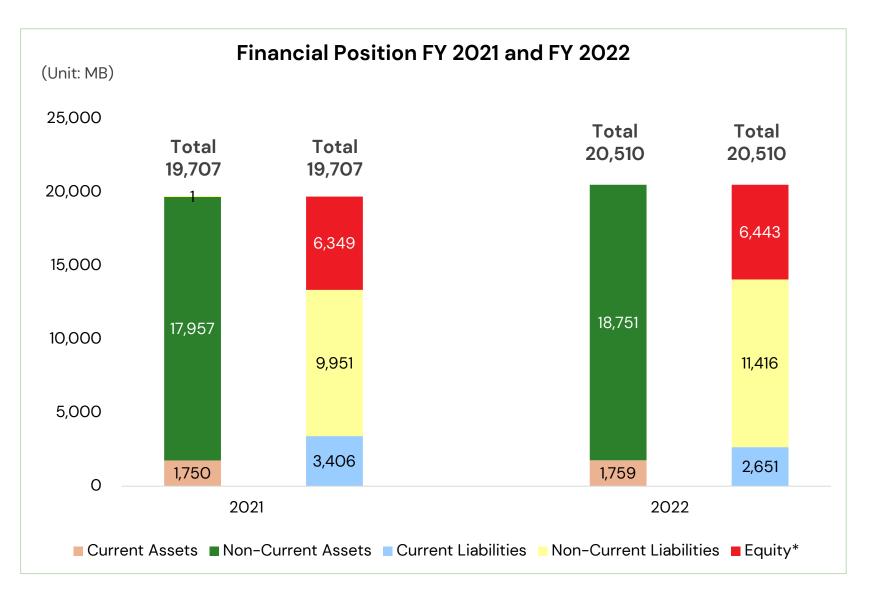
D/E\* Ratio for the year 2022 was increased to 2.18 times or +4% as compared to last year of 2.10 times. This was primarily due to an increase in loans from financial institutions for Onikoube and Soilcrete projects.

# ROE\* +41% YoY

ROE\* for the year 2022 was increased to 11.32% or +41% as compared to last year. This was mainly due to a gain from divestment in Japan in March, 2022 of which was approximately 213 MB., an increase in management fee of 55 MB., an increase in other income of 12 MB., a decrease in COGs of 893 MB., and an increase in Net Profit.

## FINANCIAL POSITION 31 DECEMBER 2022





FINANCIAL POSITION	FY2021	FY2022	+/- (%)
Assets	19,706.77	20,510.04	4%
Liabilities	13,357.39	14,067.31	5%
Equities*	6,349.38	6,442.73	1%
D/E Ratio (times)	2.10	2.18	4%

### Note:

# Total Assets +4% YoY

Increasing from 19,707 MB. to 20,510 MB. or +4%

# Total Liabilities +5% YoY

Increasing from 13,357 MB. to 14,067 MB. or +5%

# Equity Attributable to owners of the parent +1% YoY

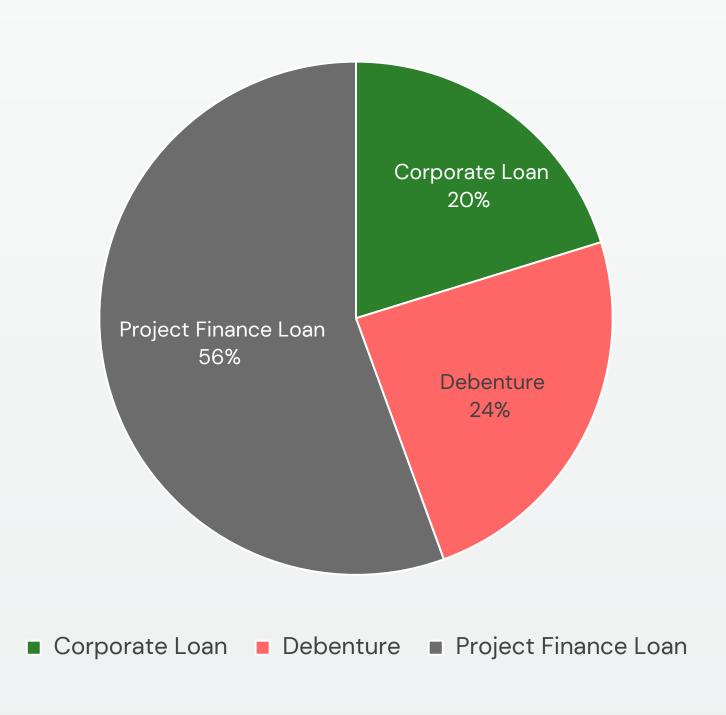
Increasing from 6,349 MB. to 6,443 MB. or +1%

For the year 2022, overall operating performance was increased as compared to last year 2021 due to the reasons as mentioned earlier. In addition, net profit was significantly increased mainly due to a gain from divestment in a Solar PV Farm project (capacity of 13.5 MW) in Japan.

<sup>\*</sup>Average Equity attributable to owners of the parent

### DEBT STRUCTURE FY2022





# Project Finance Loan 56%

Most of interest bearing debt from Project Finance Loan for 56%, increased from Onikoube Project Finance Loan drawdown. 14% of Project Finance Loan from COD projects decreased accordingly from schedule repayment.

# Corporate Loan and Debenture 44%

The remaining interest bearing debt from Corporate Loan and Debenture for 44% 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: 2Q2023

Status: Under construction

Operated by: OSP

Start Project Construction: In April, 2020

### **Project Components**

EPC by: TOSHIBA TOSHIBA

PV Module by: Trina Solar Trinasolar

Inverter by: Huawei

### **Financing**

Project Finance by: BBL (THB 8.6 bn.)

### **ONIKOUBE PROJECT**



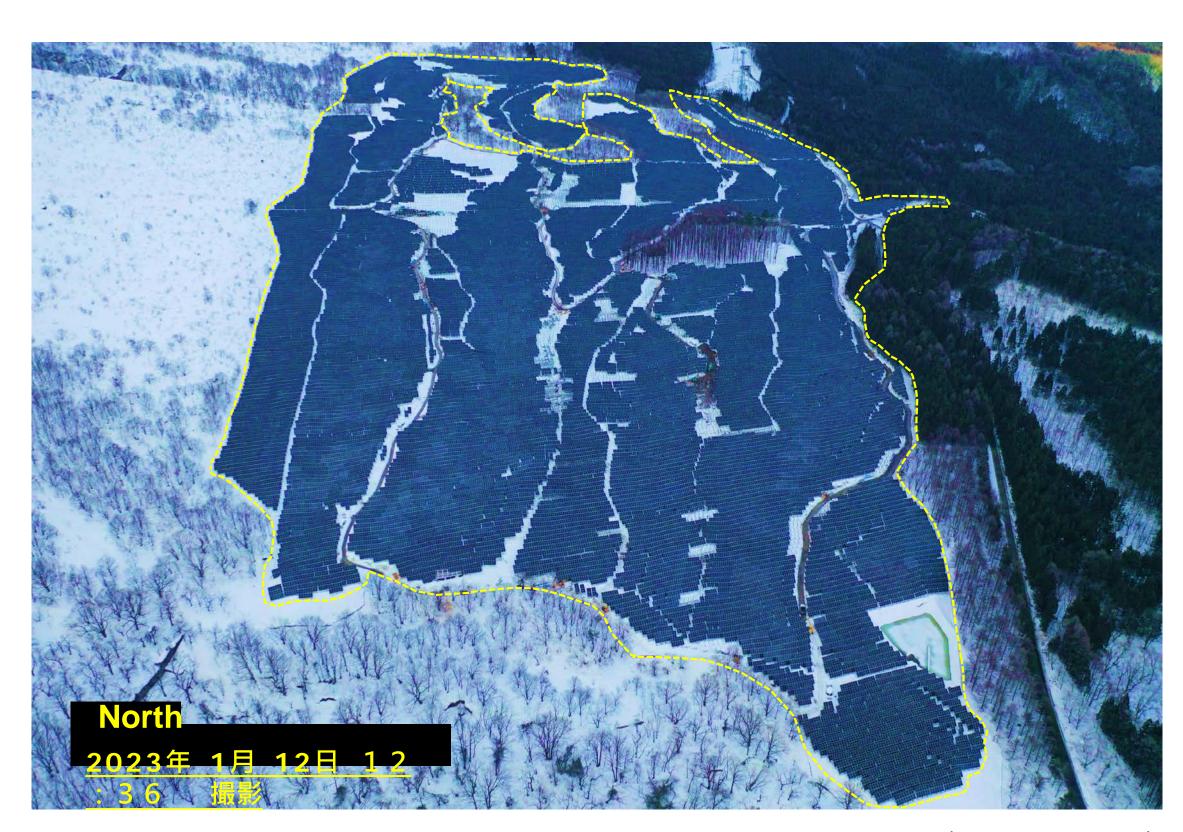
# CONSTRUCTION UPDATE OF ONIKOUBE PROJECT





### CONSTRUCTION UPDATE OF ONIKOUBE PROJECT





(As of December, 2022)

At the end of the year 2022, the construction of the Onikoube Power Plant achieved 97.6%.

All major construction works are already completed including the connection to the Utility's grid line.

The remaining construction works are minor and expected to complete in the coming spring.

This ensures our readiness to start the commercial operation phase in Q2 of 2023.



# O3 OUTLOOK

Summary of TSE's Business Outlook and Investment Plan



# OUTLOOK



### **THAILAND**

- Acquiring New Solar Projects under PDP Plan
- Penetrating Private PPA in Solar PV Farms
- Acquiring Existing Solar Projects in Thailand
- Expanding into Waste to Energy

### **OVERSEAS**

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



Solar PV Farm

Waste to Energy



Windfarm

Totaling approx.

300 MW\*

within the next 7 years

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

### CAPACITY GROWTH FORECAST



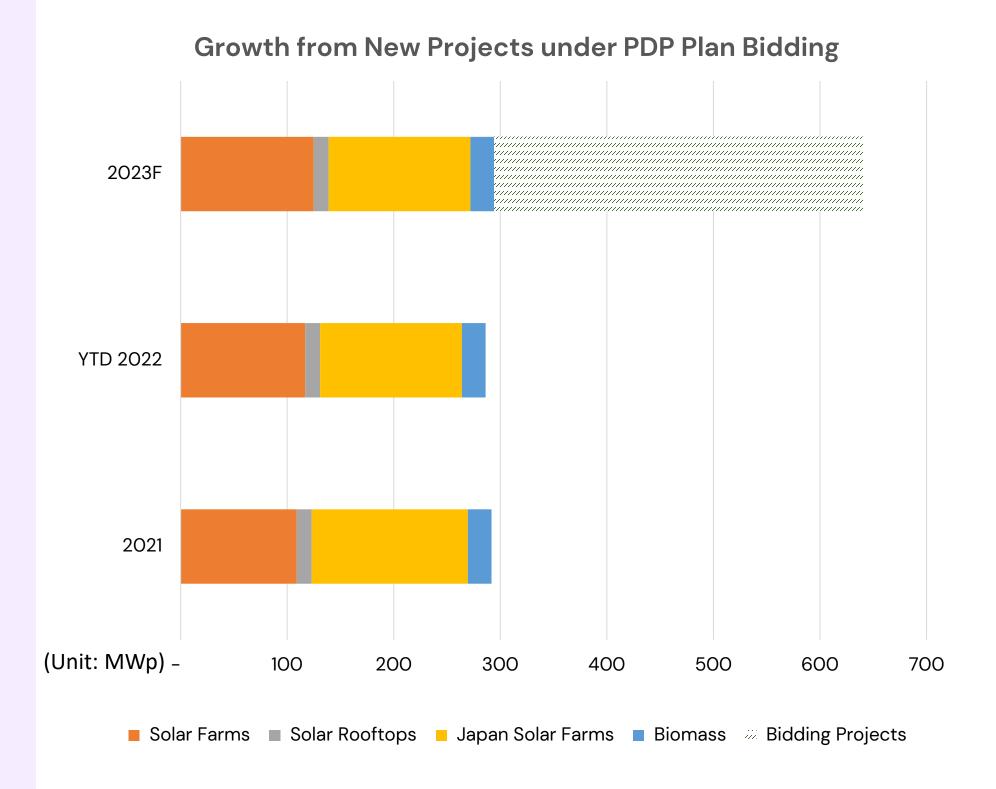
Renewable Energy Projects under PDP Plan in FiT Format for the year 2024 – 2030

SPP

Small Power Producer (10 – 90 MW)

**VSPP** 

Very Small Power Producer (<10 MW)





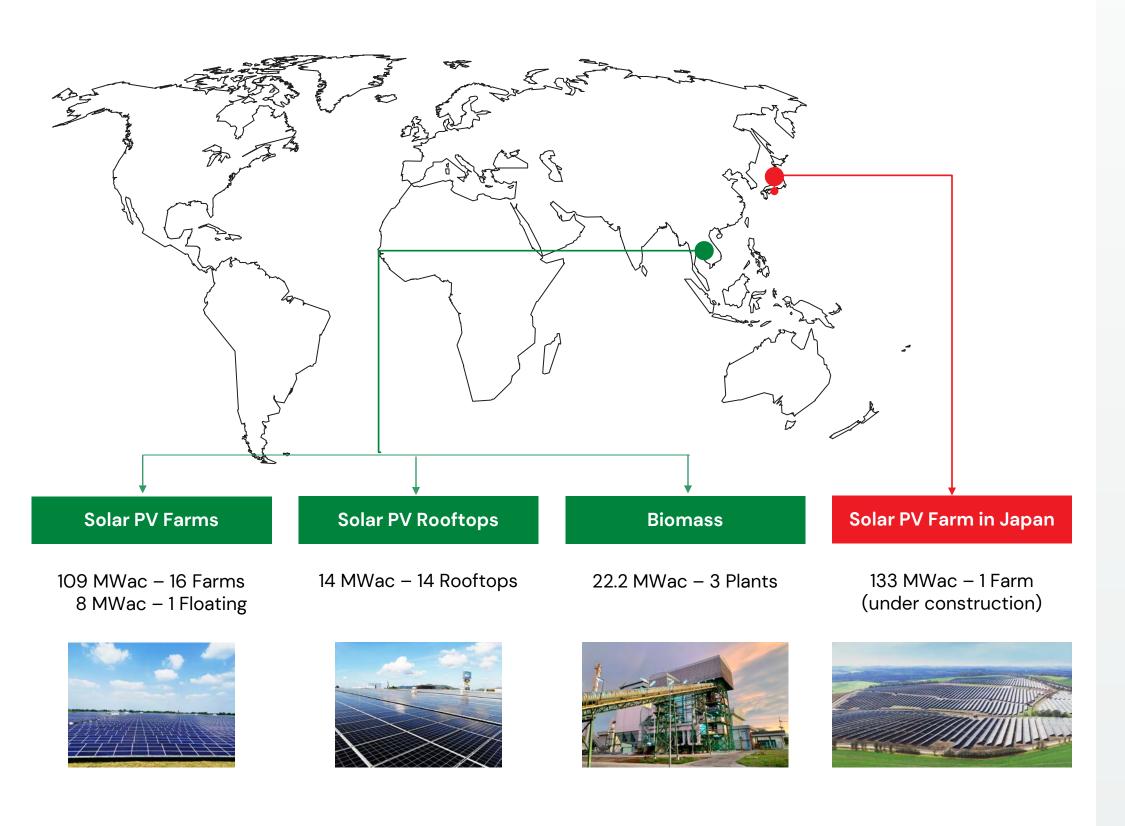
# **04 APPENDIX**

Summary of TSE's OPERATING ASSETS



# TSE's PROJECTS





# 286.20 MWac

Total of Acquire Capacity (MW PPA)

# 35 Projects

# Total of TSE's Projects

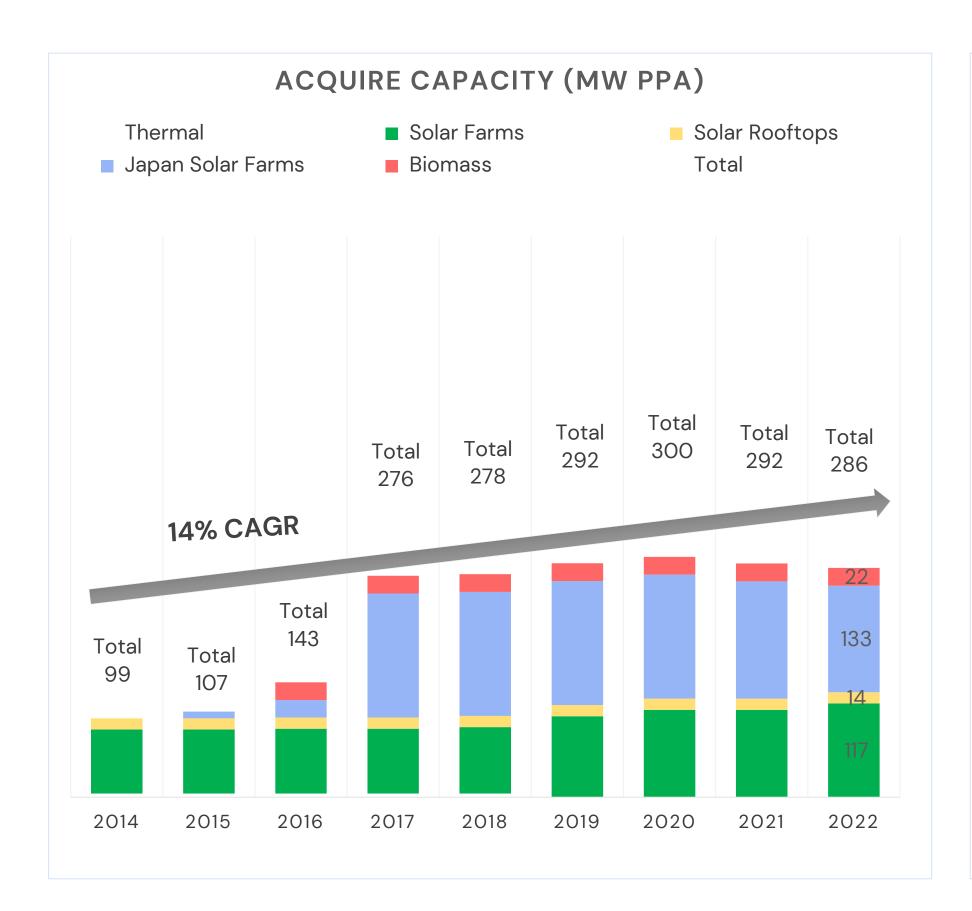
Note: \*101 MW (69 MWe) > 10 projects - Partnership with GPSC (TSE 60%)

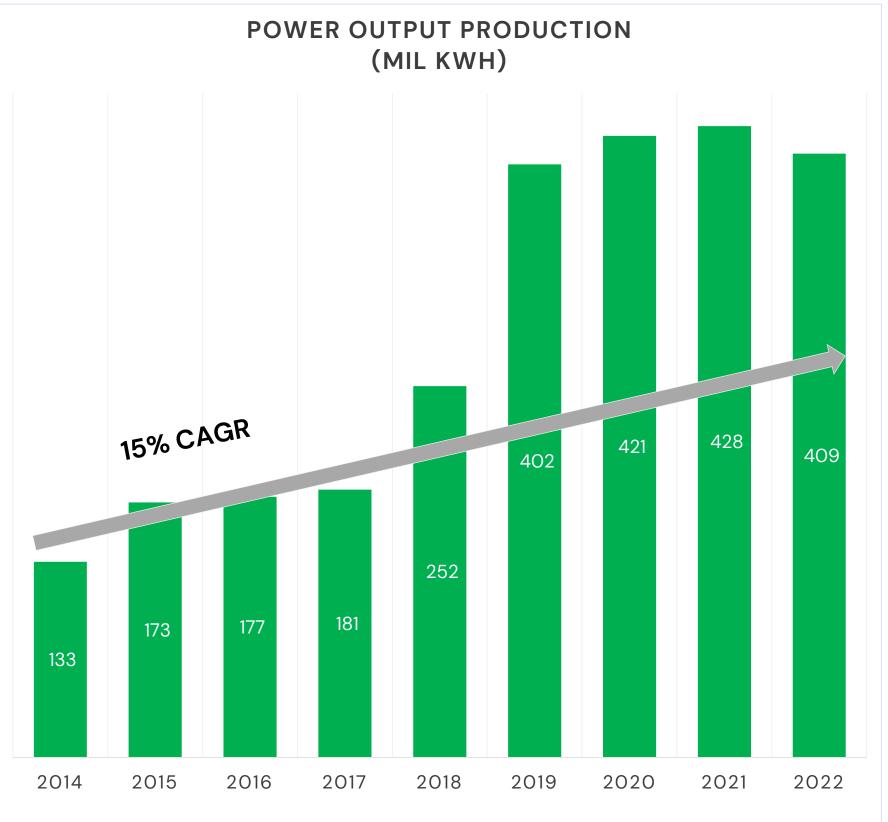
\*\* 286.20 MW

- > 34 projects (153.20 MWac) are in operation.
- > 1 project (133 MWac) is under construction.

# **CAPACITY GROWTH**

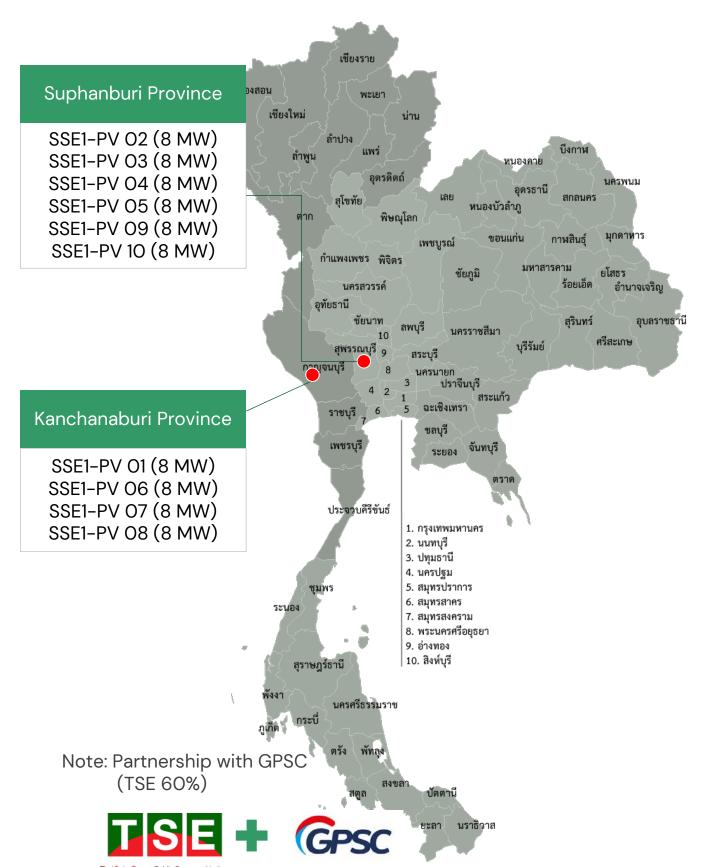






# SOLAR PV FARMS (THAILAND): 10 Projects (80 MWac) with GPSC





	Adder	6.5 THB/ kWh	
Project	Selling Capacity (MW)	COD	Province
SSE1-PV01	8	4-Sep-13	Kanchanaburi
SSE1-PVO2	8	17-Jul-13	Suphanburi
SSE1-PVO3	8	28-Oct-13	Suphanburi
SSE1-PVO4	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















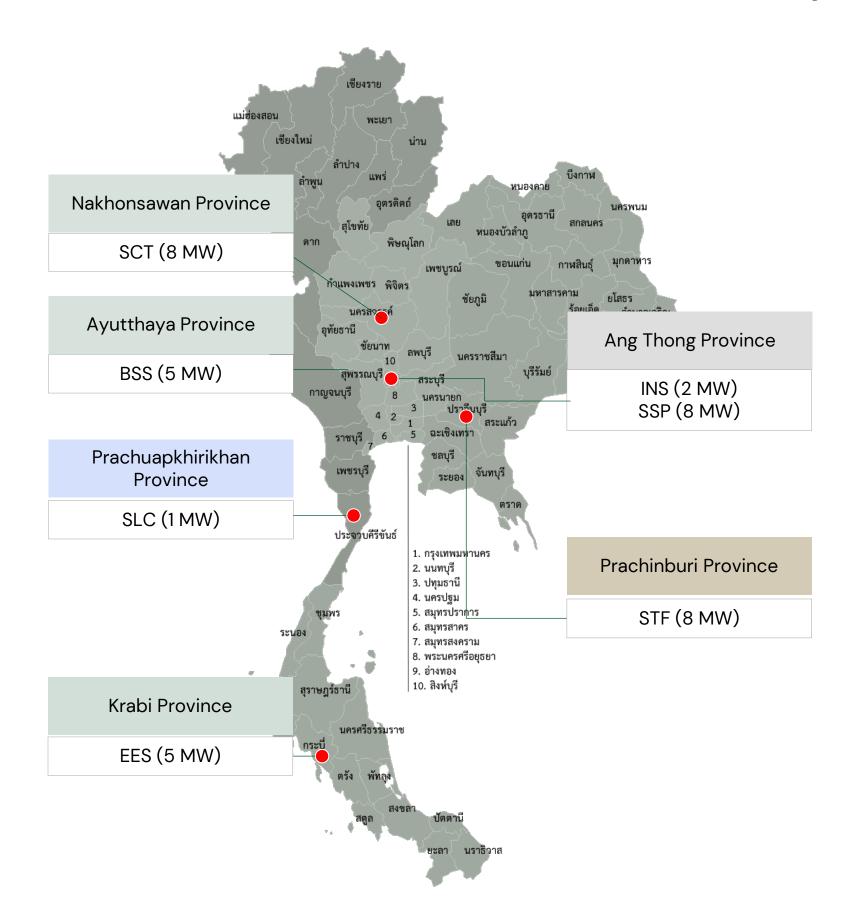






# SOLAR PV FARMS (THAILAND): 7 Projects (37 MWac)





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
SCT	8	Dec-15	Nakhonsawan	FiT 5.66 THB/ kWh















# FLOATING SOLAR PV FARM (THAILAND): 8 MWac





Private PPA 25 Years				
Summary of "Siam Tara Floating" 8 MWp Project				
Installed Capacity (MWp):	Installed Capacity (MWp): 8			
Selling Capacity (MWac):	8			
PPA Type:	Priv	ate PPA		
PPA Period:	25	years		
Location:		oinburi Industrial Zone vince	(KIZ), in Prachinburi	
Off-Taker:	Arc	elik Hitachi Home App	liances (Thailand) Ltd.	
COD:	25	MAY 2021		
Operated By:	SV	(TSE's subsidiary)		
Investment:	Jun	ne, 2020		
F	roje	ect Components		
PV Module by:		Trina Solar	<b>Trina</b> solar	
Floating material and Mounting structure:		SCG Thailand	SCG	
Inverter by:		String type - Huawe	HUAWEI	
Electrical apparatus:		Switchgear - Sieme Transformer - Ekara	ns, <b>SIEMENS</b> EKARAT	

# SOLAR PV FARM (THAILAND) - "SOILCRETE" PROJECT: 8 MWac





FiT 5.66 THB/ kWh				
Summary of "Soilcrete" 8 MWp Project				
Installed Capacity (MWp):	8			
Selling Capacity (MWac):	8			
Type of Solar Plant:	Ground Mounted Solar Power Plant (Tracking)			
PPA Period:	25 years			
BOI Privilege	0% 8 years			
Location:	Nakhonsawan Province			
Contract parties:	Provincial Electricity Authority (PEA)			
COD:	29 DEC 2015			
Operated By:	SV (TSE's subsidiary)			
Type of PPA:	FiT – 5.66 THB/kWh TOU – 2.90 THB/kWh			

# SOLAR PV FARM (JAPAN) - "ONIKOUBE" PROJECT: 133 MWac



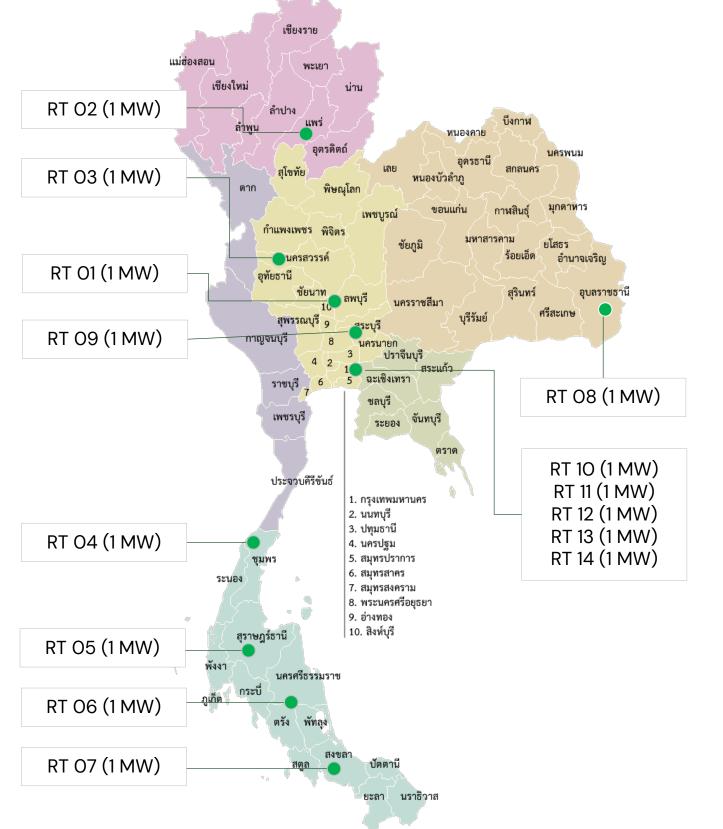


Project	Selling Capacity (MW)	COD	Province	Power Purchase Rate
ONIKOUBE	133	2Q2023	Miyagi	FiT 36 JP¥/ kWh



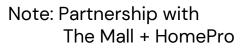
# SOLAR PV ROOFTOPS (THAILAND): 14 Projects (14 MWac)





FiT 6.16 THB/ kWh				
Project	Selling Capacity (MW)	COD	Province	
TSER-RTO1	1	Sep-14	Lopburi	
TSER-RTO2	1	Feb-15	Phrae	
TSER-RTO3	1	Jun-15	Nakhonsawan	
TSER-RTO4	1	Sep-14	Chumporn	
TSER-RTO5	1	Dec-14	Surat Thani	
TSER-RTO6	1	Jul-15	Nakhon Si Thammarat	
TSER-RTO7	1	Oct-15	Hat Yai	
TSER-RTO8	1	Mar-15	Ubon Ratchathanee	
TSER-RTO9	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	













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





RT-01 Lopburi COD SEP 2014



RT-02 Phrae COD FEB 2015



RT-O3 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



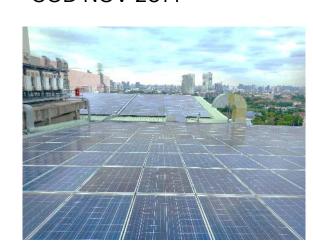
RT-11 Ratchapruek COD NOV 2014



RT-12 Thapra COD JUL 2015



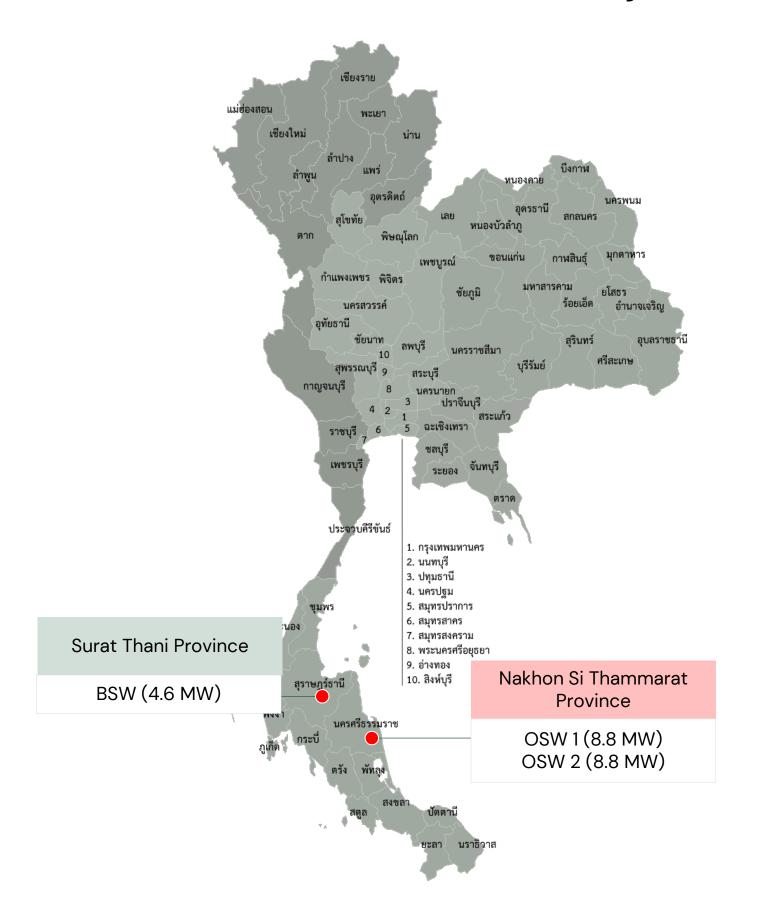
RT-13 Bangkapi COD JUL 2015



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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