



Thai **S**olar **E**nergy Public Company Limited

# Presentation

1Q2021





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Thai Solar Energy Public Company Limited



*Renewable for the Future*



# AGENDA

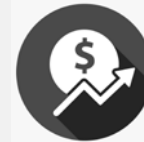


## Company Overview



Summarize TSE's businesses

## Financial Performance 1Q2021



Summarize TSE's Financial Performance 1Q2021

## Appendix



Summarize Corporate information and photos of current projects



# COMPANY OVERVIEW

Summarize TSE's businesses



Thai Solar Energy Public Company Limited

# 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.

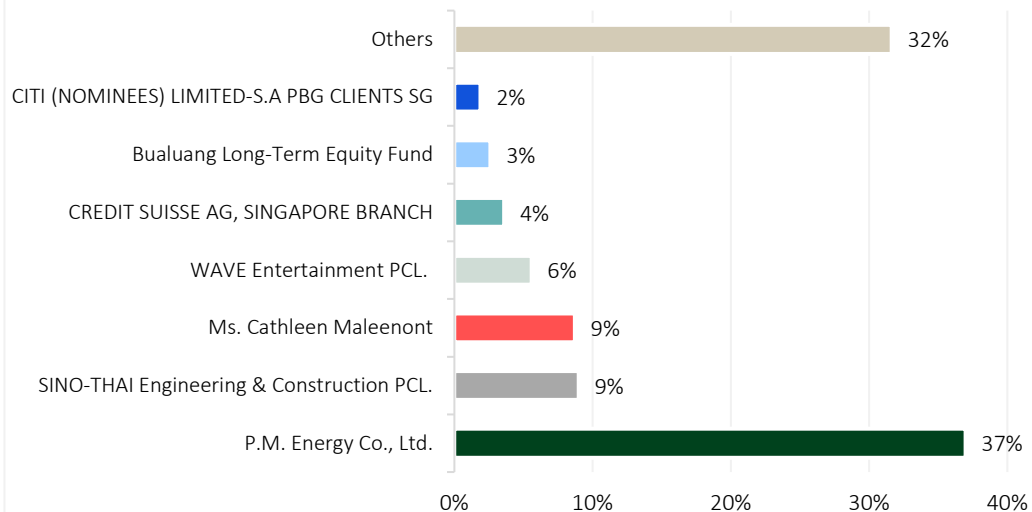
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## MISSION

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.

# COMPANY OVERVIEW

TSE's Major Shareholders (as of 11 MAR 2021)



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.

Listed in:

MAI (30 OCT 2014)  
- moved to SET since 14 MAY 2019

Paid-up Capital:

THB **2,117** million

Sector:

Energy & Utilities

Industry:

Resources

CG Rating:



Credit Rating:

BBB- stable



## Solar Farm Thailand

100%

World Solar Co., Ltd.  
(WS)

Native Power Energy Co., Ltd.  
(NPE) 100%

White Solution Energy Co., Ltd.  
(WSE) 100%

Clean Renewable Co., Ltd.  
(CLR) 100%

60%

Thai Solar Renewable Co., Ltd.  
(TSR)

Siam Solar Energy 1 Co., Ltd.  
(SSE1) 100%

100%

Solar Visible Co., Ltd.  
(SV)

Solar Community Co., Ltd.  
(SLC) 100%

Infinity Solar Co., Ltd.  
(INS) 100%

BS Bangsai Solar Co., Ltd.  
(BSS) 100%

Siam Solar Power PCL.  
(SSP) 100%

Siam Waste Power Co., Ltd.  
(SWP) 100%

Earth Energy System Co., Ltd.  
(EES) 100%

Mars Solar Co., Ltd.  
(MARS) 100%

Siam Tara Floating Co., Ltd.  
(STF) 100%

## Solar Farm Japan

100%

TSE Overseas Group Co., Ltd.  
(TSEO)

TSE JAPAN Godo Kaisha  
(TSEJ) 100%

Onikoube Solar Power PTE. LTD.  
(OSP) 100%

Purplesol, Godo Kaisha  
(PPS) 100%

TSE Group International PTE. LTD.  
(TSI) 100%

Eco Solar Aizu  
(ESA) 97%

Ishikawa Hanamizuki 1  
(IH1) 100%

Solar Assets PTE. LTD.  
(SA) 100%

Ibaraki Ushiku 1  
(IU1) 100%

Ibaraki Ushiku 2  
(IU2) 100%

## Solar Rooftop

100%

TSE Rooftop Co., Ltd.  
(TSER)

Champ Energy Co., Ltd.  
(CE) 100%

North Rooftop Co., Ltd.  
(NR) 100%

Roof Energy Co., Ltd.  
(RE) 100%

Green Rooftop Co., Ltd.  
(GR) 100%

Lucky Solar Co., Ltd.  
(LS) 100%

## Biomass

100%

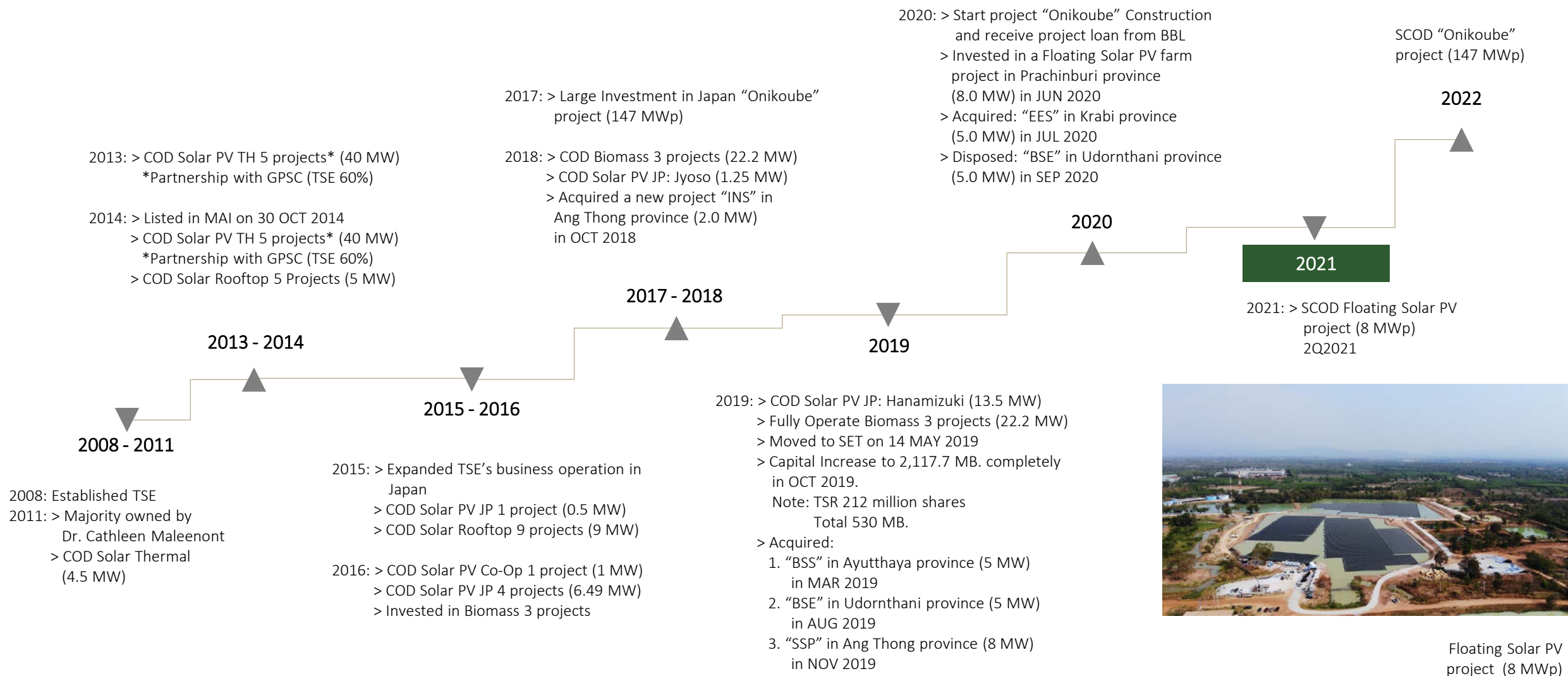
Thai Community Energy Co., Ltd.  
(TCE)

Oscar Save the World Co., Ltd.  
(OSW) 100%

Bangsawan Green Co., Ltd.  
(BSW) 100%

# COMPANY STRUCTURE

# MILESTONES





# CORE BUSINESSES

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.



Solar PV Farms



Solar PV  
Rooftops



Biomass

**Total:**

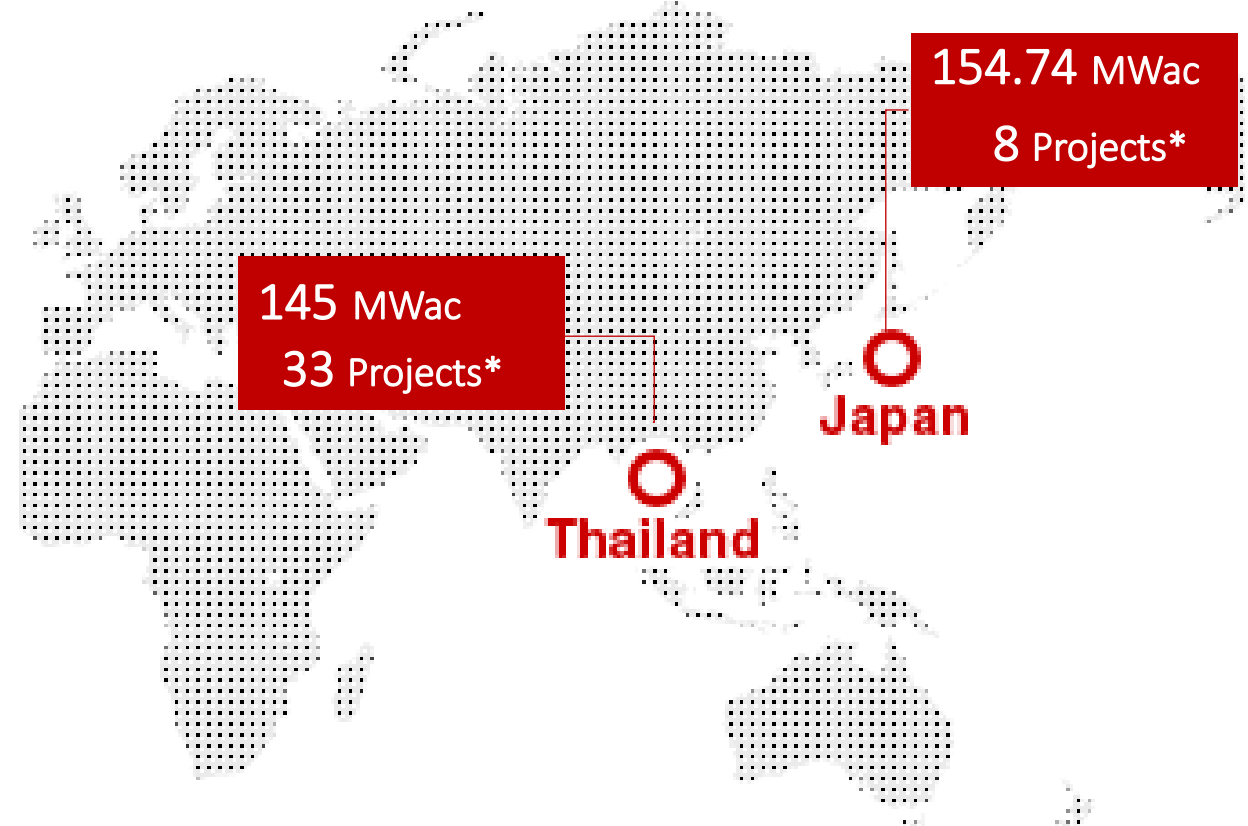
**41 Projects**  
**299.94 MWac**

In Operation:

158.94 MWac

Under Construction:

141.00 MWac

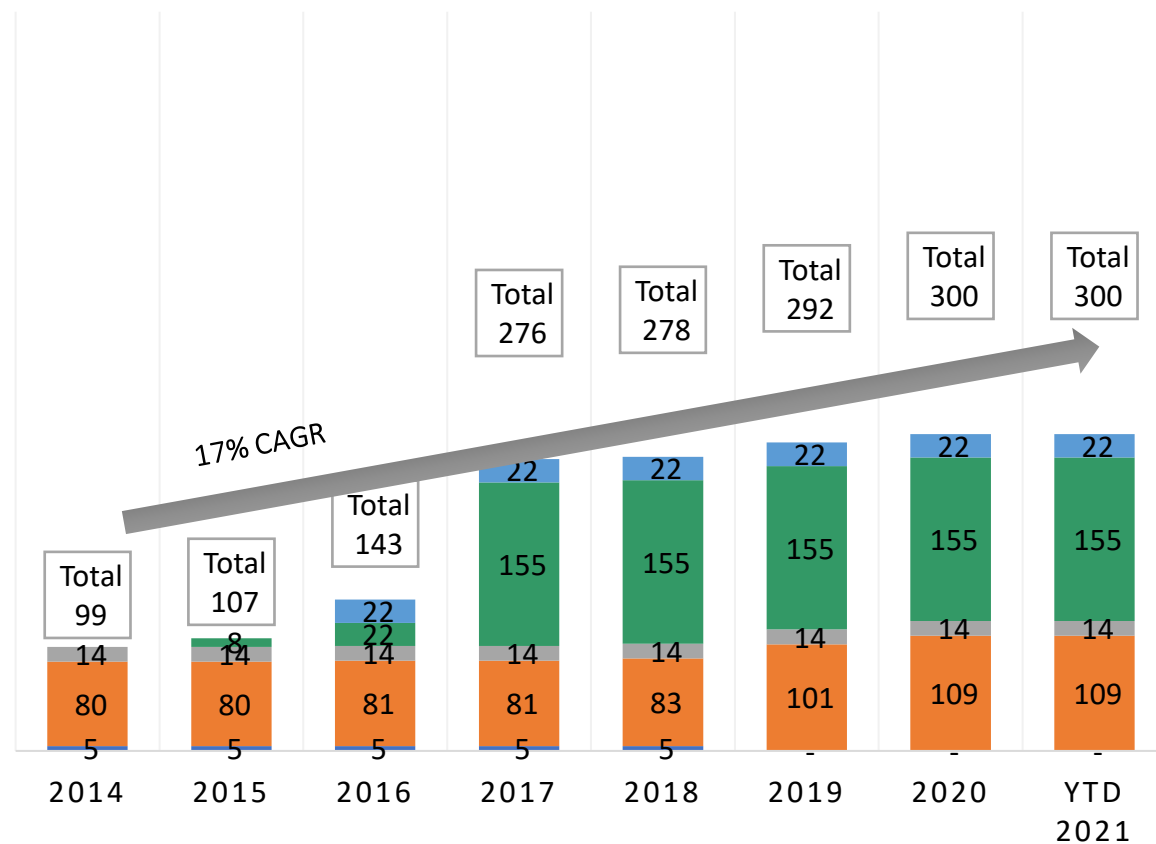


Note: \*10 Solar PV Farms (totaling 80 MWac) are partnering with GPSC (TSE 60%)

# CAPACITY GROWTH

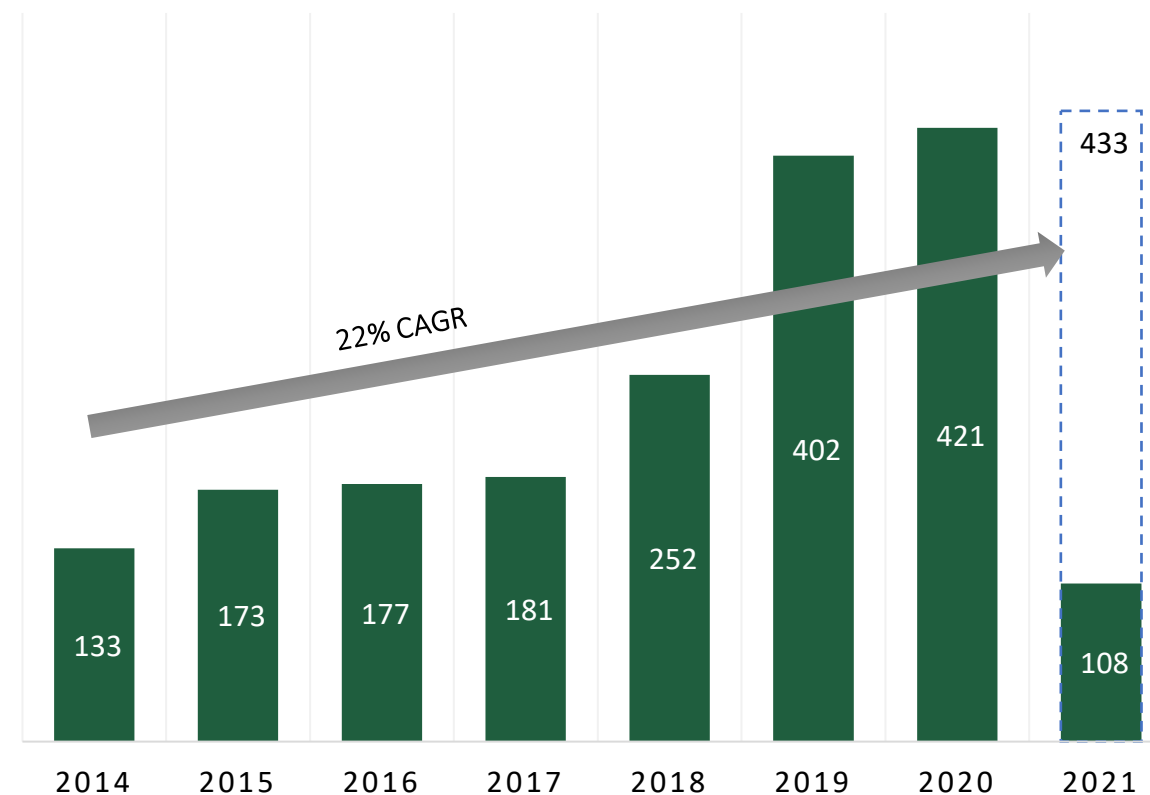
## ACQUIRED CAPACITY (MW PPA)

■ Thermal ■ PV Farms ■ PV Rooftops ■ PV Japan ■ Biomass ■ Total



## POWER OUTPUT PRODUCTION (MIL KWH)

■ Actual ■ Forecast





# OUTLOOK



## Thailand

- Acquiring new projects
- Planning to bid for Power Plant Community

Totaling approx. 50 MW PPA

## Overseas

- Investing in new renewable energy projects overseas approx.

Totaling approx. 50 - 100 MW PPA

Total approx. 100 – 200 MW\* within 3 – 5 years

Note: \*The plan is subject to change depending on a situation.

# FINANCIAL PERFORMANCE

Summarize TSE's Financial Performance 1Q2021



Thai Solar Energy Public Company Limited



# INCOME STATEMENT 1Q2021

Statement of Comprehensive Income	Consolidated (Unit: million Baht)		
	1Q2021	1Q2020	% Change
<b>Revenue</b>			
Electricity Sales	359.47	359.69	0%
Management Fee	11.93	11.37	5%
<b>Total Revenue</b>	<b>371.40</b>	<b>371.06</b>	<b>0%</b>
COGs	(269.81)	(241.46)	12%
<b>Gross Profit</b>	<b>101.60</b>	<b>129.60</b>	<b>-22%</b>
Other Income	1.98	4.71	-58%
Administrative Expenses	(47.45)	(65.73)	-28%
Gain (Loss) from exchange rate	43.91	(167.47)	-126%
Finance costs	(84.69)	(62.54)	35%
Share of Profit from joint ventures	187.40	168.59	11%
<b>Profit before Income Tax</b>	<b>202.74</b>	<b>7.15</b>	<b>2734%</b>
Income Tax	(0.22)	(0.66)	-67%
<b>Net Profit from Operation</b>	<b>202.53</b>	<b>6.49</b>	<b>3021%</b>
Currency translation differences	(142.66)	515.16	-128%
Change in fair value of hedging derivatives	11.37	(7.74)	100%
<b>Total Comprehensive Income</b>	<b>71.23</b>	<b>513.91</b>	<b>-86%</b>
<b>Profit Attributable to:</b>			
Owners of the Parent	202.57	6.53	3002%
Non-Controlling Interests	(0.04)	(0.04)	-2%
	<u>202.53</u>	<u>6.49</u>	3021%
<b>Total Comprehensive Income Attributable to:</b>			
Owners of the Parent	71.29	513.61	-86%
Non-Controlling Interests	(0.05)	0.30	-118%
	<u>71.23</u>	<u>513.91</u>	-86%

## Summary

### ■ Total Revenue:

Increasing from 371.06 MB to 371.40 MB, or +0.09%

### ■ Gross Profit:

Decreasing from 129.60 MB to 101.60 MB, or -22%

### ■ Share of profit from JV:

Increasing from 168.59 MB to 187.40 MB, or +11%

### ■ Profit Attributable to Owners of the Parent:

Increasing from 6.53 MB to 202.57 MB, or +3002%

Due to the reverse of FX from loss to gain of 43.91 MB in 1Q2021, the Company gained profit of 202.57 MB, or significantly increased 3002%.

# FINANCIAL HIGHLIGHTS 1Q2021

## Summary

### ■ Total Revenue:

Total Revenue from operations of 1Q2021 increased to 371 MB or +24% as compared to 1Q2019 of 300 MB. This was due to the growth of business continually as planned.

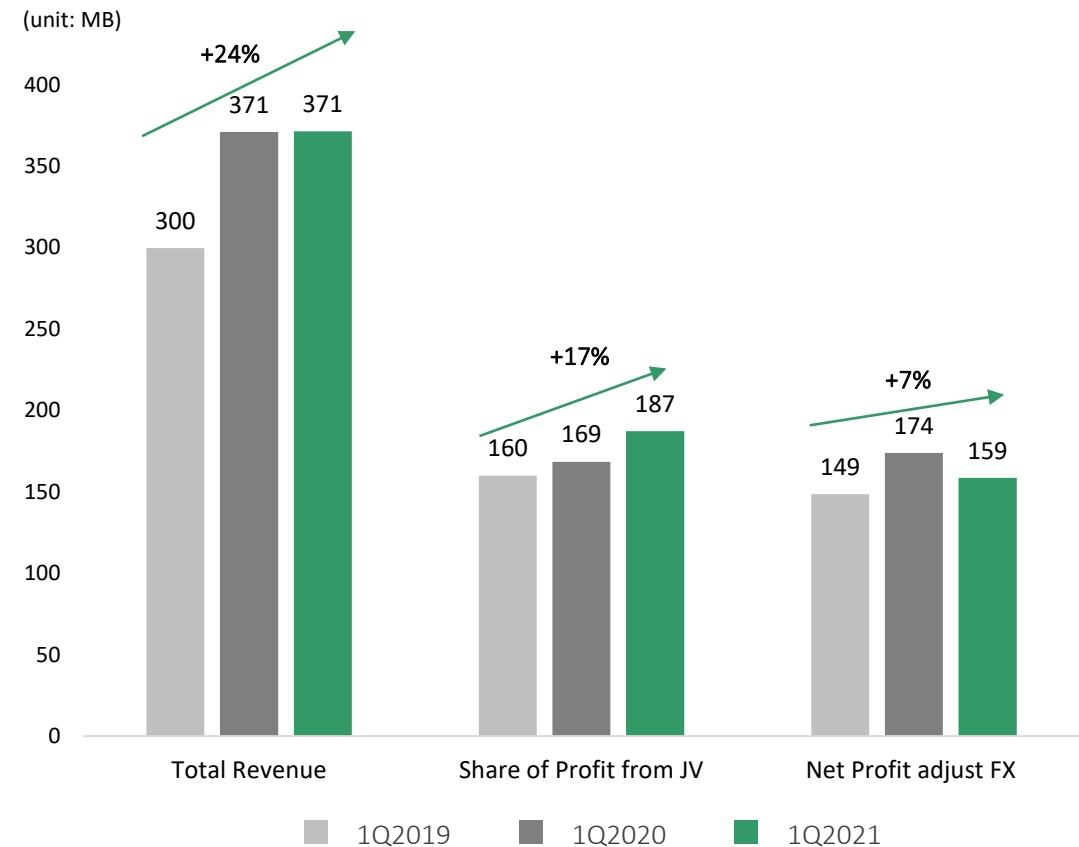
### ■ Share of profit from JV:

Share of profit from JV (Solar PV Farms) of 1Q2021 increased to 187 MB or +17% as compared to 1Q2019 of 160 MB. This was due to improvement of Solar PV Farms' efficiency and finance costs reduction.

### ■ Net Profit adjust FX:

Net Profit adjust FX of 1Q2021 increased to 159 MB or +7% as compared to 1Q2019 of 149 MB. This was due to the same reason of the growth of business continually as planned.

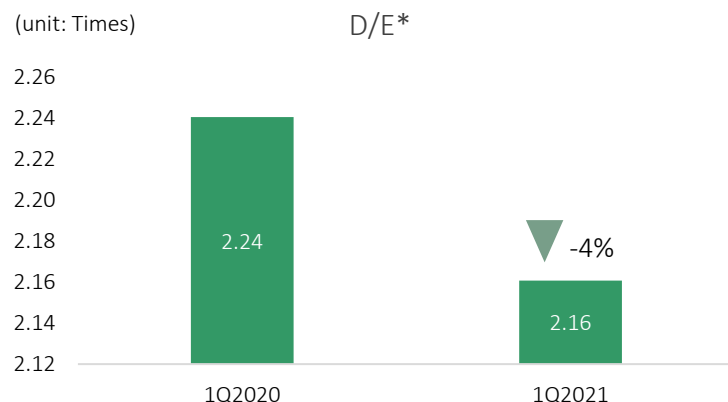
Comparison of 1Q2019 – 1Q2021 (3-months period)



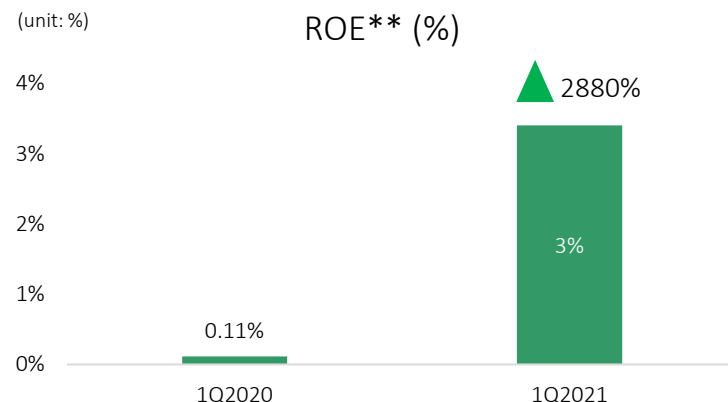


# D/E RATIO, ROE, and EPS 1Q2021

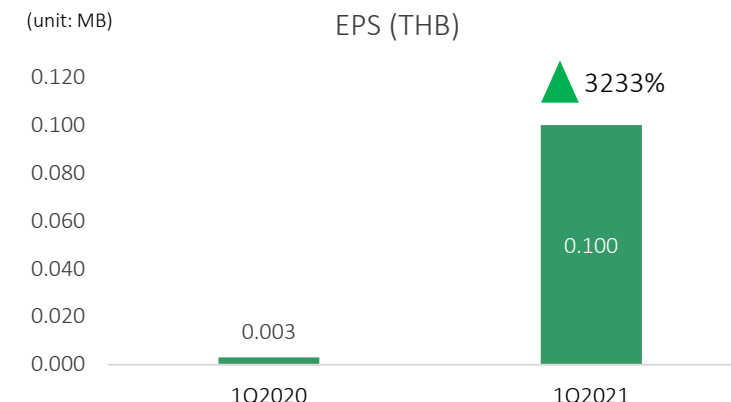
## D/E\* Ratio (Times)



## ROE\*\* (%)



## EPS (THB)



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

## Summary

### ■ D/E\* Ratio:

D/E\* Ratio of 1Q2021 decreased to 2.16 times or -4% as compared to 1Q2020 of 2.24 times. This was because a decrease in liabilities from loan repayment during the year and an increase in equities from an increase of net profit in 1Q2021.

### ■ ROE\*\* (%):

ROE of 1Q2021 significantly increased to 3% or +2880% as compared to 1Q2020. This was because of the same reason of an increase in net profit in 1Q2021.

### ■ EPS (THB):

EPS of 1Q2021 also significantly increased to 0.10 Baht or +3233% as compared to 1Q2020 of 0.003 Baht. This was primarily due to the reversion of gain on exchange rate in 1Q2021 and improvement of Solar PV Farms' efficiency.

# FINANCIAL POSITION AS AT 31 MARCH 2021

## Summary

### ■ Total Assets:

Decreasing from 19,177 MB to 18,930 MB, or -1%.

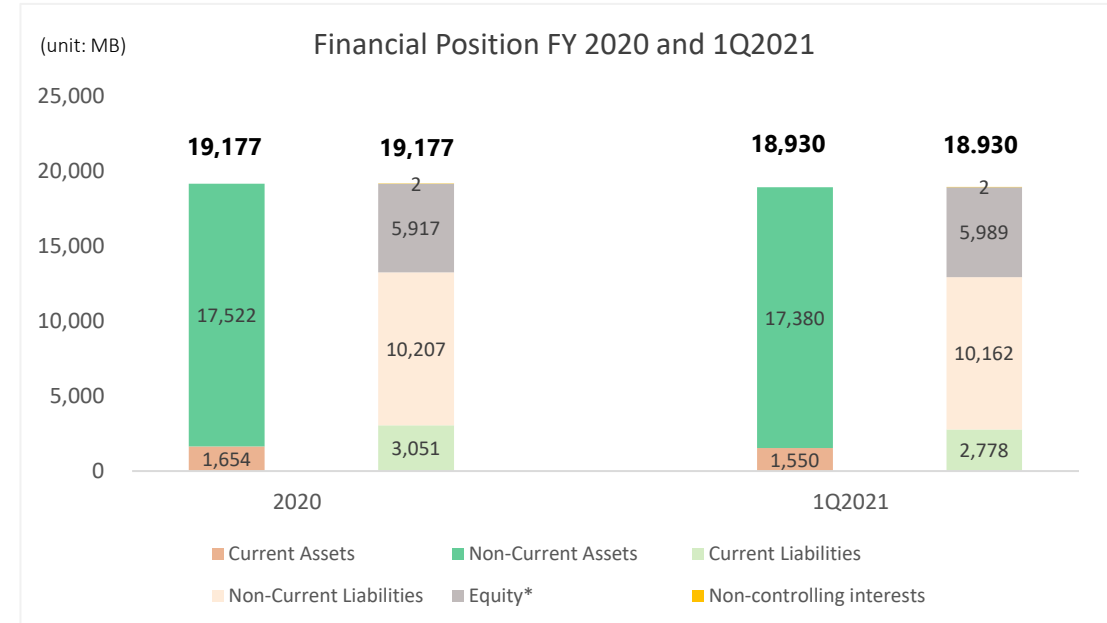
### ■ Total Liabilities:

Decreasing from 13,257 MB to 12,940 MB, or -2%.

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

Increasing from 5,917 MB to 5,989 MB or +1%.

Due to the growth of business continually and improvement of power plant efficiency; therefore, it helped generate more revenue.



FINANCIAL POSITION	FY2020	FY1Q2021	+/- (%)
Assets	19,177	18,930	▼ -1%
Liabilities	13,257	12,940	▼ -2%
Equities*	5,917	5,989	▲ 1%
D/E Ratio (times)	2.24	2.16	▼ -4%

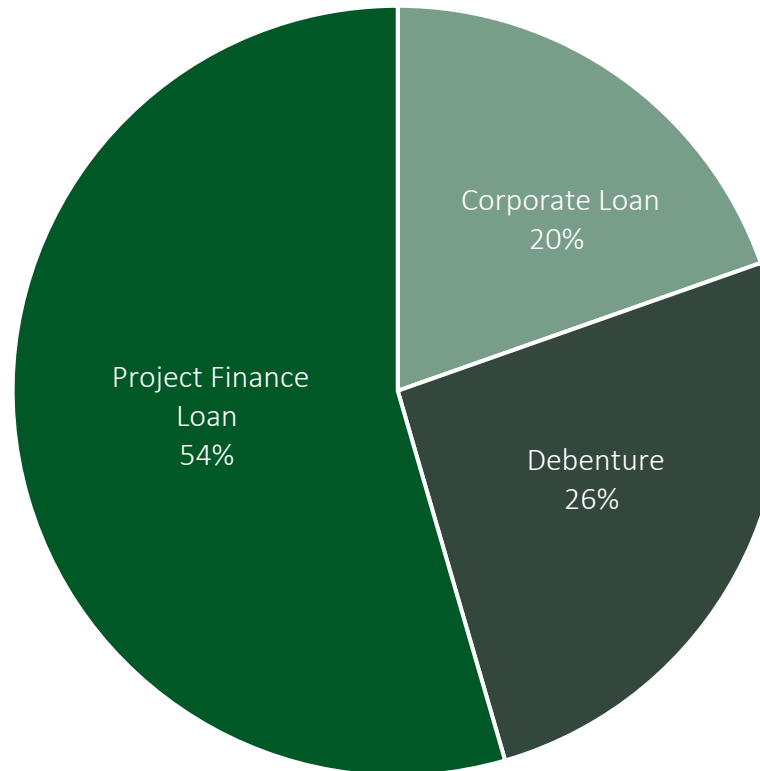
# DEBT STRUCTURE 1Q2021

## Project Finance Loan

Most of interest bearing debt from Project Finance Loan for 54%, maintained from Onikoube Project Finance Loan drawdown.

34% of Project Finance Loan were from COD projects decreased from schedule repayment.

The rest of Project Finance Loan were from the project under-construction.



■ Corporate Loan   ■ Debenture   ■ Project Finance Loan

## Corporate Loan and Debenture

The remaining interest bearing debt from Corporate Loan and Debenture for 46%.



# CONSTRUCTION UPDATE

## “Onikoube” 147 MWp

- Start Project Construction in April, 2020
- Project Financing by BBL THB 8.6 bn.
- SCOD 4Q2022



## Floating Solar PV Farm 8 MWp

- Invested in June, 2020
- SCOD 2Q2021
- Private PPA Period 25 years

# Floating Solar PV Farm (8 MWp)

Private  
PPA 25  
Years

## Summary of Project

Installed Capacity (MWp):	8
Selling Capacity (MWac):	8
PPA Type:	Private PPA
PPA Period:	25 years
Location:	Kabinburi Industrial Zone (KIZ)
Off-Taker:	Hitachi Consumer Products (Thailand) Ltd.
SCOD:	2Q2021
Operated By:	SV (TSE's subsidiary)

## 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



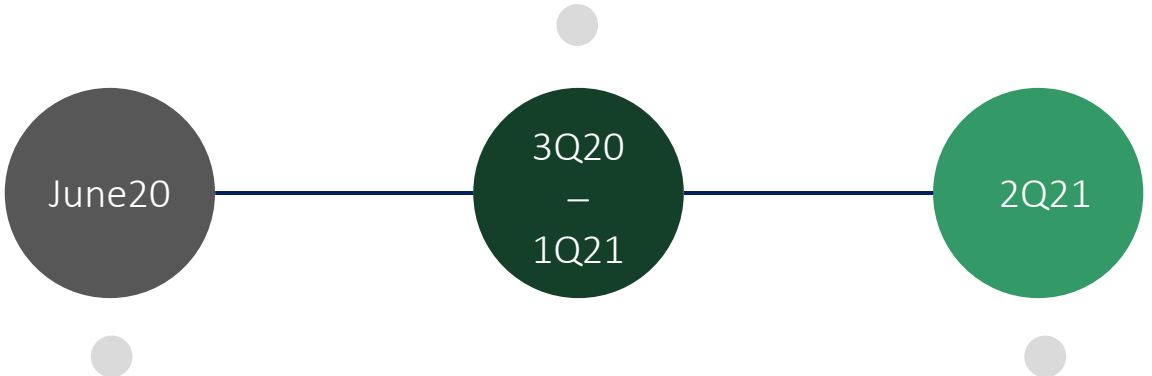


# Floating Solar PV Farm (8 MWp)



## WORK BACK TIMELINE

Construction has started in 3Q2020



Invested in Floating Solar PV Farm  
Project 8 MWp in Prachinburi  
Province

SCOD 2Q2021



# Floating Solar PV Farm (8 MWp)



Overall is completed 99% and ready to COD within 2Q2021.



# “ONIKOUBE” 147 MWp

Purchase  
Rate  
(FiT JP¥)  
**36**

## Summary of Project

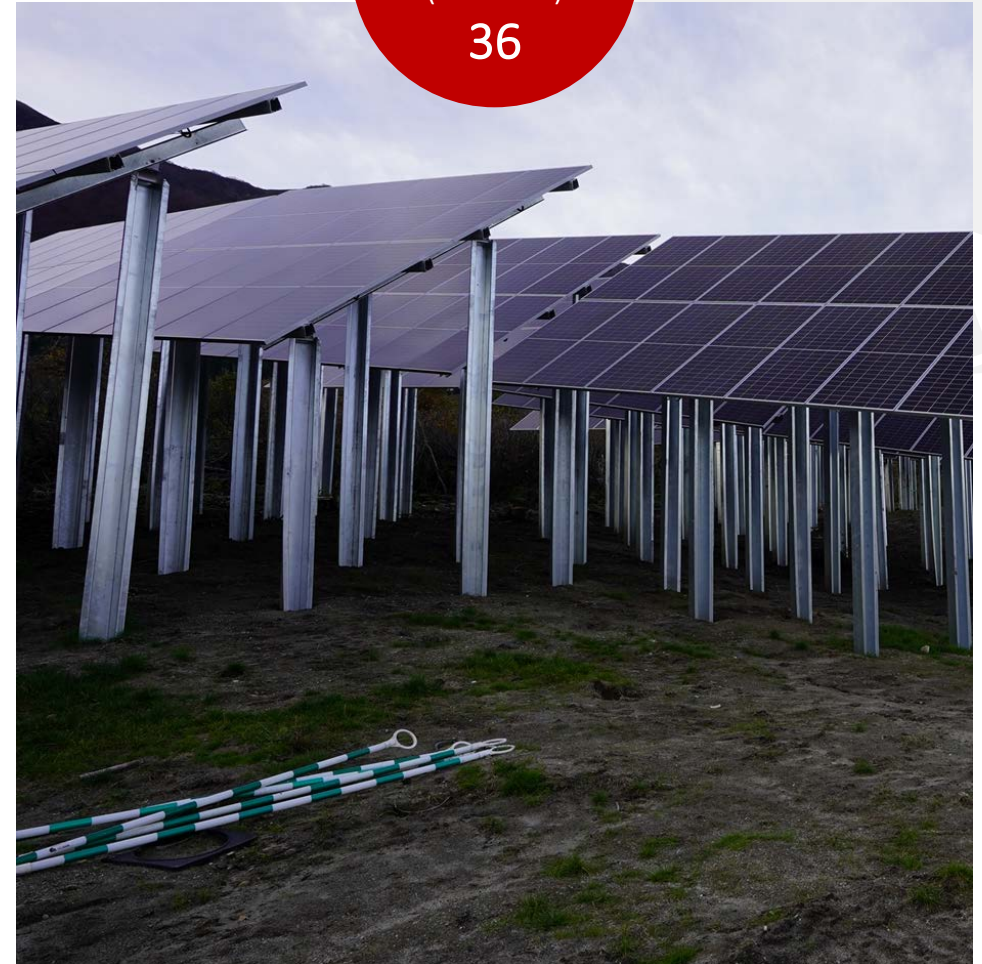
Installed Capacity (MWp):	147
Selling Capacity (MWac):	133
Purchase Rate (FiT JP¥):	36
Location:	Miyagi, Japan
Off-taker:	Tohoku Utility
SCOD:	4Q2022
Status:	Under construction
Operated By:	OSP

## 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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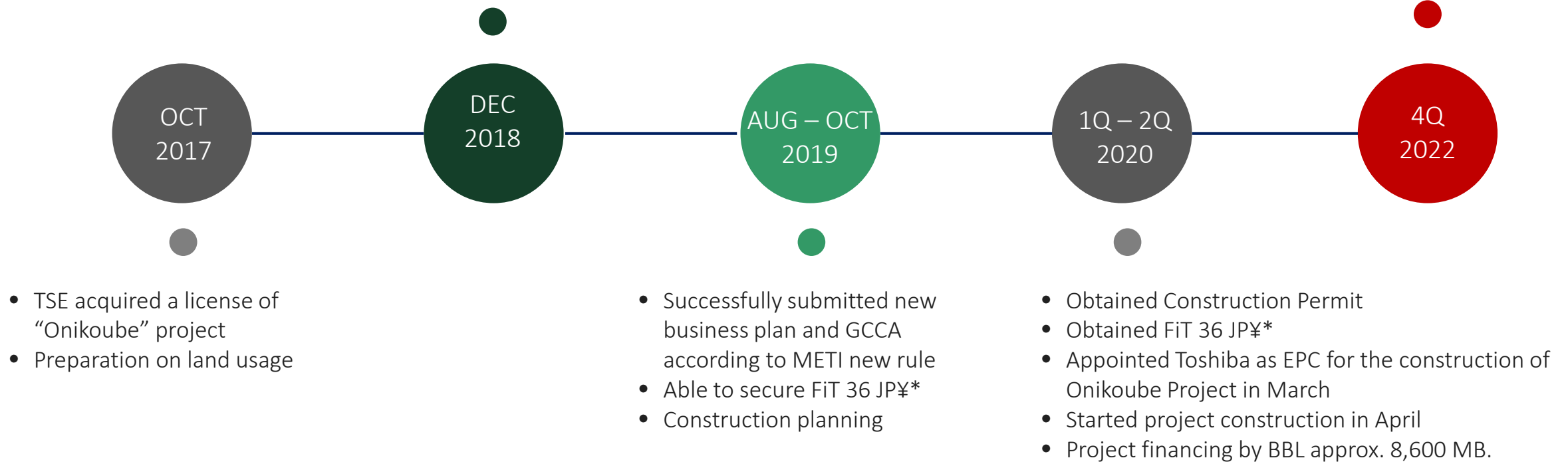
# “ONIKOUBE”

## 147 MWp

### WORK BACK TIMELINE

- METI released new FiT
- Price policy (One-Year Rule)\*

SCOD 4Q2022



\*METI’s one-year rule requires resubmission of a business plan in order to secure project’s FiT price and tenor year under the condition that the project is ready for the construction and to COD within a certain timeline. The conditions required by METI such as, EIA Approval, Forest Permit. Onikoube does not subject to such requirements so the project successfully secures FiT price under the new rule.



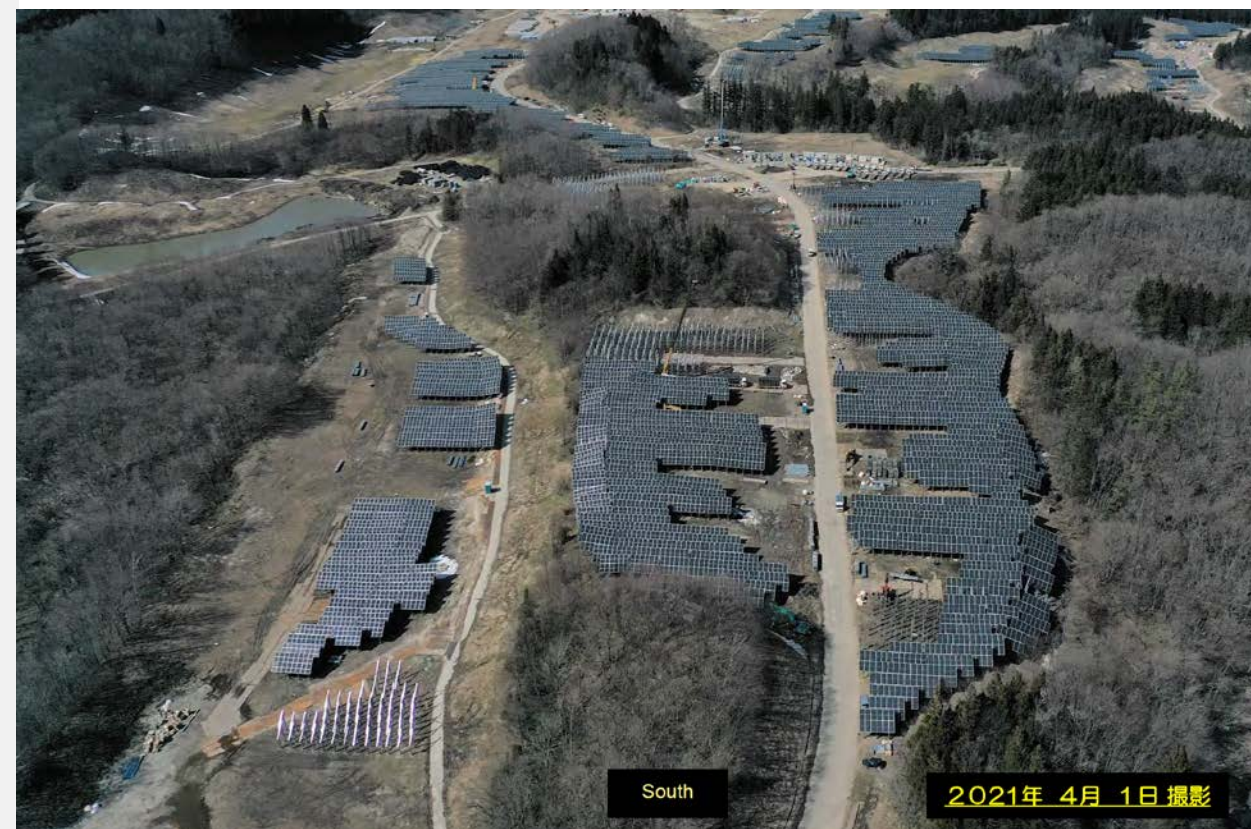
# ONIKOUBE (147 MWp)



Construction had been started since 1Q2020. EPC mainly focuses on civil work so solar module installation can be speedily installed in later stage. Solar modules are planned to be placed on its original landscape conditions. The construction progress target of 68% is planned to be completed by December 2021. The project is expected to SCOD within 4Q2022.



# ONIKOUBE (147 MWp)



(as of 1 April 2021)





Thai Solar Energy Public Company Limited

## APPENDIX

Summarize Corporate information and photos of current projects





# ORGANIZATION STRUCTURE

## Board of Directors

Nomination and  
Remuneration Committee

Executive Committee

Audit Committee

Company Secretary

Chief Executive Officer  
Cathleen Maleenont, Ed.D.

Internal Audit

Chief Operating Officer  
Mr. Somphop Prompanapitak

Chief Technical Officer  
Mr. Kitiphong Thunnom

Chief Financial Officer  
Cathleen Maleenont, Ed.D.

Vice President  
Solar PV Engineering and  
Construction

Assistant Vice President Biomass /  
Biogas Operation & Maintenance

Assistant Vice President  
Finance & Strategic Planning

Assistant Vice President  
Accounting – Domestic

Assistant Vice President  
Accounting - International

Assistant Vice  
President  
Supporting Office

Assistant Vice  
President  
Human Resources

Assistant Vice President  
Government Relation and  
Procurement

Assistant Vice President  
Business Development -  
Local

Assistant Vice President  
Business Development –  
International

Department Manager  
Investor Relations

# BOARD OF DIRECTORS



**Dr. Prommin Lertsuridej**  
Vice Chairman, Chairman of  
Nomination and Remuneration  
Committee, and Independent  
Director



**Mr. Pala Sookawesh**  
Independent Director



**Mr. Prasert Patradhilok**  
Independent Director and  
Chairman of Audit Committee



**Mr. Aran Apichari**  
Independent Director



**Mr. Somphop Prompanapitak**  
Director



**Mrs. Angkanee Rerksirisuk**  
Director



**Mr. Masthawin Charnvirakul**  
Director

## AUDIT COMMITTEE



**Mr. Prasert Patradhilok**  
Chairman of Audit Committee  
and Independent Director



**Mr. Pala Sookawesh**  
Member of Audit Committee  
and Independent Director



**Dr. Praphan Subsang**  
Member of Audit Committee  
and Independent Director

# TSE's PROJECTS



Note: \*101 MW (69 MWe) > Partnership with GPSC (TSE 60%)  
 \*\* 299.94 MW > 158.94 MW are in operation.  
 > 141 MW are 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 Farms

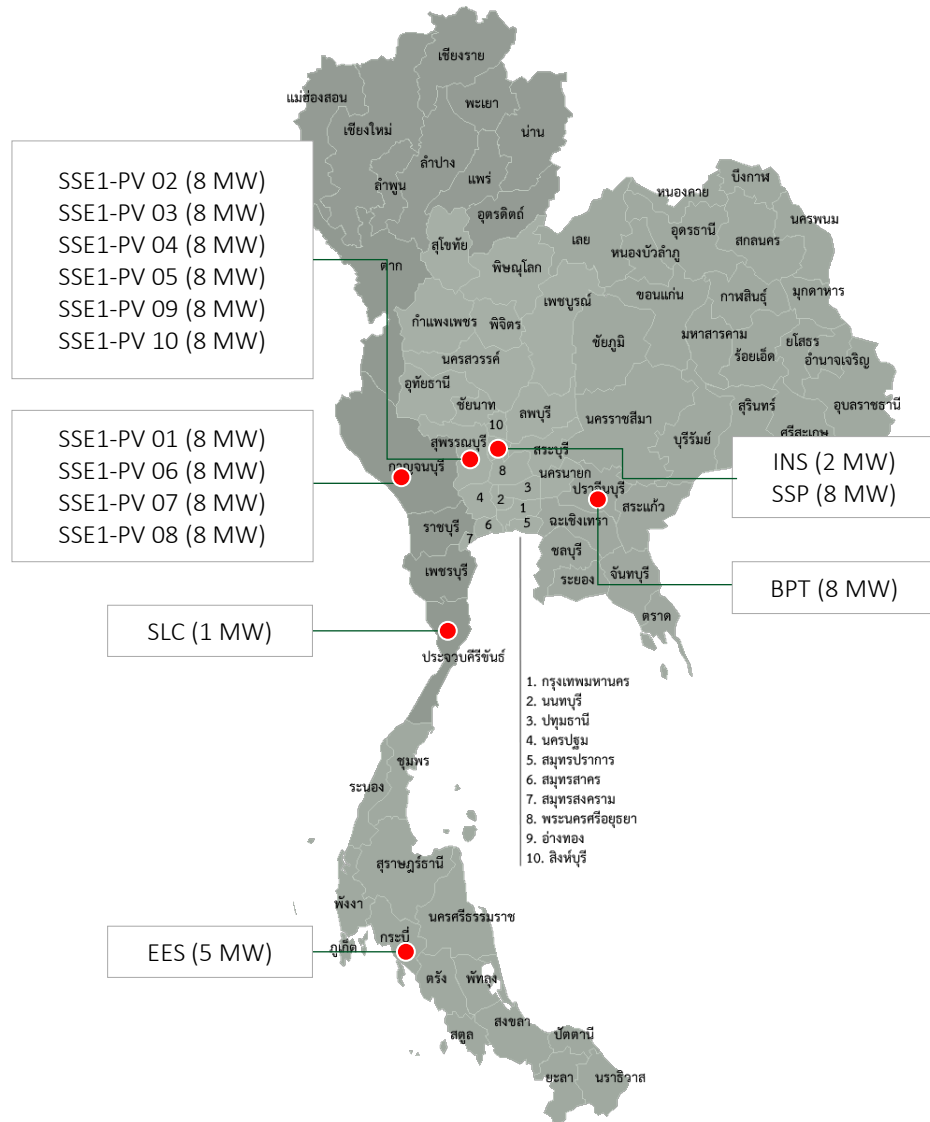
154.74 MWac – 8 Farms

# PORTFOLIO SUMMARY

Project Types	Operated By	Ownership (%)	No. of Sites	COD Year	Installed Capacity (MWDC)	Contract Capacity (MWAC)	Equity Capacity (MWe)
Solar PV Farms:							
> Thailand:	TSR	60	10	2013 - 2014	104.8	80	48
	SV	100	5	2013, 2015, 2016, 2018	22.7	21	21
> Floating Solar PV Farm	SV	100	1	SCOD 2Q2021	8	8	8
> Japan:	TSI	100	7	2015, 2016, 2017, 2018, 2019	28.54	21.74	21.74
	OSP	100	1	SCOD 4Q2022	147	133	133
Solar PV Rooftops	TSER	100	14	2014 - 2015	14	14	14
Biomass	TCE	100	3	2018	25.8	22.2	22.2
<b>Total</b>			<b>41</b>		<b>350.84</b>	<b>299.94</b>	<b>267.94</b>



















# SOLAR PV FARMS (THAILAND) : 16 Projects (109 MWac)

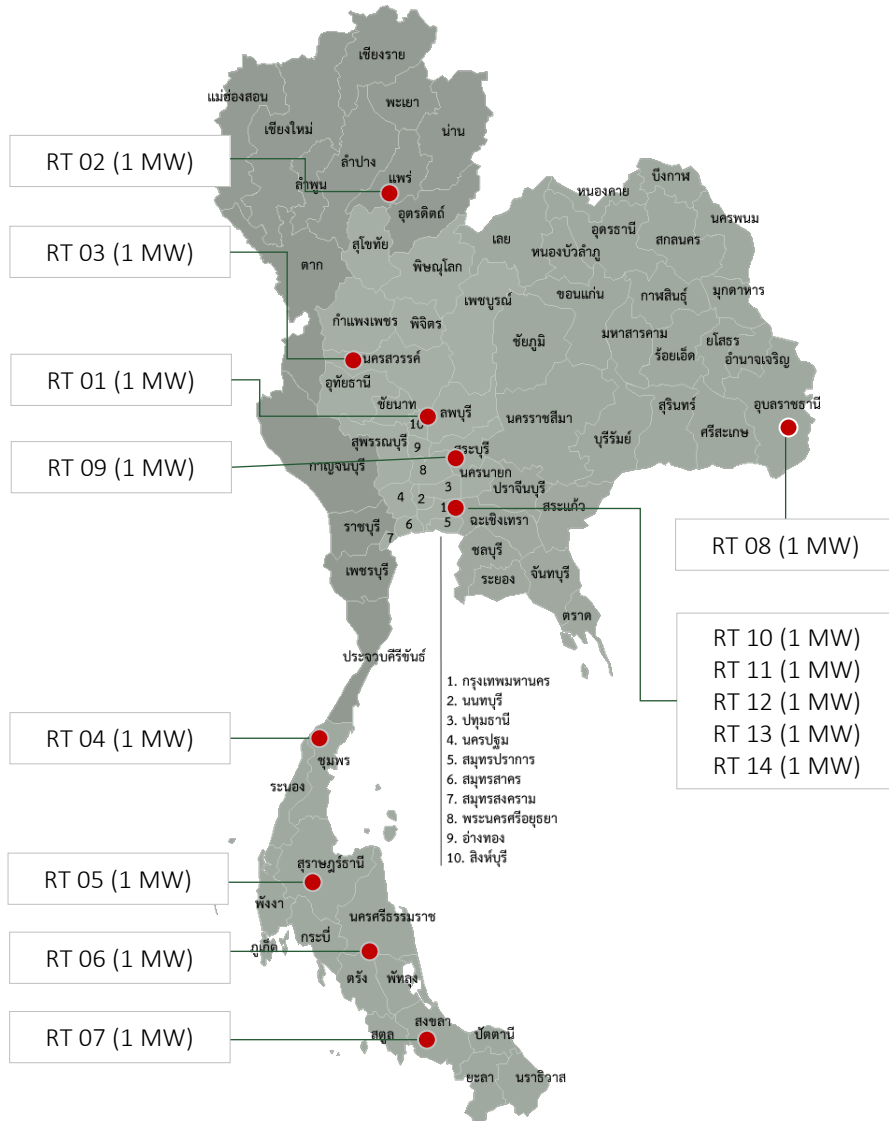


Project	Selling Capacity (MWac)	Equity Capacity (MWe)	COD	Power Purchase Rate	Tenor
SSE1 PV01 – PV10 *Partnership with GPSC (TSE 60%)	80	48	2013 – 2014	Base Tariff + FT + Adder 6.5 THB/kWh (10 years from COD)	5 years with automatic renewable
SLC	1	1	2016	FiT 5.66 B.	25 years
INS	2	2	2015	FiT 5.66 B.	25 years
BSS	5	5	2016	FiT 4.12 B.	25 years
SSP	8	8	2013	Base Tariff + FT + Adder 8 THB/kWh (10 years from COD)	5 years with automatic renewal
EES	5	5	2018	FiT 4.12 B.	25 years
Floating Solar	8	8	2Q2021	Private PPA	25 years
<b>Total</b>	<b>109</b>	<b>77</b>			

# SOLAR PV FARMS (THAILAND) : 16 Projects (109 MWac)

<p>Adder 6.5 THB/ kWh (SSE1: PV01 – PV10)</p>  <p><b>SSE1-PV01 (8MW)</b> COD SEP 2013</p>			<p>FiT 5.66 THB/ kWh</p>  <p><b>SLC (1MW)</b> COD DEC 2016</p>		<p>FiT 4.12 THB/ kWh</p>  <p><b>BSS (5MW)</b> COD DEC 2016</p>		<p>Adder 8 THB/ kWh</p>  <p><b>SSP (8MW)</b> COD MAR 2013</p>	
 <p><b>SSE1-PV02 (8MW)</b> COD JUL 2013</p>	 <p><b>SSE1-PV03 (8MW)</b> COD OCT 2013</p>	 <p><b>SSE1-PV04 (8MW)</b> COD NOV 2013</p>	 <p><b>INS (2MW)</b> COD DEC 2015</p>		 <p><b>EES (5 MW)</b> COD DEC 2018</p>		<p>Private PPA</p>  <p><b>Floating Solar PV Farm (8MW)</b> SCOD 2Q2021</p>	
 <p><b>SSE1-PV05 (8MW)</b> COD NOV 2013</p>	 <p><b>SSE1-PV06 (8MW)</b> COD JUN 2014</p>	 <p><b>SSE1-PV07 (8MW)</b> COD MAR 2014</p>						
 <p><b>SSE1-PV08 (8MW)</b> COD JUN 2014</p>	 <p><b>SSE1-PV09 (8MW)</b> COD APR 2014</p>	 <p><b>SSE1-PV10 (8MW)</b> COD MAY 2014</p>						

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



Project	Selling Capacity (MWac)	COD	Power Purchase Rate	Tenor
TSER 01 - 14 *Partnership with The Mall and HomePro	14	2014 – 2015	FiT 6.16 B.	25 years
<b>Total</b>	<b>14</b>			





# 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 Ratchathane  
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



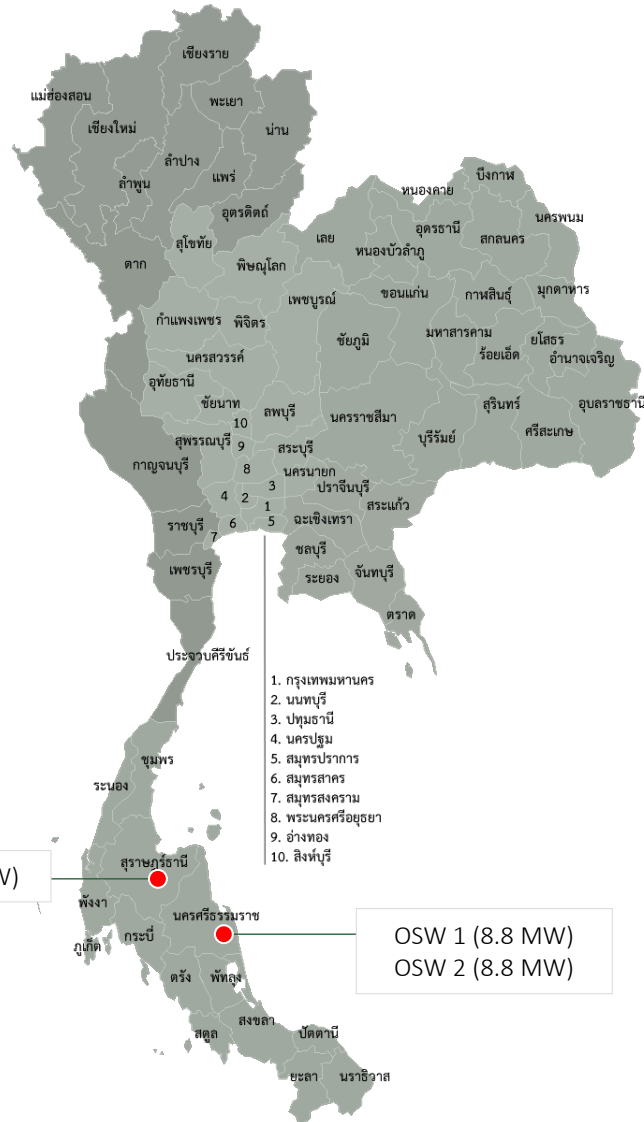
**RT-13** Bangkapi  
COD JUL 2015



**RT-14** Ngamwongwan  
COD AUG 2015



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



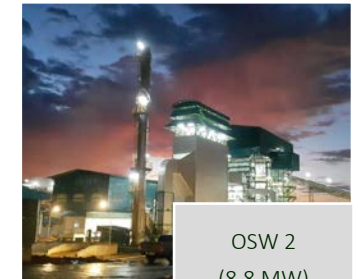
Project	Selling Capacity (MWac)	COD	Power Purchase Rate	Tenor
BSW	4.6	2018	FiT 4.24 Baht + Premium 0.30 THB (8 years)	20 years
OSW 1	8.8	2018		15Y4M
OSW 2	8.8	2018		
Total	22.2			



BSW (4.6 MW)



OSW 1 (8.8 MW)



OSW 2 (8.8 MW)

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

## Details / Projects

### BSW

**Installed Capacity:** 6.0 MW  
**PPA Capacity:** 4.6 MW  
**Purchase Rate:** FiT 4.24 Baht + Premium 0.30 Baht (8 yrs.)  
 20 years from COD  
**Tenor:** 100%  
**TSE's Ownership:** Surat Thani  
**Location:** MAR 2018  
**COD:**

### OSW1 and OSW2

**Installed Capacity:** 19.8 MW  
**PPA Capacity:** 17.6 MW  
**Purchase Rate:** FiT 4.24 Baht + Premium 0.30 Baht (8 yrs.)  
 15 years 4 month from COD  
**Tenor:** 100%  
**TSE's Ownership:** Nakhon Si Thammarat  
**Location:** OSW1 – AUG 2018  
**COD:** OSW2 – OCT 2018

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



BSW (4.6 MW)  
 COD MAR 2018

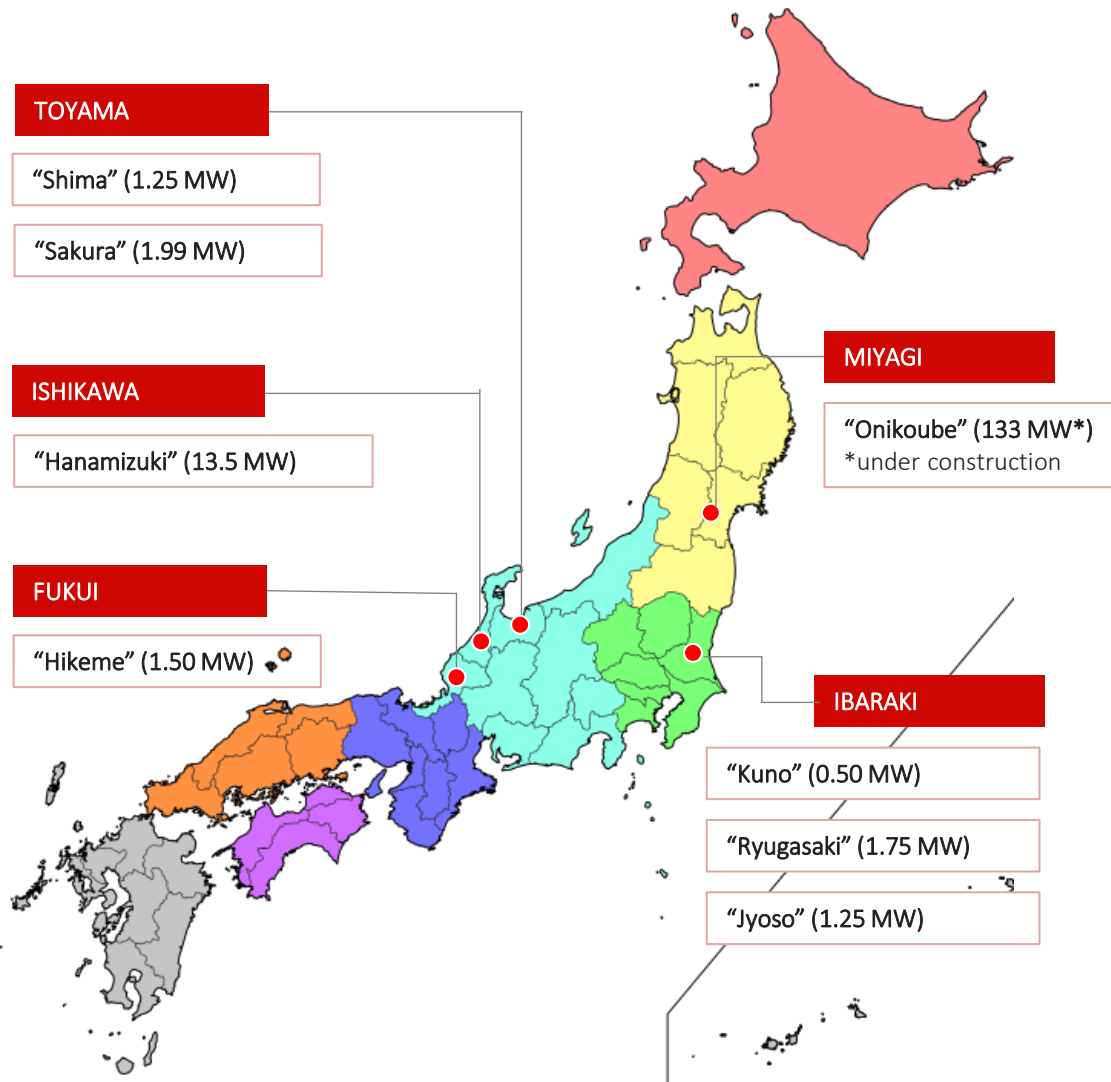


OSW1 (8.8 MW)  
 COD AUG 2018



OSW2 (8.8 MW)  
 COD OCT 2018

# SOLAR PV FARMS (JAPAN) : 8 Projects (154.74 MWac)



Project	Location	Installed Capacity (MW)	Selling Capacity (MWac)	COD	Feed-in-Tariff (JP¥)
Kuno	Ibaraki	0.65	0.50	31/8/2015	36
Shima	Toyama	1.43	1.25	2/3/2016	32
Hikeme	Fukui	1.86	1.50	1/4/2016	32
Ryugasaki	Ibaraki	2.36	1.75	1/9/2016	36
Sakura	Toyama	2.55	1.99	2/11/2017	32
Jyoso	Ibaraki	1.59	1.25	2/5/2018	36
Hanamizuki	Ishikawa	18.1	13.50	2/1/2019	36
Onikoube	Miyagi	147.00*	133.00*	4Q2022	36
<b>Total</b>		<b>175.54</b>	<b>154.74</b>		

\* Under development



# SOLAR PV FARMS (JAPAN) : 8 Projects (154.74 MWac)



**Kuno** (0.5 MW)  
COD AUG 2015



**Ryugasaki** (1.75 MW)  
COD SEP 2016



**Shima** (1.25 MW)  
COD MAR 2016



**Jyoso** (1.25 MW)  
COD MAY 2018



**Hanamizuki** (13.5 MW)  
COD JAN 2019



**Onikoube** (133 MW)\*  
SCOD 4Q2022

(\*under construction)



**Hikeme** (1.50 MW)  
COD APR 2016



**Sakura** (1.99 MW)  
COD NOV 2017





Thai Solar Energy Public Company Limited

THANK YOU

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