

RENEWABLE ENERGY MARKETS ASIA 2024 PANEL DISCUSSION

MARKET SPOTLIGHT: JAPAN



Kae Takase
Senior Coordinator
Renewable Energy Institute (REI)



Jules Chuang
Co-Founder & Director
Mt. Stonegate Green Asset Management

Monday, 29 April 3:30-4:00 PM





自然エネルギー財団

RENEWABLE ENERGY INSTITUTE

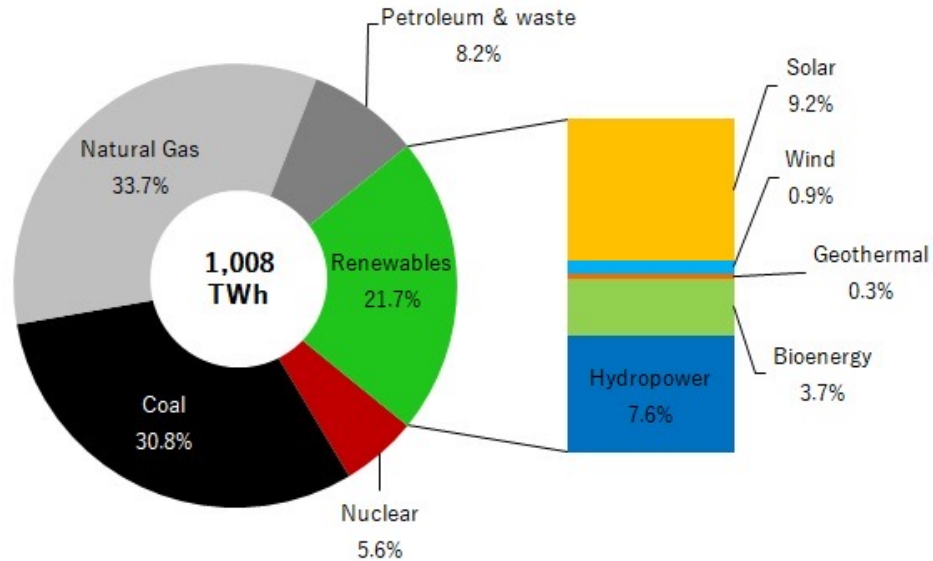
Renewable Electricity Procurement in Japan

Kae Takase
Senior Coordinator
Renewable Energy Institute (REI)

Electricity and RE ratio in Japan (FY2022)

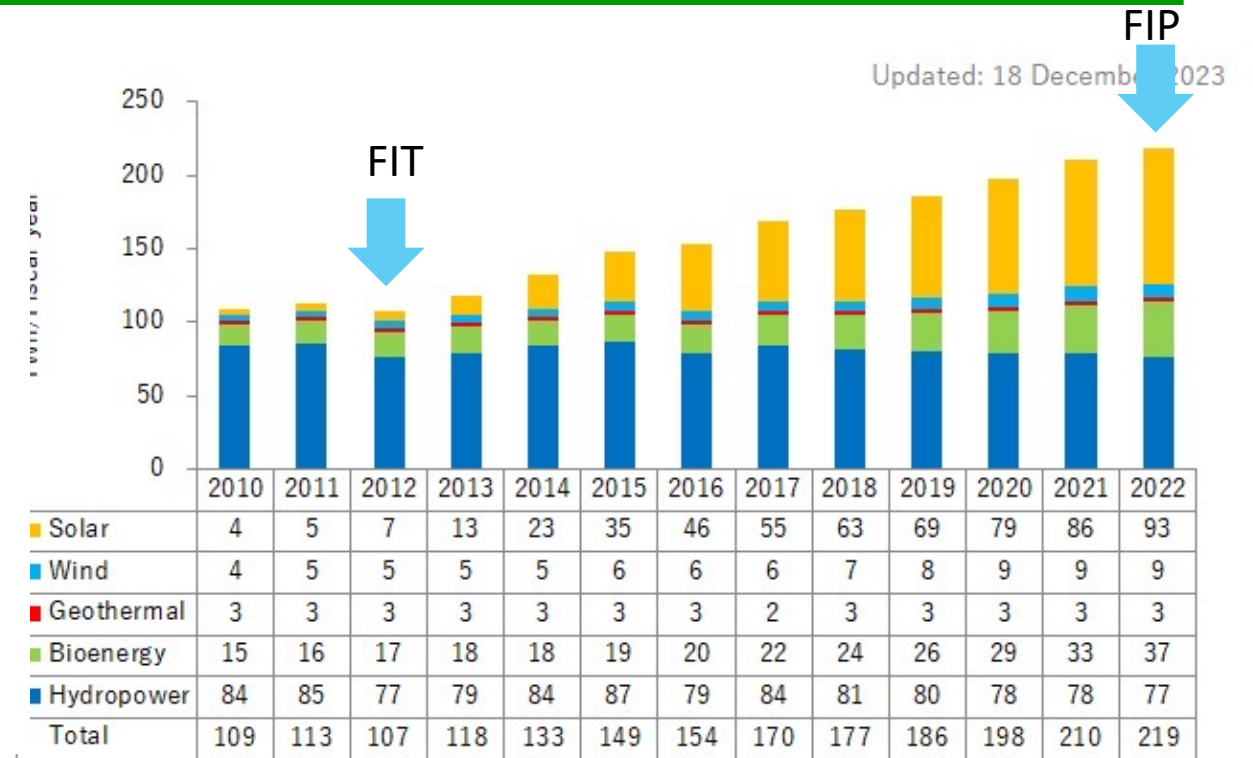
< FY2022 (preliminary) >

Updated: 18 December 2023



Source: METI/ANRE "Total Energy Statistics"

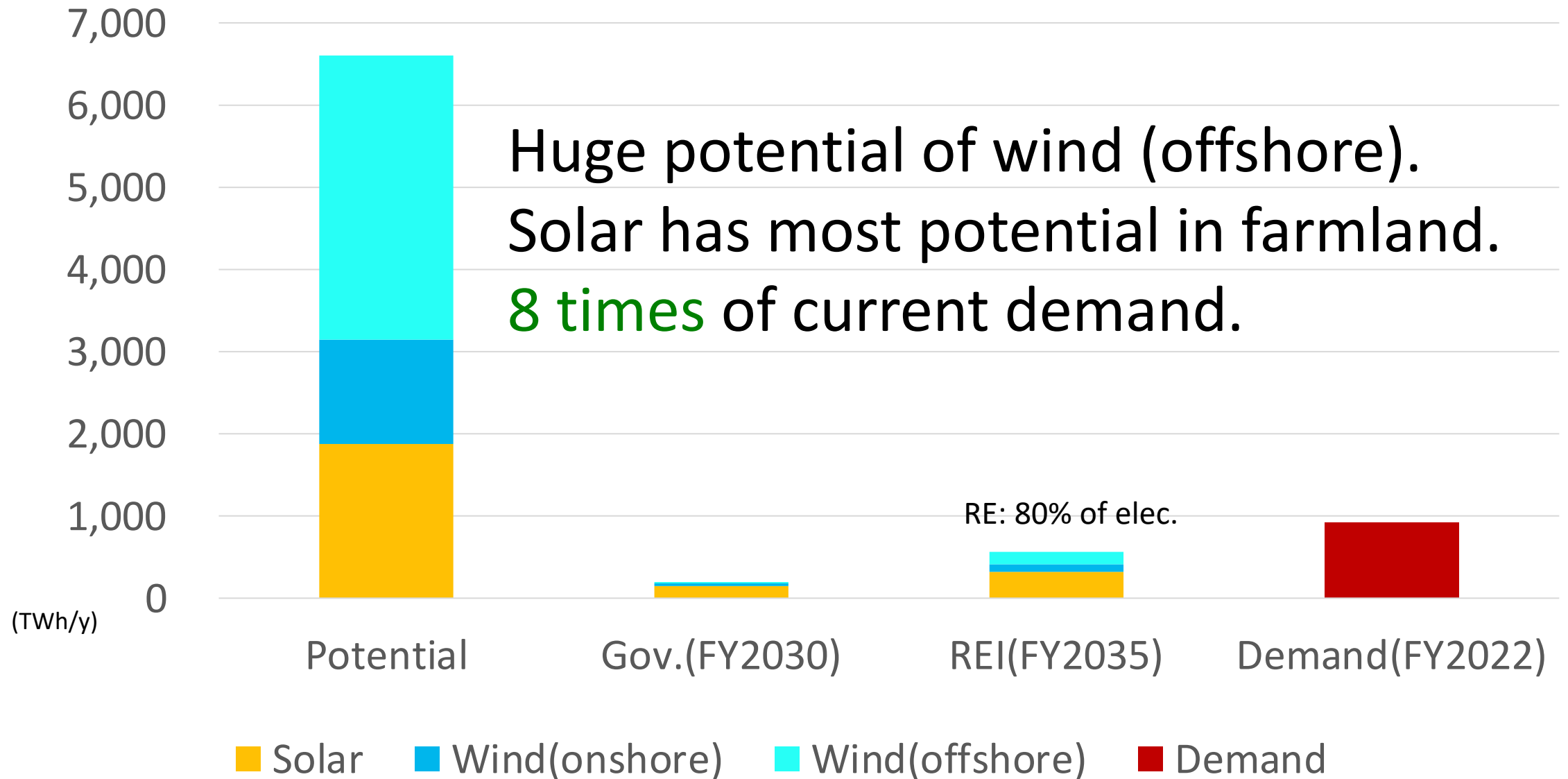
Updated: 18 December 2023



Source: METI/ANRE "Total Energy Statistics"

- Renewable electricity increased since FIT started in 2012.
- Solar PV lead the increase of RE in Japan.
- Japan has less wind power, but huge offshore potential.

RE potential in Japan

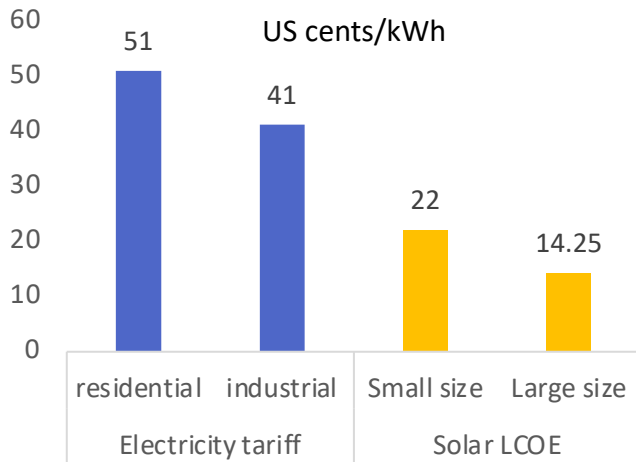


Recent Topics around RE in Japan

Solar PV



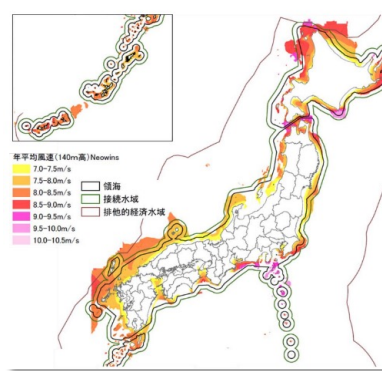
Cost Competitive!
Local Opposition
High Curtailment Rate



Wind



Offshore Potential is recognized
New Law enabling EEZ development
Local opposition for onshore
National support scheme undeveloped
Low target (36-38 RE in 2030)



FIT → FIP

Good:

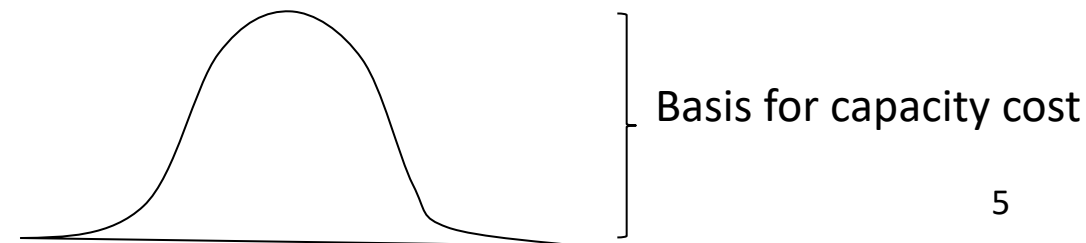
- Unlike FIT, Generators can retain attributes (EACs).
- Generator can still receive support.
- Incentives to sell at higher price (w/batteries).

Bad:

- Premium will be decided by complex calculation, therefore difficult to predict (harder for investors).

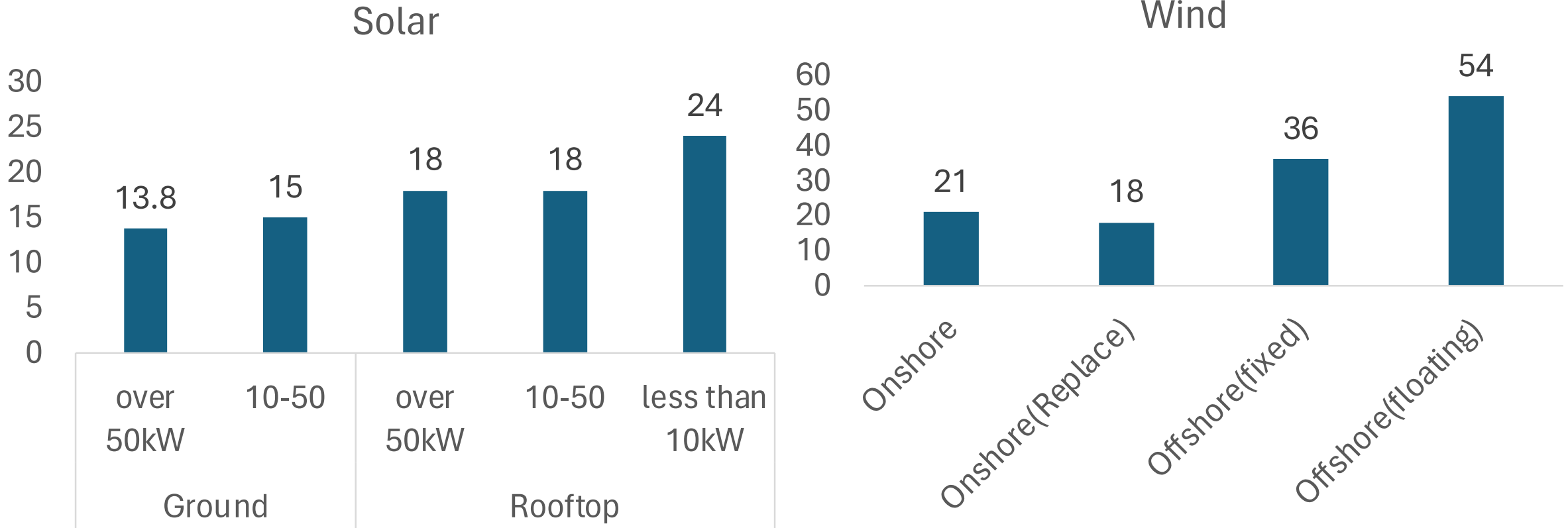
Electricity Market Reform, against solar PV

- In FY2024, new charge will be imposed.
 - A part of wheeling fee to generators (10% of wheeling fees)
 - Capacity costs to retailers
- Capacity costs will be calculated by the peak, therefore solar PV will be charged high fees per kWh.



FIP/FIT reference price (US cents/kWh)

Still high support for wind power.

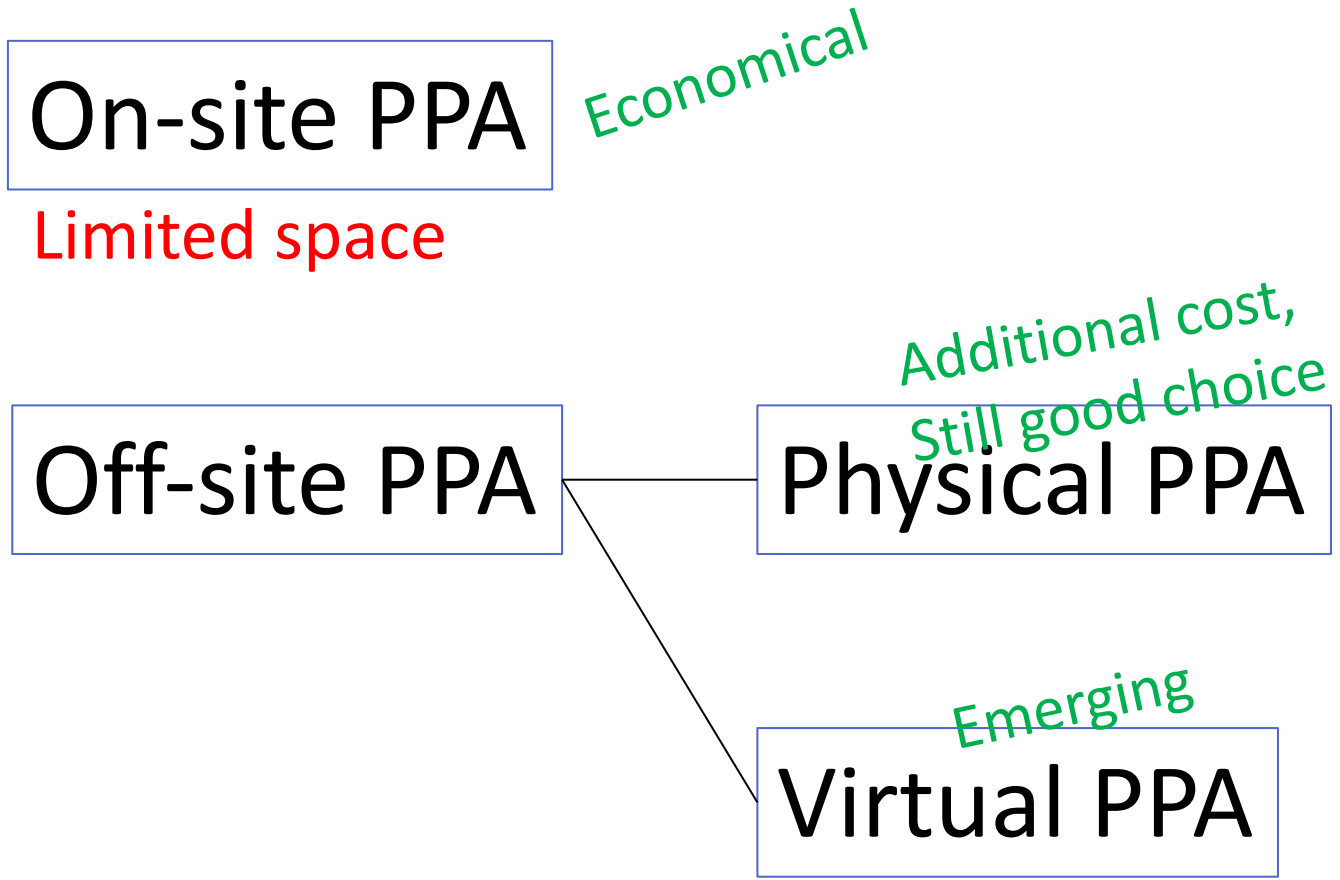


FIT/FIP reference price for FY2024.

Auction for over 50kW Solar PV and wind (expect for floating offshore).

Applied 150 yen/USD.

PPA in Japan: Increasing for solar, possible for offshore wind



Solar PV

Economical: No FIT surcharge, wheeling fee, capacity charge.

Solar PV

Additional cost: FIT surcharge, wheeling fee, capacity charge.
Getting matured.

Solar PV, offshore wind

Emerging!: EACs (NFCs) can be directly contracted between generators and consumers.
(still can receive **FIP support**)
Accounting rule not yet decided.

See [REI's latest CPPA info-pack\(2024\)](#) for further information

Grid electricity

Self-consumption

Mostly NFCs
Can choose to issue GEC, I-REC, J-credits

GEC
J-Credits
I-REC

I-REC, also to supplement NFCs' shortcomings

- A) Where there is **no other EACs** issued.
- B) NFCs are issued, but **no detailed information are tracked**.
- C) NFCs are issued, tracking information by the government is provided, however there is a **need to prove cancellation under a robust tracking system**. (I-REC must be issued with the same attributes as corresponding NFCs.)

		Non-FIT Renewables		FIT Renewables	
		No NFC issuance	NFC issued	Bilateral contracts	General (no bilateral)
Grid connected		Subject of issuance (2) A)	Subject of issuance (3) B), C)	Subject of issuance (4) C)	
	Self-consumption, self-delivery	No I-REC issuance where GEC/J-Credit are issued			
	Subject of issuance (1)				

Note: For FIT-NFC, all NFCs have detailed information, therefore only C) is applicable. For non-FIT where NFCs are issued, there are NFCs both with and without detailed information. For latter, B) is applicable. For the ones with detailed information, C) is applicable, and I-REC issuer will make sure the attributes of NFCs and I-REC match.

*Facilities under subject to issuance (3), which are sold to the wholesale power market and for which NFCs with tracking information have been issued, are excluded from the scope of I-REC issuance.

Renewable Electricity Tracking/Certification Schemes in Japan

EACs: Energy Attribute Certificates

	2018-		2001-	2013-	2023-
	NFC(FIT): (Non-fossil Certificates)	NFC(non-FIT): (Non-fossil Certificates)	GEC: (Green Energy Certificates)	J-Credit (renewable):	I-REC
Feature	Standard certificates. Less additionality.	Emerging, but small amount. Can receive FIP support. Only elec. retailers can purchase.	Classic EACs in Japan. Manually managed , small amount.	Less expensive, mostly household solar PV, self-consumption.	Emerging. Favored by international companies for RE100/SBT/CDP purpose. Not recognized for national GHG reporting.
Issuer	Government	Government	Registered issuer	Government	Local Good
Original intention /History	Auction scheme for “non-fossil” ratio regulation, currently cannot used toward the target achievement	Auction scheme for “non-fossil” ratio regulation	Energy Attribute Certificates	Carbon credits	Energy Attribute Certificates
Cancellation	Expire within fiscal year	Expire within fiscal year	Yes	Yes	Yes
Transaction	Auction @JEPX only (quarterly), Multi-price	Auction @JEPX only (quarterly) Single-price	Bilateral	Auction, bilateral	Bilateral, market place (platform)
Issuance Amount	121 TWh(FY2022)	100 TWh(FY2022)	0.43 TWh (FY2022)	1.19 TWh* (FY2022)	0.193 TWh (FY2023)
Price	JPY 0.4-4.0/kWh (FY2023)	JPY 0.6-1.3/kWh (FY2023)	JPY 2-4/kWh for volume purchase	JPY 1.4/kWh (Ave. May 2023 auction)	Undisclosed

* The issuance amount is not disclosed. J-Credits are issued when available for sale after the certification.

Source: Compiled by author using information from [“Renewable Electricity Procurement Guidebook, 2024 Edition” by REI \(January, 2024\)](#), Local Good, etc.



Mt.Stonegate

石門山綠資本 · 石門山新電力
Green Asset Management · Novel Power



Practical Perspectives on Japan Renewable Energy Market

Jules CHUANG Managing Director

Mt. Stonegate Green Asset Management Ltd. April

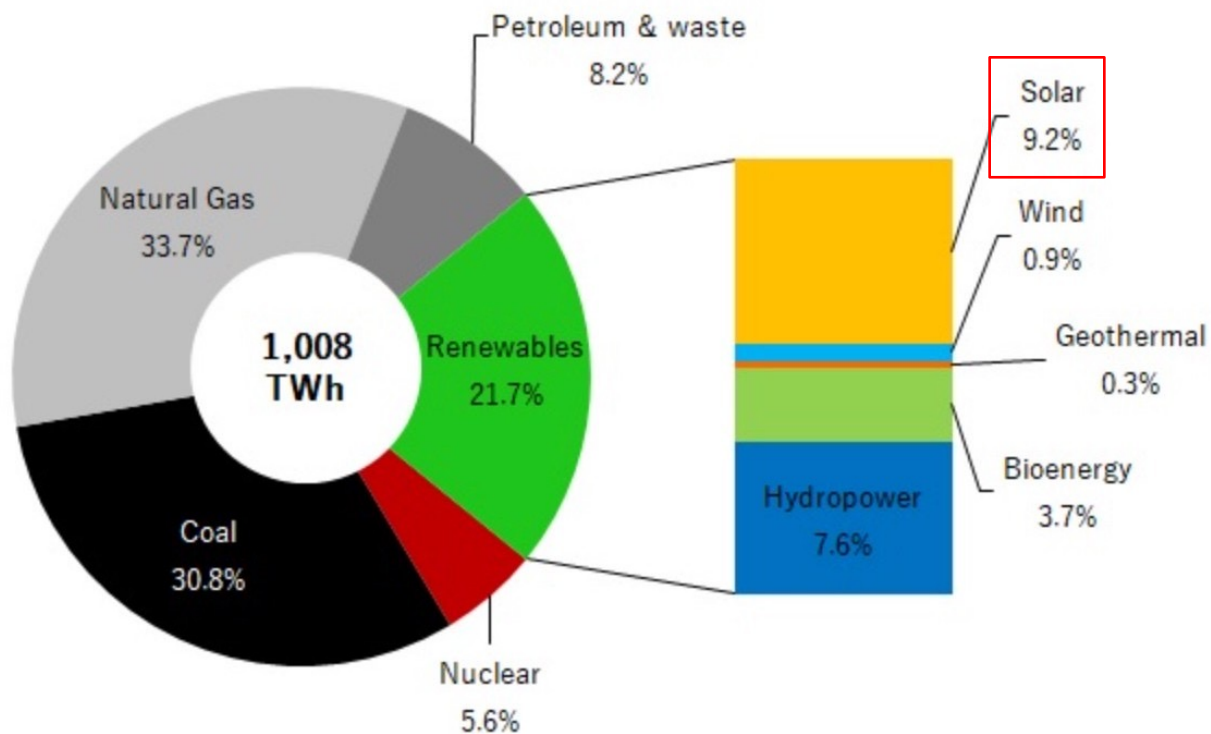
2024

Market Overview

Japan Electricity Generation in FY 2022

< FY2022 (preliminary) >

Updated: 18 December 2023



Source: METI/ANRE "Total Energy Statistics"

Picture made by REI

Share of RE (FY22)

21.7%

↑ 1.4% FY21

Renewable Supply (FY22)

218.7 TWh



Market Tools: Self-generation, PPA, VPPA

Source: <https://project.nikkeibp.co.jp/ms/atcl/19/news/00001/02860/?ST=msb>

Onsite PPA: Low-cost Renewable Energy

Significant growth of Onsite PPA in market due to low-cost of solar

-Nikkeibp

- ✓ Price lower than the rising regular tariff
- ✓ Less time-consuming and lower risk



Source: <https://www.fuji-keizai.co.jp/press/detail.html?cid=23129&la=ja>

VPPA Set to Be Market's Hot Topic

By 2040, there will be over 600

VPPAs

– Fuji Keizai Group

- ✓ Stable access to renewable energy
- ✓ Flexibility and unrestricted by geography
- ✓ RE100 members actively signed VPPAs



Solutions	RE100 /CDP	Accessibility	Transaction Cost	Difficulty
Self Generation & On-Site PPA	✓	★ ★ ☆ ☆ ☆	\$	Limited Space
Offsite PPA	✓	★ ☆ ☆ ☆ ☆	\$\$	Location, Grid
VPPA	✓	★ ☆ ☆ ☆ ☆	\$\$	Market Opportunity

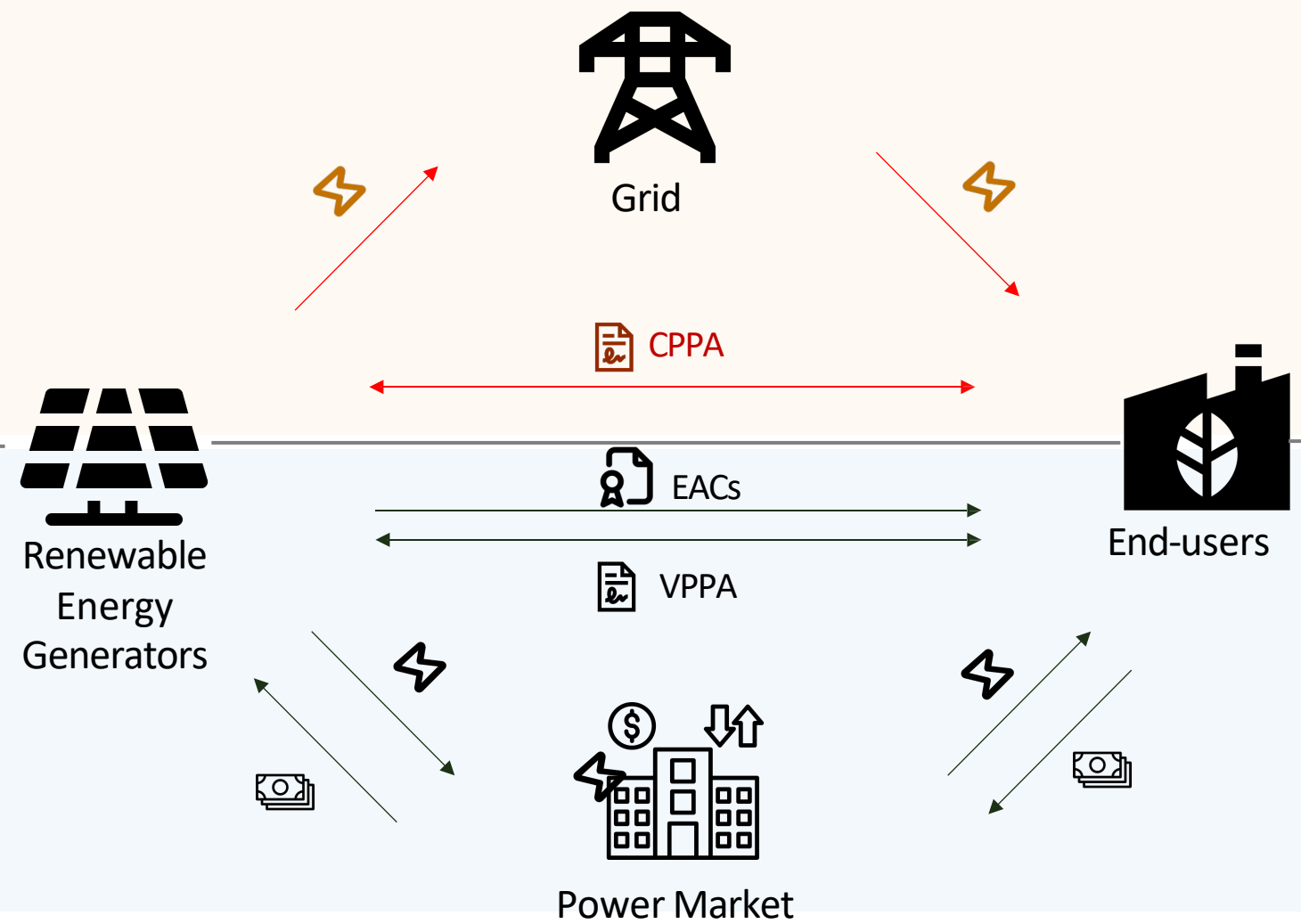
PPA Scheme

CPPA

End-users purchase electricity from the Generators/Retailers

VPPA

- Generators sale electricity to market and transfer EACs to End- users
- End-users purchase electricity from the market





Market Tool: RECs

December 17, 2019



ITOCHU Announces Full Switchover to Real CO2-free Electricity at Tokyo Head Office

ITOCHU will source its real CO2-free electricity, together with Non-Fossil Fuel Energy Certificate showing the environmental value of not emitting CO₂. ... can also be used to prove compliance with "RE100" in response to the global trend towards decarbonization.

Data Fact Sheet 2022



Microsoft procures and uses renewable energy from J-Credits

Microsoft captures the impact from on-site generation, PPAs, and green power products **to support** our progress against our commitment to **have 100 percent direct renewable electricity** by 2025.



Emphasizing high-quality RECs



Solutions	RE100/ CDP	Accessibility	Transaction Cost	Challenge
FIT-NFC, Non-FTT NFC (renewable)	✓	★★★★★	\$\$\$	Price fluctuation
J-Credit	✓	★★★★☆	\$\$\$	Price fluctuation
GEC	✓	★★★☆☆	\$\$\$\$	Limited supply
I-REC	✓	★★★☆☆	\$\$\$\$	Limited supply
Green Product	✓	★★★★★	\$\$\$\$	Price fluctuation

Case Study: Murata



INNOVATOR IN ELECTRONICS



Characteristics

- Large electricity consumption scale
- 45 operating sites in Japan, geographically dispersed



Demand

- 100% RE usage by 2050
- 2,665,000 MWh consumption in 2022 (23.7% RE)



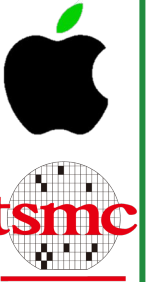
Strategy

Japan	VPPA, RECs(NFC), self-generation
Global	On-site PPA, RECs, self-generation

- ✓ Utilize large quantity of VPPA (130MW) to achieve RE target without geography limitation across different operation sites

⚡ QUICK READ • March 13, 2024

Apple expands innovative Restore Fund with TSMC and Murata



Today Apple welcomed key manufacturing partners TSMC and Murata Manufacturing as new investors in the Restore Fund, which is designed to scale global investment in high-quality, nature-based carbon removal

Case Study: Panasonic

Panasonic



Characteristics

- **Large** electricity consumption scale
- Multiple factories own **large rooftop areas**



Demand

- 100% RE usage by 2030
- 4,666,239 MWh consumption in 2022 (11.2% RE)



Strategy

Japan	RECs(NFC), J-Credit, on-site PPA, self-generation
Global	RECs (I-REC) , on-site PPA, self-generation

- ✓ Utilizing every space effectively for solar energy, including **on-site PPA and self generation**

Solar panel at Youkaichi site



Source:Panasonic

Expand Brand's Green Impact

Panasonic GREEN IMPACT

31 Plants* achieved Zero CO₂ status**

#PanasonicInNumbers

*Achieved by 22 plants in FY23: Japan (8), China & NEA (6), SEA/Oceania/India/South Asia/Middle East (3), North & Latin America (4), and Europe & CIS (1). Nine plants achieved this status in FY22.
**Zero-CO₂ plant: Facility achieving net-zero CO₂ emissions by promoting energy conservation, introducing renewable energy, utilizing carbon credits, etc.

31 plants have achieved “Zero CO₂” by **self-generation, on-site PPA, RECs and Carbon Credits**

Source: Panasonic

Case Study: Sekisui House



SEKISUI HOUSE



Characteristics

- Have a **large homebuyers base**
- Electricity consumption is not primary emission source



Demand

- 100% RE usage by 2040
- 110,134 MWh consumption in 2022 (55.1% RE)

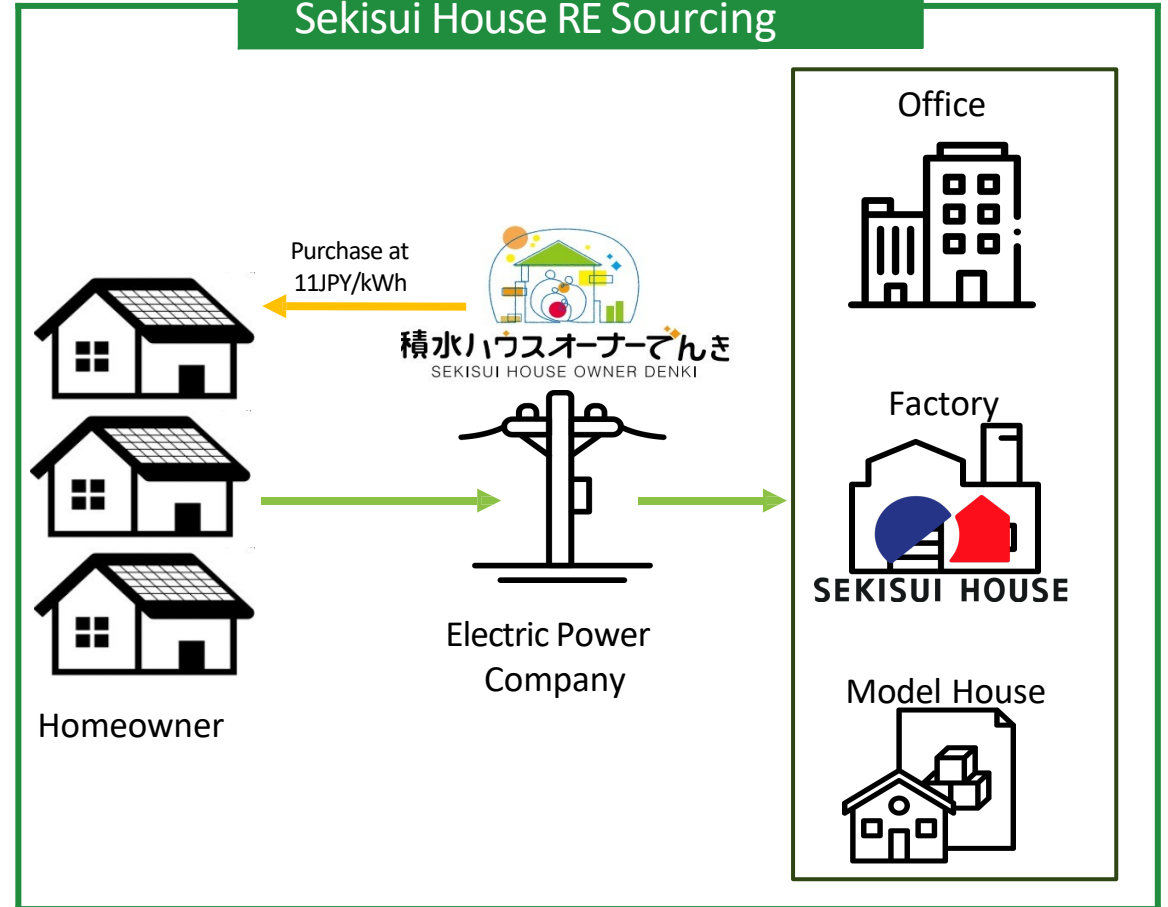


Strategy

Japan	Purchase post-FIT rooftop solar from customers (unit price:11 JPY/kWh)
-------	---

- ✓ Acquiring **surplus electricity** from customer rooftops solar energy
- ✓ Creating **new business models** to expand corporate influence

Sekisui House RE Sourcing



Source: Sekisui house value report,
https://www.sekisuihouse.co.jp/english/company/release/topics_2023/20230426_en/



Market Insight

Solutions	RE100 / CDP	Accessibility	Transaction Cost	Challenge
Self Generation & On-Site PPA	✓	★★☆☆☆	\$	Limited Space
Offsite PPA	✓	★☆☆☆☆	\$\$	Location, Grid
VPPA	✓	★☆☆☆☆	\$\$	Market Opportunity
FIT-NFC, Non-FIT NFC(renewable)	✓	★★★★★	\$\$\$	Price fluctuation
J-Credit	✓	★★★★☆	\$\$\$	Price fluctuation
GEC	✓	★★★☆☆	\$\$\$\$	Limited supply
I-REC	✓	★★★☆☆	\$\$\$\$	Limited supply
Green Product	✓	★★★★★	\$\$\$\$	Price fluctuation

Contact us



Taichung / Taiwan

8F-1, No.925, Sec. 4 I'aiwan Blvd.,
Xitun Dist., I'aichung City 407205,
I'aiwan

☎: +886 4 2358 5129

Shanghai / China

6F-632, I'6 Cíystal Plaza, Jiangyao
Rd., Pudong Dist., Shanghai 200126,
P.R. China

☎: +86 21 6259 8238

Tokyo / Japan

2nd Yamauchi Building, 3-23-12
Nishi-shimbashi Minato-ku,
I'okyo 105-0003,
Japan

☎: +81 3 5777 5283

Jakaíta / Indonesia

15F, Agung Sedayu Gíoup I'oweí,
Jl. Pantai Indah Kapuk Blvd. No.1,
Noíth Jakaíta 14470, Indonesia

☎: +62 21 5088 6375

Chennai / India

Regus Business Centíe, 6F, 10/11
Dí. Radhakiíshnan Salai, Mylapoíe,
Chennai 600004, India

☎: +91 44 4221 8077

RENEWABLE ENERGY MARKETS ASIA 2024 PANEL DISCUSSION

MARKET SPOTLIGHT: JAPAN



Kae Takase
Senior Coordinator
Renewable Energy Institute (REI)



Jules Chuang
Co-Founder & Director
Mt. Stonegate Green Asset Management

Monday, 29 April 3:30-4:00 PM



SINGAPORE

29 - 30 APRIL 2024



**Renewable Energy
Markets Asia 2024**

Small Group Discussions

- 1 Driving Renewable Energy Adoption Among Your Suppliers:** Scott Martin, VP Head of Global Commercial Business, 3Degrees
- 2 Enabling Distributed Solar Across Asia:** Guai Ti Howe, Chief Financial Officer, REDEX
- 3 Green-e® Certification in Asia and Beyond:** Alex Pennock, Senior Director, CRS
- 4 Procurement with Purpose:** Ricky Buch, Founder, PowerTrust
- 5 Clean Energy Accounting Project:** Todd Jones, Principal, U.S. Markets, CRS
- 6 Renewable Energy Updates for the Philippines:** Mylene Capongcol, Assistant Secretary, Department of Energy, Philippines
- 7 Why Is It Challenging to Source Renewables in Taiwan? What Strategies Can We Employ:** Lynn Hsiao, Assistant Project Manager, Mt. Stonegate

Small Group Discussions

- 8 Megatrends, Challenges, and Strategies of Renewable Energy Purchase in the Asia Pacific:** Kelvin Li, Director of Corporate Energy Solutions, CLP Holdings Ltd.
- 9 Buyer Cohorts: Joint PPA Opportunities and Challenges in APAC:** You Jie (Jessie) Cai, Corporate Renewable Energy Analyst, Apala Group
- 10 Issues and Market Potential in the Formation of Corporate PPA Schemes in Japan:** Seiya Miyake, President & Representative Director, Renewable Energy Promoting Organization (REPO)
- 11 Onsite PPA Realities: Exploring RECs as a Solution to Limitations:** Diana Sukor, Environmental Certificates Originator iRECS, and Maxim van Goethem, Head of EAC, APAC, STX Group