



Thai Solar Energy Public Company Limited

TSE PRESENTATION FY2021

March, 2022

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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.

AGENDA



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COMPANY OVERVIEW

Summary of Corporate Information

02

HIGHLIGHTS of FY2021

Summary of TSE's Financial Performance FY2021 and Projects' Update

03

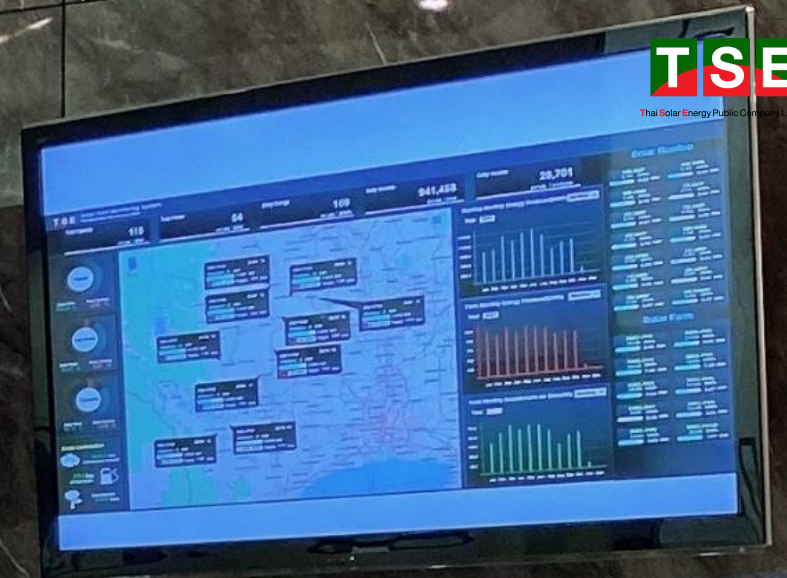
OUTLOOK

Summary of TSE's Business Outlook and Investment Plan

04

APPENDIX

Summary of TSE's Projects

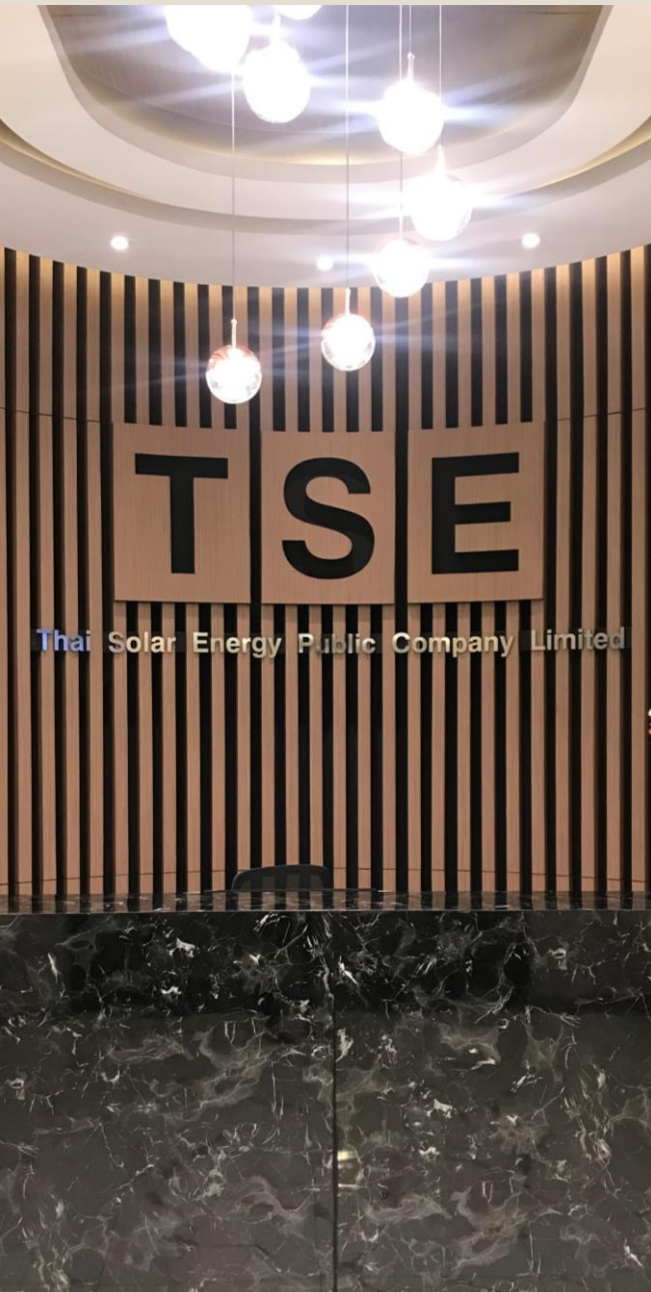


01 COMPANY OVERVIEW

Summary of Corporate Information

COMPANY OVERVIEW

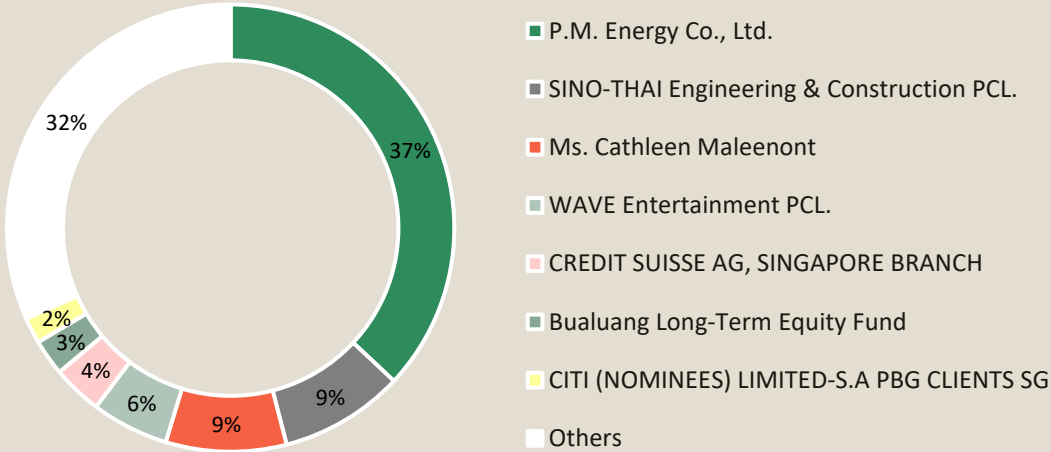
Thai Solar Energy Public Company Limited (“TSE”) was established in 2008 with a mission to establish a solid footprint in Thailand in the solar power industry and expand into other renewable energies as well as developing an international solar power business focusing in Asia and Oceania regions.



COMPANY OVERVIEW

TSE's Major Shareholders

(as of 11 MAR 2021)



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



Solar PV Farms



Solar PV Rooftops



Biomass

3 CORE BUSINESSES:

1. Solar PV Farms
2. Solar PV Rooftops
3. Biomass

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 (i.e. Vietnam) + Expanding Private PPA

- 2022:** > SCOD "Onikoube" project (147 MWp) 4Q2022



Ref. photo of "Onikoube" project

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



Cathleen Maleenont, Ed.D.

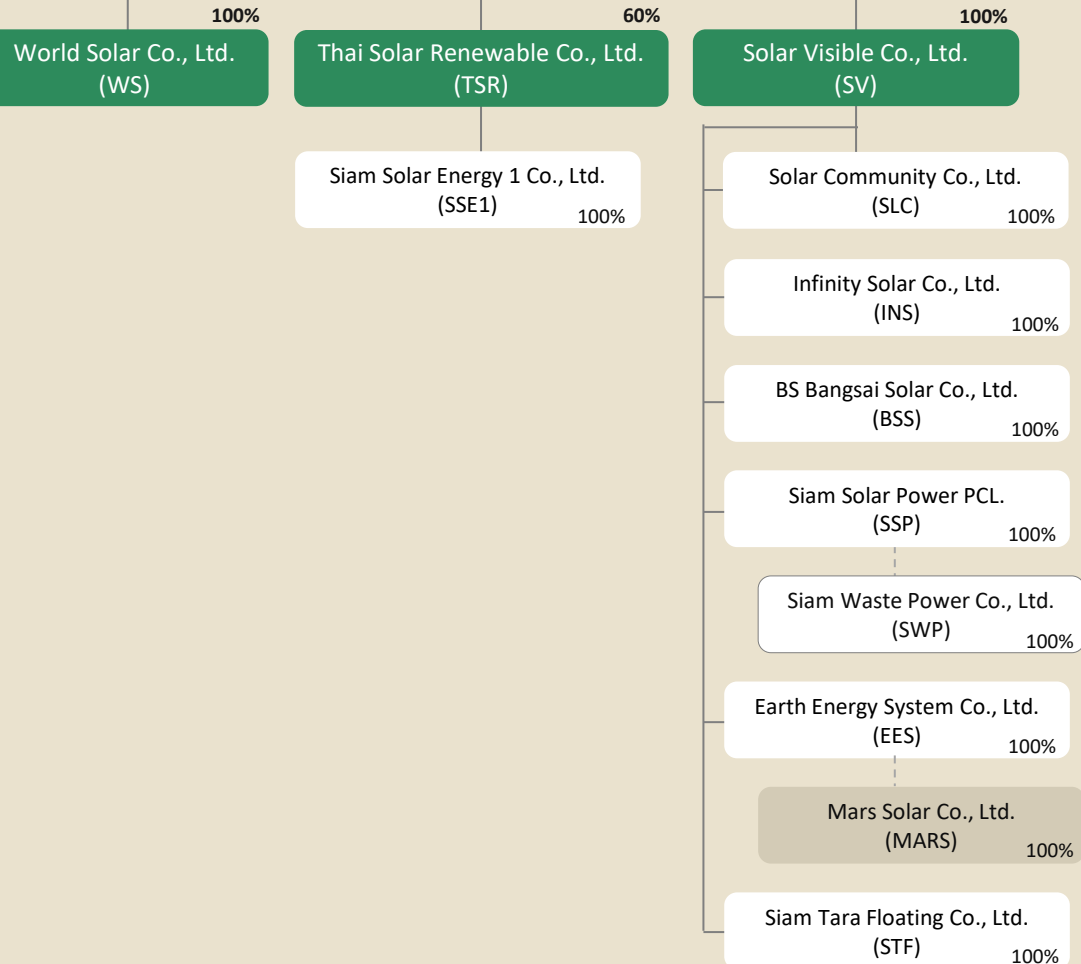
Chairman of Board of Directors

COMPANY STRUCTURE

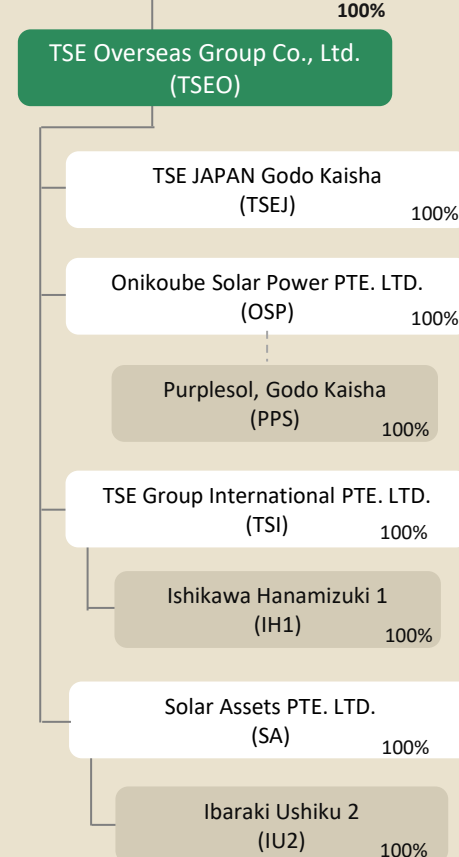


Thai Solar Energy Public Company Limited

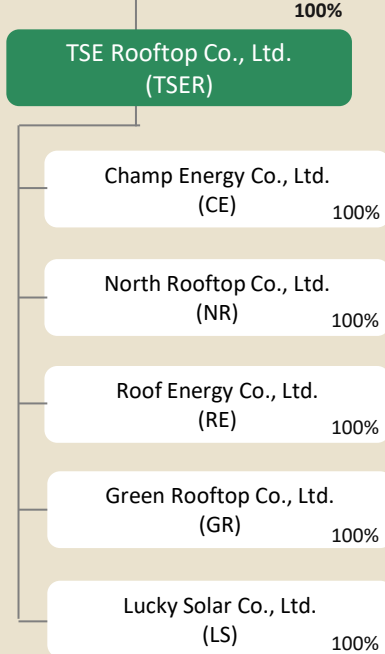
Solar Farm Thailand



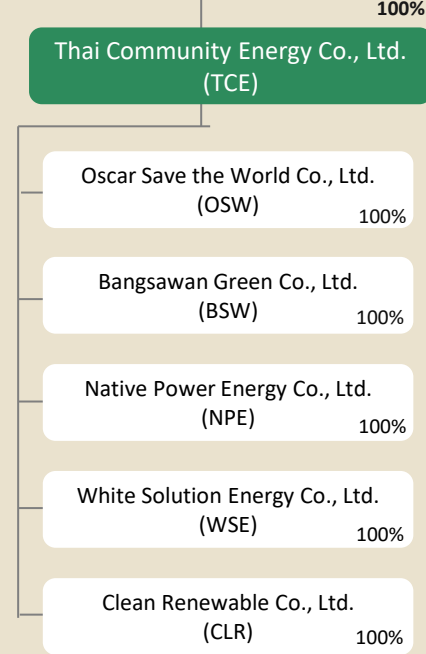
Solar Farm Japan



Solar Rooftop



Biomass



(*as of December 31, 2021)

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 (Acting)

Cathleen Maleenont, Ed.D.

Vice President
Engineering & Construction – PV
Power Plant and Special Project

Assistant Vice President Biomass /
Biogas Operation & Maintenance

Assistant Vice President
Finance & Strategic Planning

Assistant Vice President
Financial Controllers

Assistant Vice President
Accounting – Domestic

Assistant Vice
President
Supporting Office

Assistant Vice
President
Human Resources

Assistant Vice President
Government Relation and
Procurement

Assistant Vice President
Business Development -
Local

Section Manager
Business Development –
International

Department Manager
Investor Relations

CORE BUSINESS

291.70
MWac

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.



In Operation
158.70 MWac*



Under Construction
133 MWac*

Total: 35 Projects
291.70 MWac

(*as of December 31, 2021)

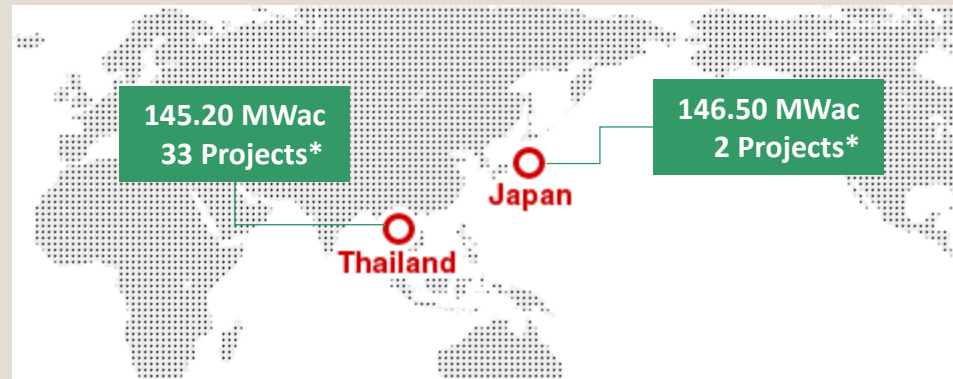
Solar PV Farms



Solar PV Rooftop



Biomass





02 HIGHLIGHTS of FY2021

Summary of TSE's Financial Performance
FY2021 and Projects' Update

HIGHLIGHTS OF THE YEAR 2021

COD Floating Solar Project 8 MWp

Siam Tara Floating (8 MWp)

PPA Type: Private PPA
PPA Period: 25 years
COD: 25 MAY 2021
Operated by: SV (TSE's subsidiary)

Dividend Payment @ 0.04 Baht/ share

Dividend Payment @ 0.04 Baht/ share

Cash dividend payment for 1H2021
@0.04 Baht / share.

Record date for the right to receive
dividends is on **30 SEP 2021**.

Payment date is on **12 OCT 2021**.

Disposal of 6 Solar Farms in Japan

Disposal of 6 Solar Farms in Japan

Disposal of 100% investment interests in
6 solar farms (a total contract capacity of
8.24 MW).

TSE earned a total enterprise value of
JP¥ 3,363 million or approximately
THB 1,027 million and recorded the profit
in 3Q2021.

Floating Solar Project “STF”

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:	Hitachi Consumer Products (Thailand) Ltd.
COD:	25 MAY 2021
Operated By:	SV (TSE’s subsidiary)
Investment:	June, 2020

Private PPA 25 Years

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

Trinasolar
SIEMENS

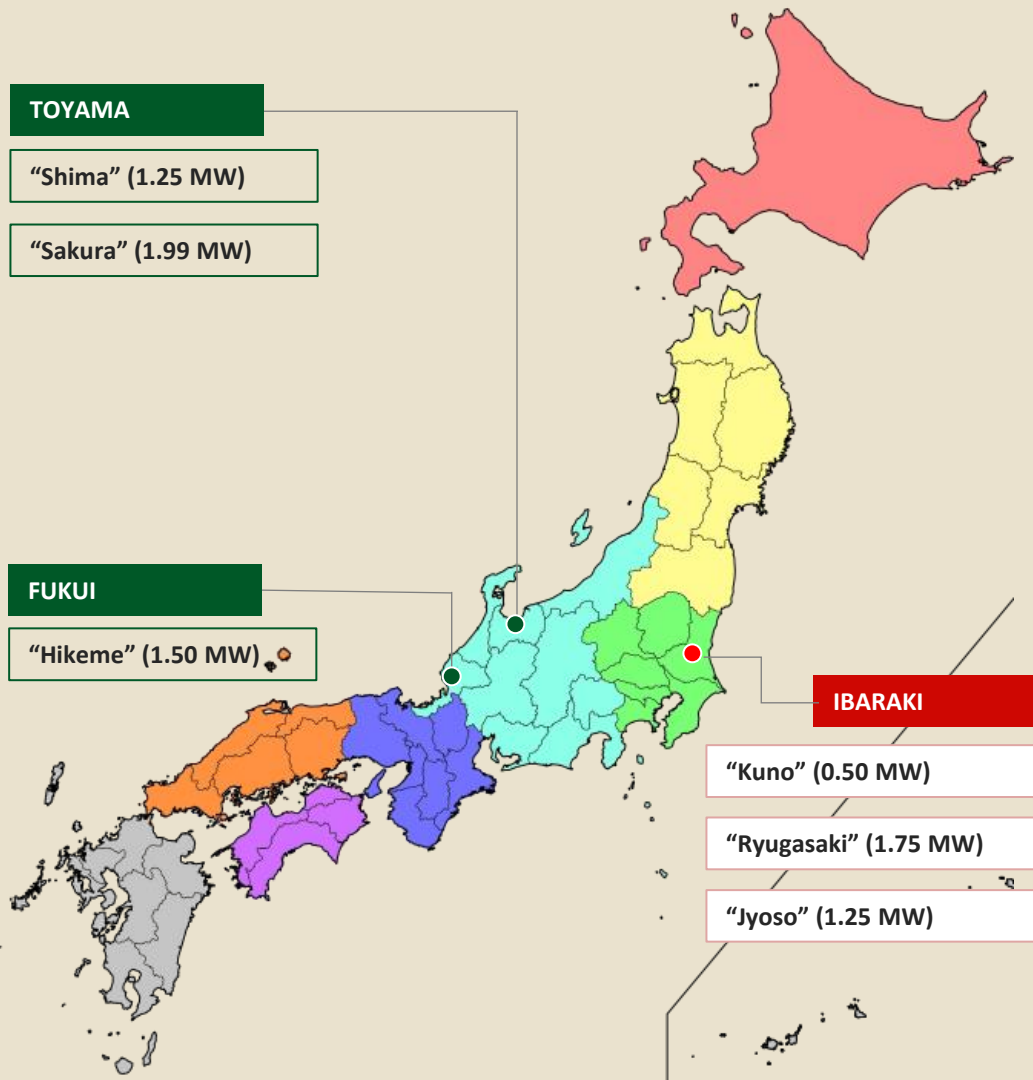


Floating Solar Project “STF”



Disposal of 6 Solar Farms in Japan

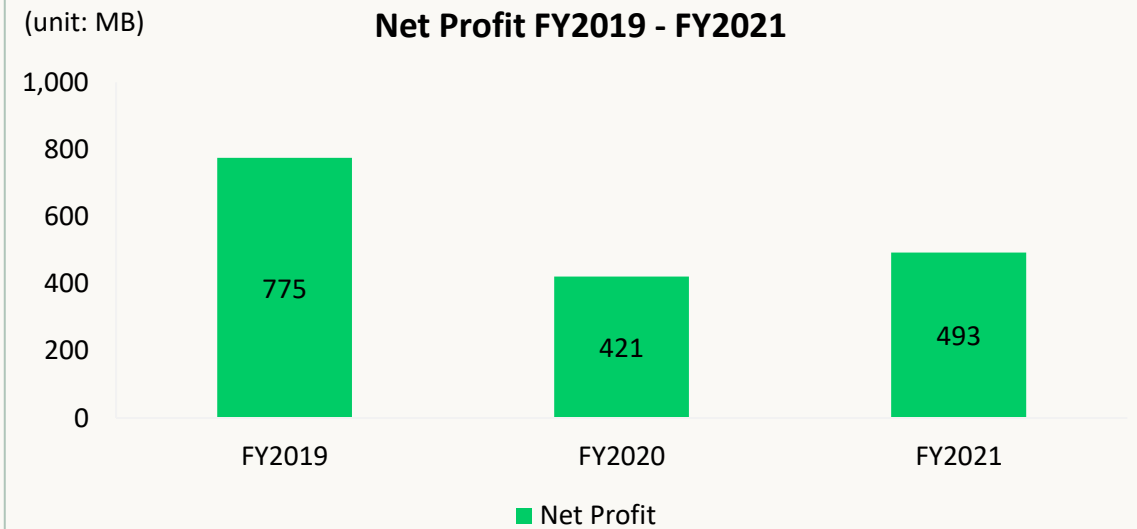
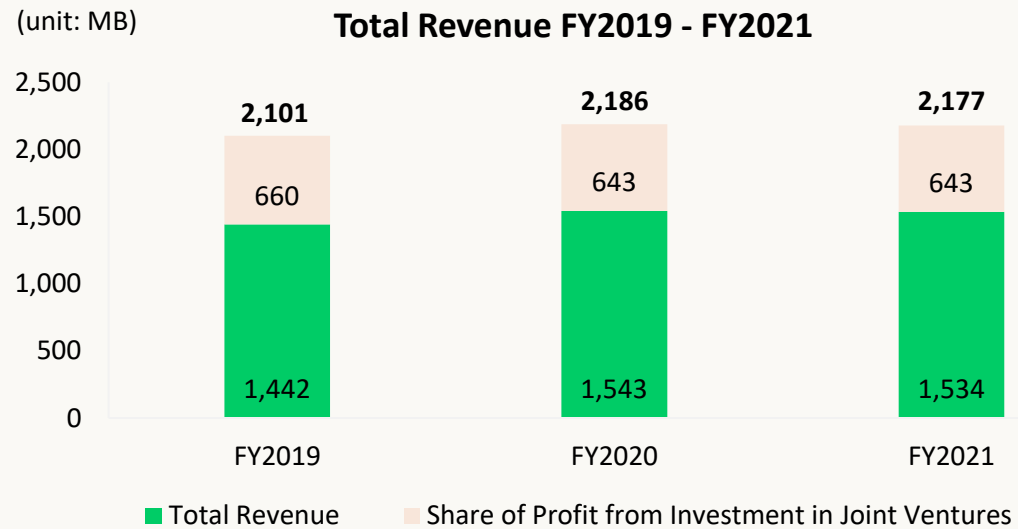
Disposal of 100% investment interests in 6 solar farms (a total contract capacity of 8.24 MW). TSE earned a total enterprise value of **JP¥ 3,363 million** or approximately **THB 1,027 million** and recorded the profit in 3Q2021.



INCOME STATEMENT FY2021

Statement of Comprehensive Income	Consolidated (Unit: Thousand Baht)		
	FY2021	FY2020	% Change
Revenue			
Electricity Sales	1,474,750.9	1,483,356.8	-1%
Management Fee	49,327.1	47,092.2	5%
Total Revenue	1,524,077.9	1,530,449.0	0%
Cost of Sales and Services	(1,075,242.8)	(1,023,345.2)	5%
Gross Profit	448,835.1	507,103.8	-11%
Other Income	9,871.6	12,290.1	-20%
Other Gains (Losses)	87,087.2	(100,438.2)	-187%
Administrative Expenses	(348,776.1)	(302,580.0)	15%
Profit (Loss) before Interest Expense and Income Tax	197,017.9	116,375.7	69%
Finance Costs	(338,316.4)	(340,728.3)	-1%
Share of Profit from Joint Ventures	642,919.2	643,333.5	0%
Profit before Income Tax	501,620.7	418,980.9	20%
Income Tax Expenses	(8,635.5)	(174.2)	4856%
Net Profit from Operation	492,985.2	418,806.7	18%
Items that will be reclassified subsequently to profit or loss:			
Currency Translation Differences	14,285.5	311,585.0	-95%
Change in fair value of hedge derivatives	8,009.2	(8,120.0)	-199%
Total Comprehensive Income	515,279.9	722,271.7	-29%
Profit Attributable to:			
Owners of the Parent	492,706.0	421,428.5	17%
Non-Controlling Interests	279.2	(2,621.8)	-111%
	492,985.2	418,806.7	18%
Total Comprehensive Income Attributable to:			
Owners of the Parent	514,958.4	724,564.5	-29%
Non-Controlling Interests	321.6	(2,292.7)	-114%
	515,279.9	722,271.7	-29%

FINANCIAL HIGHLIGHTS FY2021

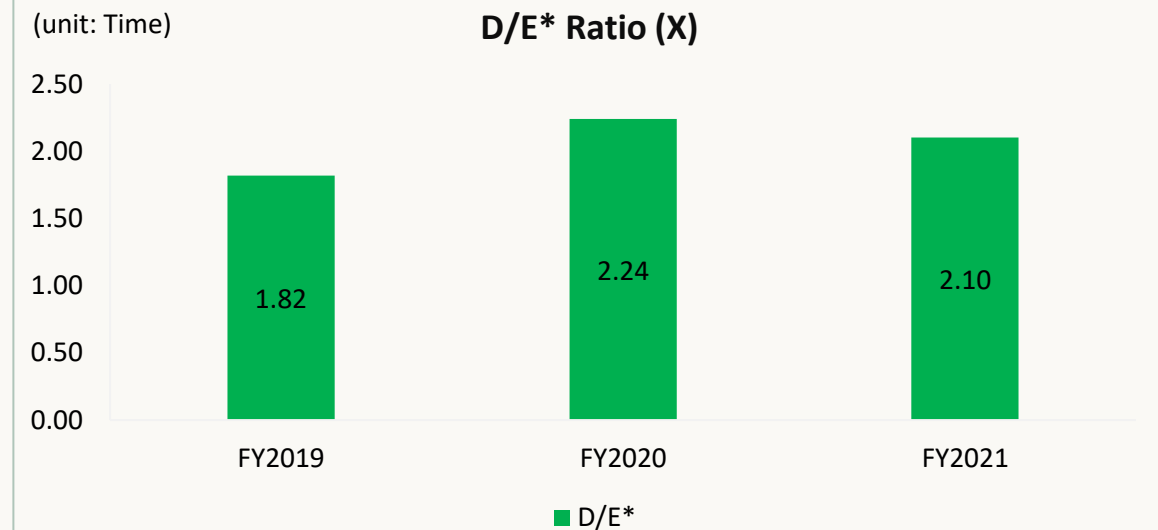
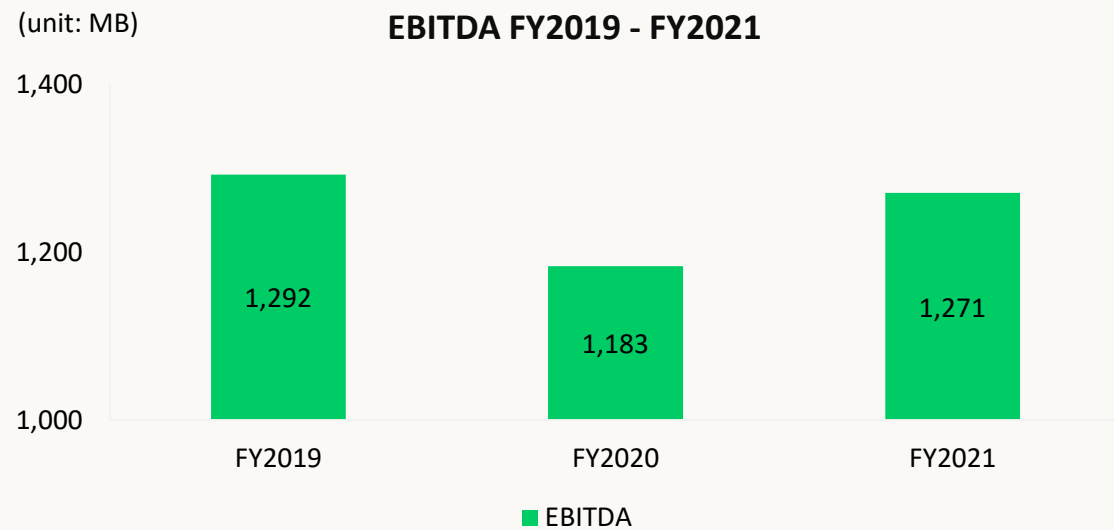


FY2021

Details

Total Revenue	YoY: -0.42%	Total revenue in the year 2021 was slightly decreased due to disposal of 100% investment in subsidiaries in Japan since September 2021, partially offset with increased from the Floating Solar project.
Share of Profit from JV	YoY: 0%	Share of Profit from JV in the year 2021 was consistent to the year 2020.
Net Profit	YoY: +17%	Net Profit in the year 2021 was increased due to the decrease in professional fee expenses and increase in extraordinary items which comprised of gain on disposal of investment in Solar Farms in Japan, increase of impairment in Thermal project, and decrease in loss from exchange rate.

EBITDA and D/E FY2021



FY 2021

Details

EBITDA

YoY: +7%

EBITDA in the year 2021 was increased due to improved operation performance in overall, a decrease in Finance Costs, and the increase in Other Gains (Losses).

D/E* Ratio

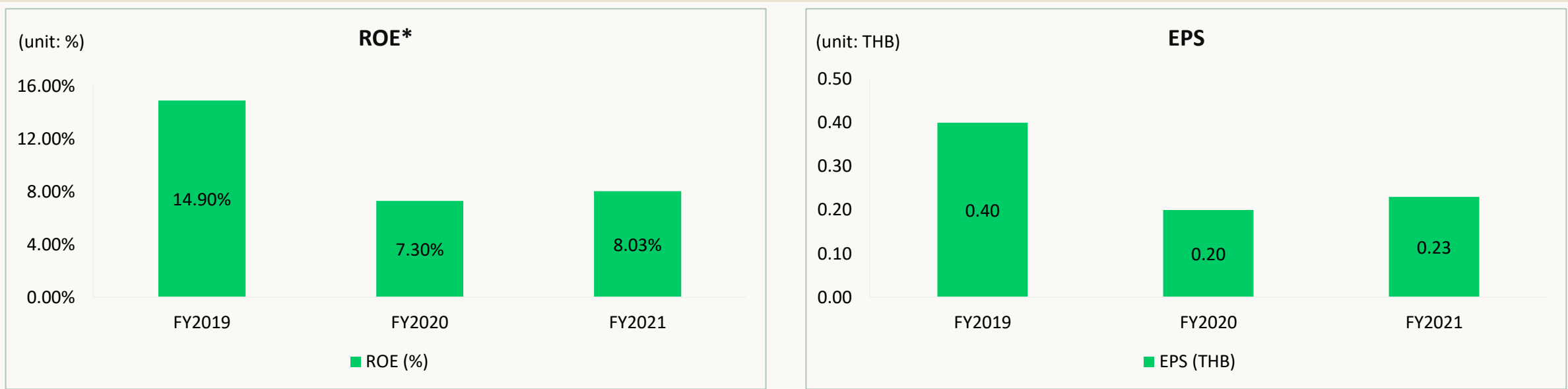
YoY: -6%

D/E* ratio in the year 2021 was decreased in relation to the increase in Net Profit from the increase in Other Gains (Losses).

Note:

*Average Equity attributable to owners of the parent

ROE and EPS FY2021

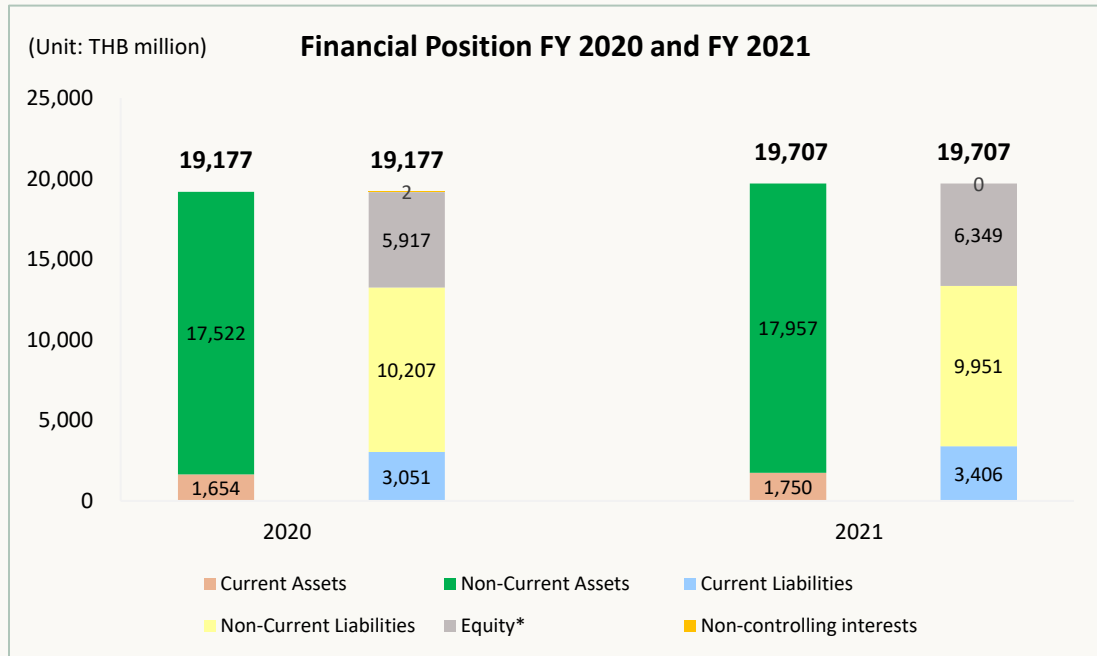


FY 2021		Details
ROE*	YoY: +10%	ROE* in the year 2021 was increased due to improved operation performance in overall and an increase in Net Profit.
EPS	YoY: +15%	EPS was increased as a result of the Net Profit in the year 2021.

Note:

* Annualized: ROE

FINANCIAL POSITION FY2021



FINANCIAL POSITION	FY2020	FY2021	+/- (%)
Assets	19,176.78	19,706.77	3%
Liabilities	13,257.45	13,357.39	1%
Equities*	5,917.30	6,349.38	7%
D/E* Ratio (times)	2.24	2.10	-6%

Note:

*Average Equity attributable to owners of the parent

Summary

■ Total Assets:

Increasing from 19,177 MB to 19,707 MB, or +3%.

■ Total Liabilities:

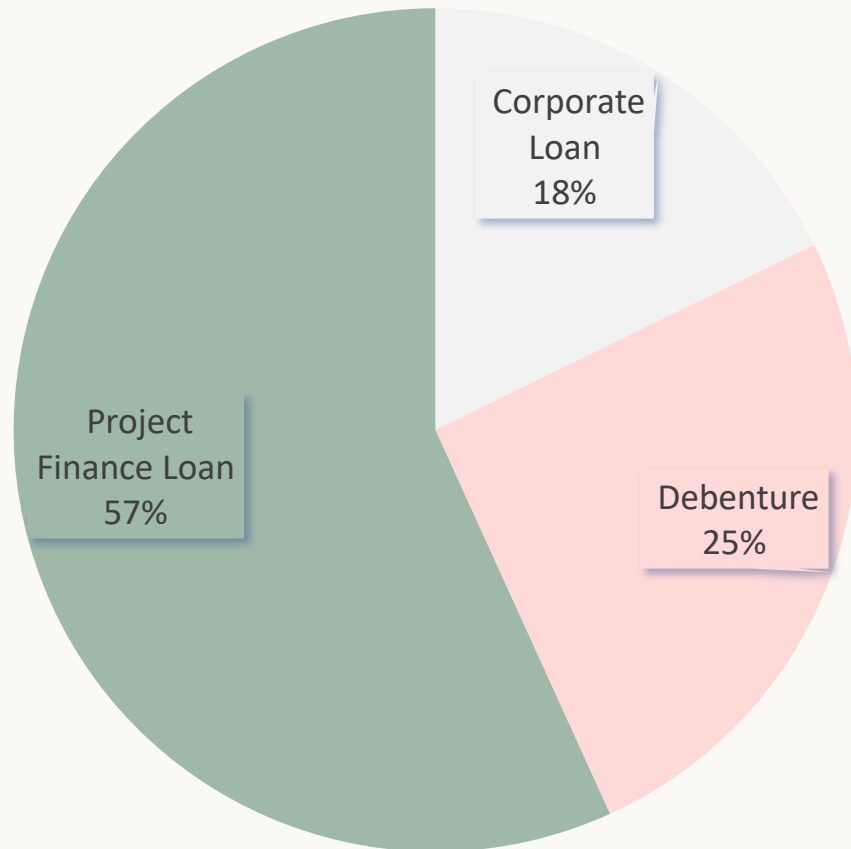
Increasing from 13,257 MB to 13,357 MB, or +1%.

■ Equity Attributable to owners of the parent:

Increasing from 5,917 MB to 6,349 MB or +7%.

For the year 2021, overall operating performance has been improved continually. Also, Net Profit was increased mainly due to the increase in Other Gains (Losses) of which helped increase in the Equity.

DEBT STRUCTURE



Summary

- Most of interest bearing debt from Project Finance Loan for 57%, increased from Onikoube Project Finance Loan drawdown.
- 26% of Project Finance Loan from COD projects decreased accordingly from schedule repayment.
- The remaining interest bearing debt from Corporate Loan and Debenture for 43% decreased from schedule repayment.

PROJECT UPDATE






Solar PV Farm “Onikoube”

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

Solar PV Farm “Onikoube”



The project construction progress has achieved 58% at the end of 2021. Module installation work, an erection of communication tower and grid tower construction work by the Utility was a major progress.



03 OUTLOOK

Summary of TSE's Business Outlook and
Investment Plan

OUTLOOK



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

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

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

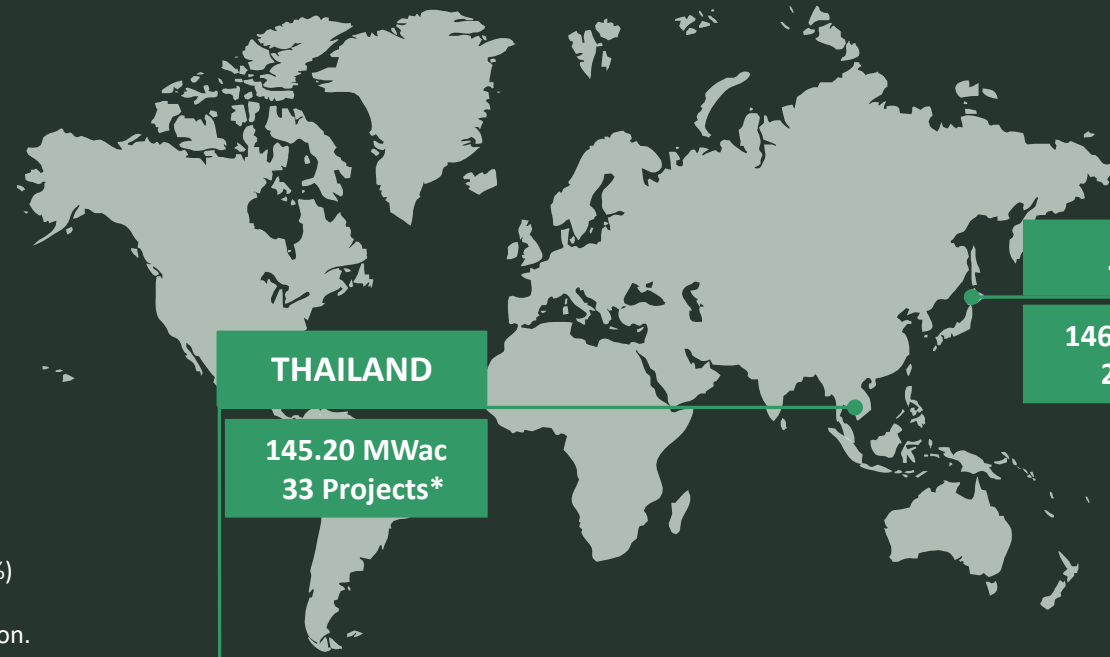
Totaling approx. 50 – 100 MW PPA



04 APPENDIX

Summary of TSE's Projects

TSE's PROJECTS



THAILAND

145.20 MWac
33 Projects*

JAPAN

146.50 MWac
2 Projects*

(As of 31 December 2021)

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

** 291.70 MW > 158.70 MWac are in operation.
> 133 MWac 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

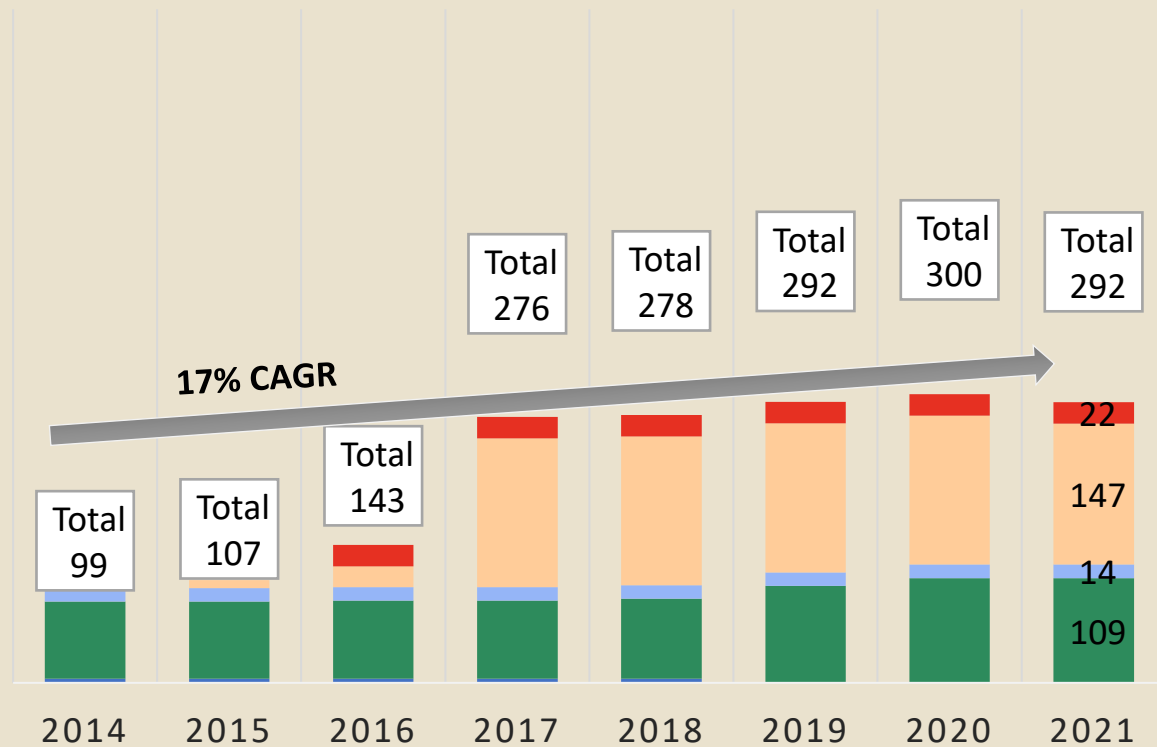
Solar PV Farms

146.50 MWac – 2 Farms

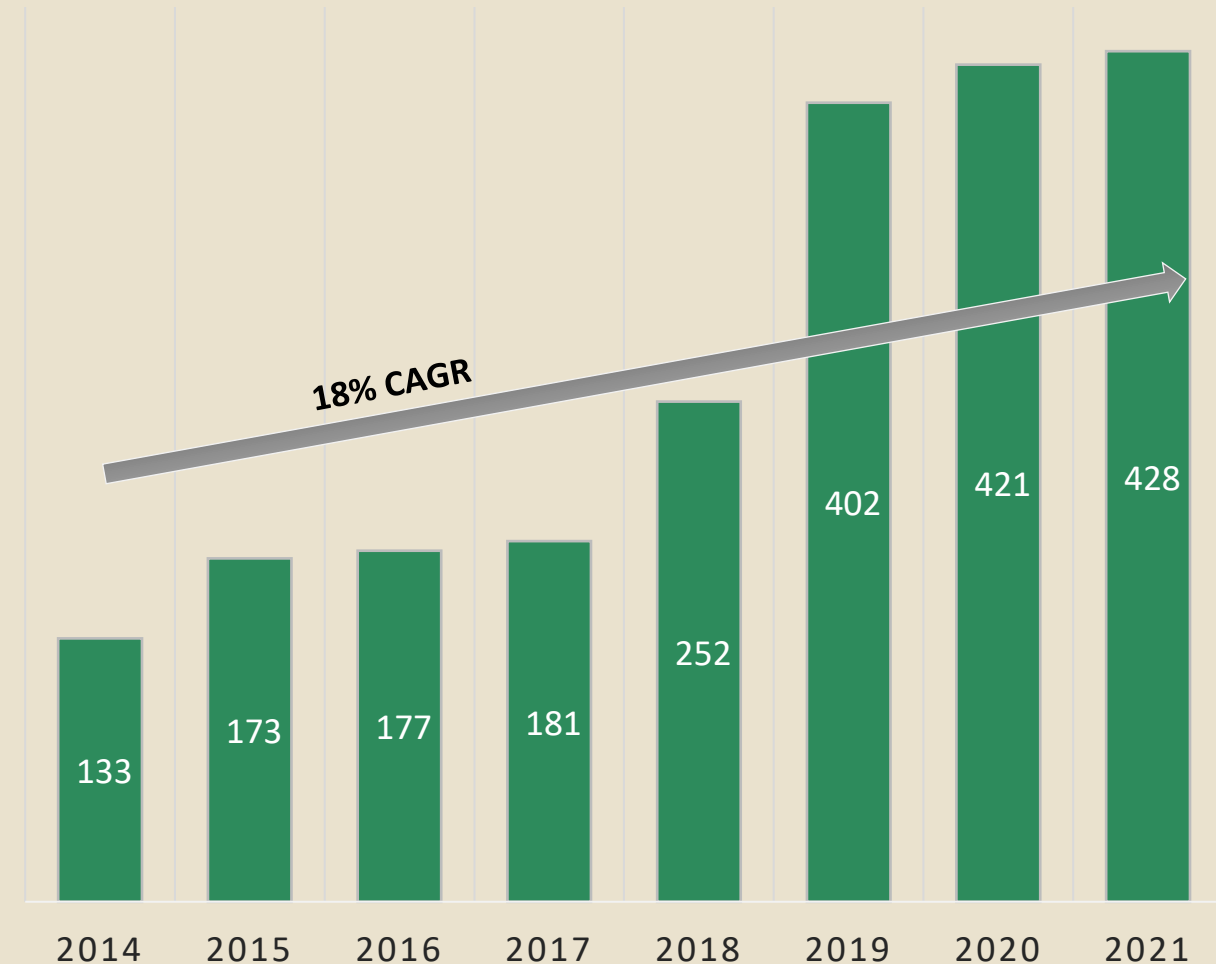
CAPACITY GROWTH

ACQUIRE CAPACITY (MW PPA)

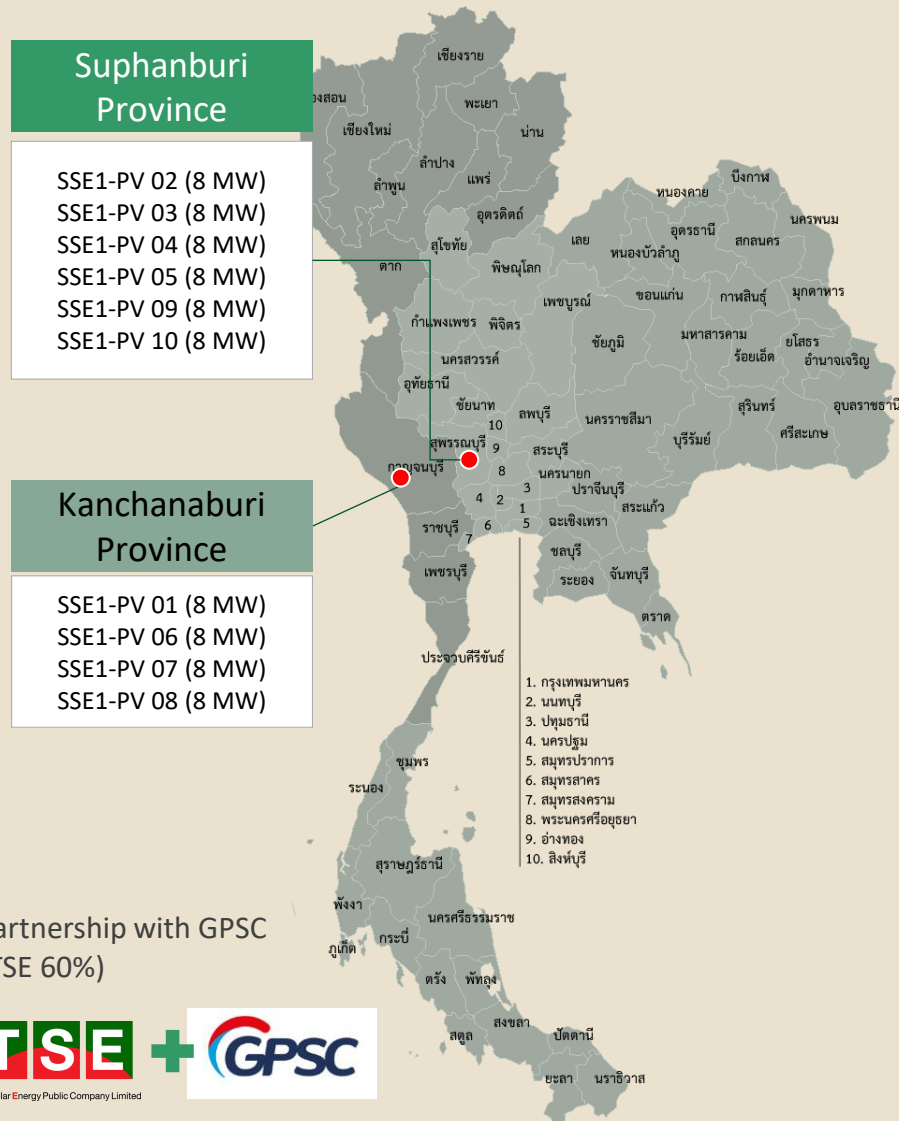
■ Thermal ■ Solar Farms ■ Solar Rooftops
■ Japan Solar Farms ■ Biomass Total



POWER OUTPUT PRODUCTION (MIL KWH)



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



Adder 6.5 THB/ kWh
(SSE1: PV01 – PV10)



SSE1-PV02 (8MW)
COD JUL 2013



SSE1-PV03 (8MW)
COD OCT 2013



SSE1-PV01 (8MW)
COD SEP 2013



SSE1-PV04 (8MW)
COD NOV 2013



SSE1-PV05 (8MW)
COD NOV 2013



SSE1-PV06 (8MW)
COD JUN 2014



SSE1-PV07 (8MW)
COD MAR 2014



SSE1-PV08 (8MW)
COD JUN 2014



SSE1-PV09 (8MW)
COD APR 2014



SSE1-PV10 (8MW)
COD MAY 2014

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



FiT
5.66
THB/ kWh

SLC (1MW)
COD DEC 2016

INS (2MW)
COD DEC 2015

FiT
4.12
THB/ kWh

BSS (5MW)
COD DEC 2016

EES (5 MW)
COD DEC 2018

Adder
8 THB/ kWh

SSP (8MW)
COD MAR 2013

Private PPA

Floating Solar PV Farm (8MW)
COD MAY 2021

FLOATING SOLAR PV FARM (THAILAND) : 8 MWac



Prachinburi Province
STF (8MW)



Private PPA 25 Years

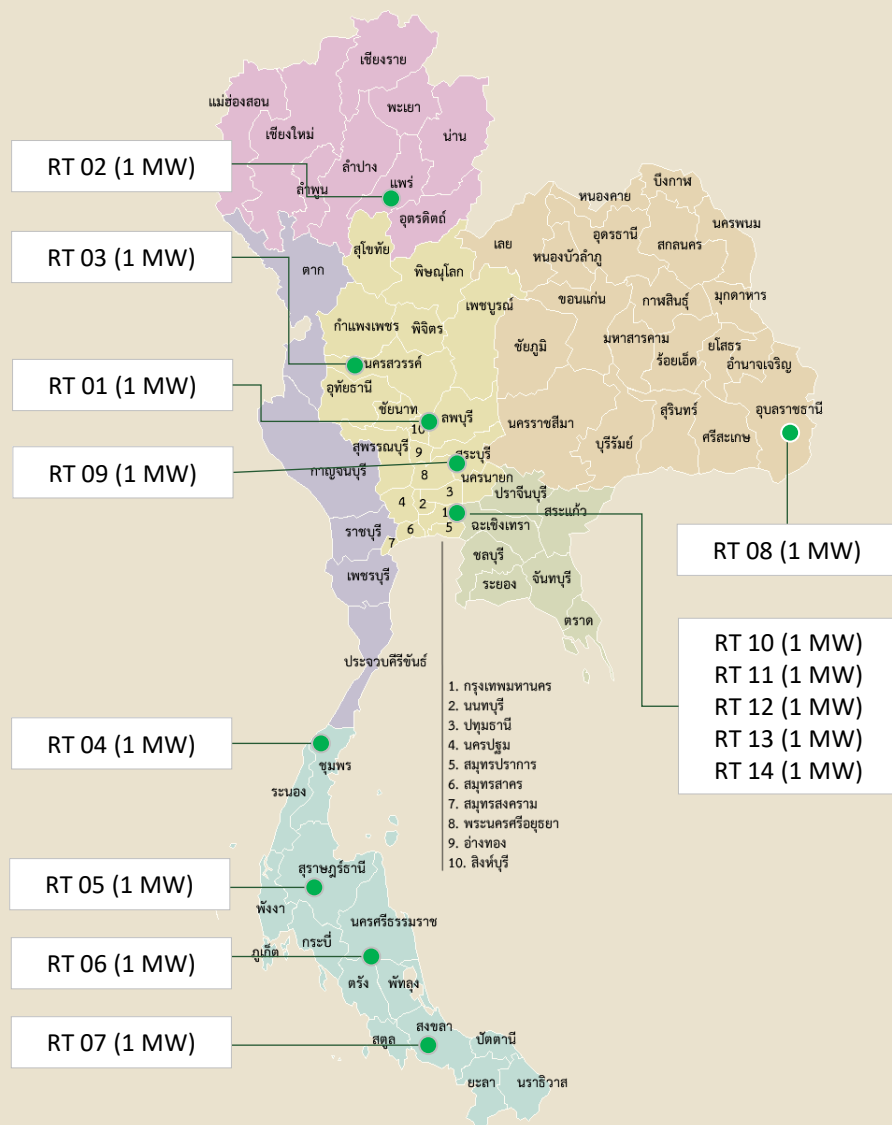
Summary of “Siam Tara Floating” 8 MWp Project

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



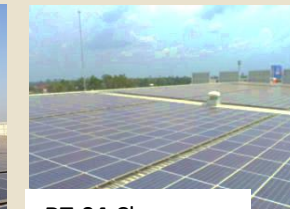
RT-01 Lopburi
COD SEP 2014



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



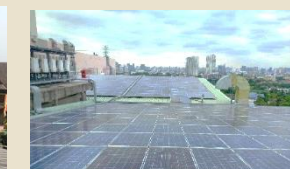
RT-11 Ratchapruek
COD NOV 2014



RT-12 Thapra
COD JUL 2015



RT-13 Bangkok
COD JUL 2015

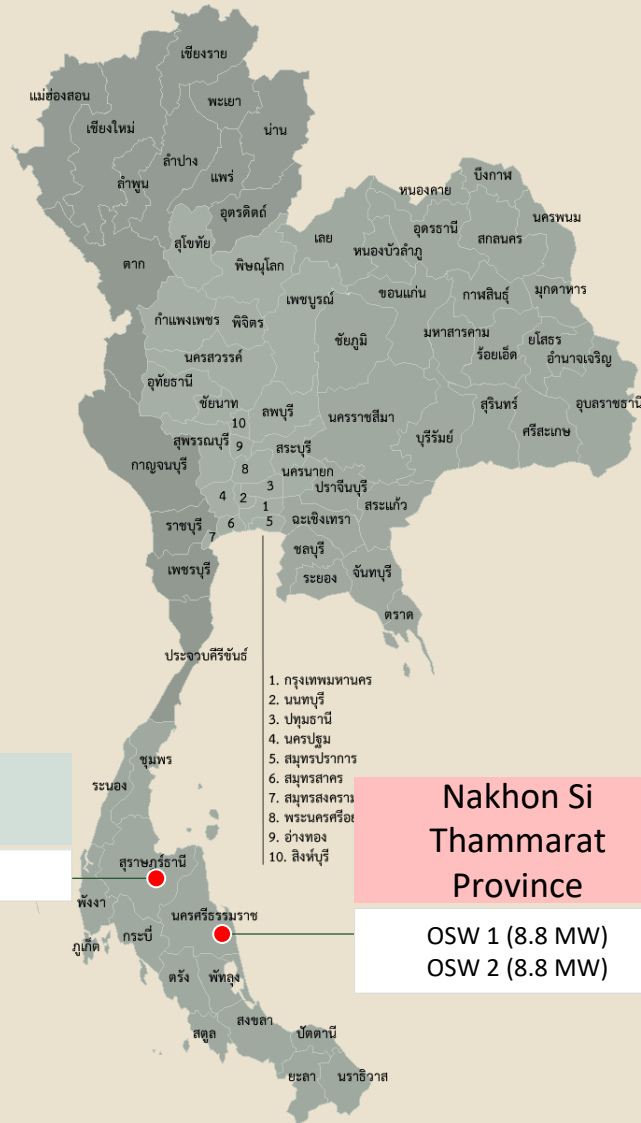


RT-14 Ngamwongwan
COD AUG 2015

Note: Partnership with
The Mall + HomePro



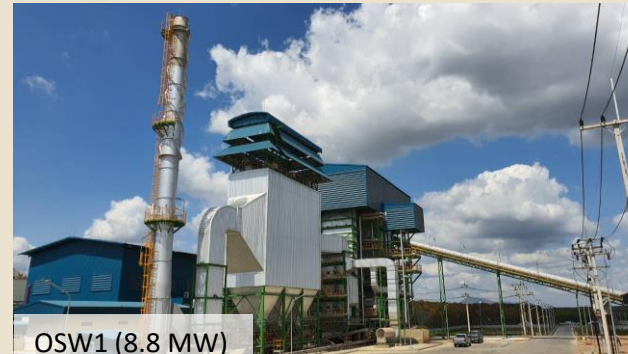
BIOMASS (THAILAND): 3 Projects (22.2 MWac)



FiT
4.24 Baht +
Premium 0.30 THB
(8 years)



BSW (4.6 MW)
COD MAR 2018

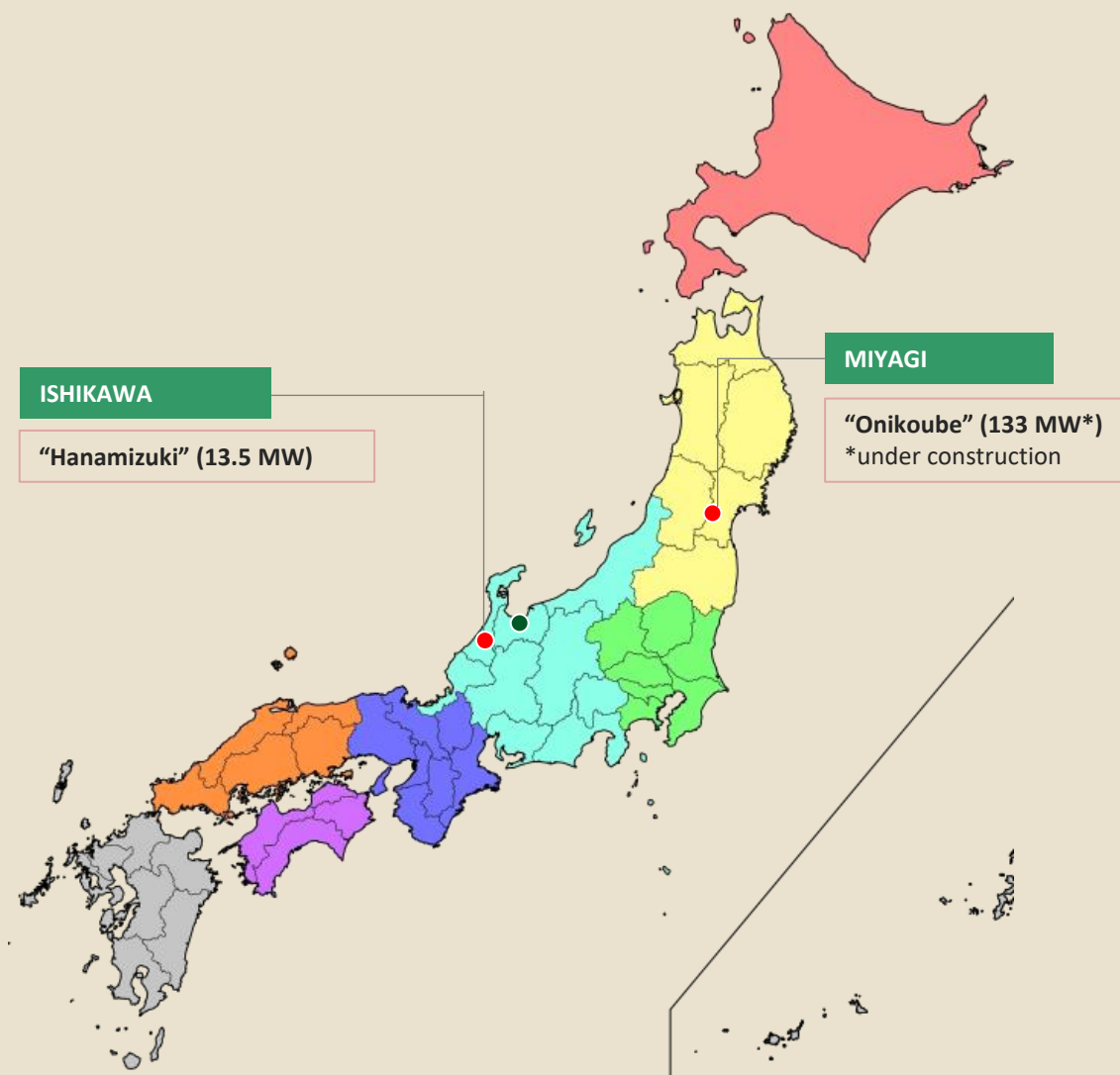


OSW1 (8.8 MW)
COD AUG 2018



OSW2 (8.8 MW)
COD OCT 2018

SOLAR PV FARMS (JAPAN) : 2 Projects (146.50 MWac)



As of December 31, 2021

FiT
36 JP¥/ kWh

Hanamizuki (13.5 MW)
COD JAN 2019

Onikoube (133 MW)*
SCOD 4Q2022



Thai Solar Energy Public Company Limited

THANK YOU

March, 2022