

IEEJ Webinar

Corporate Procurement of Renewable Electricity

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(1) Background

(2) Major Issues

(2-1) High cost and Issues on Renewable Development

(2-2) Issues on Procurement Options

(3) Policy Recommendation

Background

- ❖ Corporate buyers have become an important driver of renewable development in recent years.
- ❖ The number of Japanese companies joining RE100, a global renewable energy initiative for companies committed to 100% renewable electricity consumption, reached 69 by April 2022 from only 3 companies five years ago (2017).
- ❖ However, Japan is one of the most challenging places in the world for companies to switch to 100% renewable electricity according to a RE100 survey report. High costs and limited supply are cited as the two largest problems.

The IEEJ team conducted this study to reveal the main challenges in corporate renewable electricity procurement in Japan and what policies and/or regulations are needed to make Japan's renewable electricity market more friendly to corporate buyers.

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Major Issues: High cost and Issues on Renewable Power Development (Land Use)

Limited land suitable for renewable development is cited as the biggest issue

- ❖ A mountainous country, Japan is not home to as wide an area of flat land compared to other countries and most of the low-cost flat land suitable for renewable power generation plants has already been developed.
- ❖ Geographic constraint is not the only reason behind the land use issue.
- ❖ The acquisition of land suitable for renewable projects can be time-consuming because of complex land use approval procedures, and more so when property rights are unclear.
- ❖ Land use constraint is one of the biggest reasons for high renewable power generation cost in Japan and hinders further renewable energy development.

Other issues behind high renewable development cost

- ❖ Time consuming Environmental Impact Assessment process can also result in high cost in some cases.

Major Issues: High cost and Issues on Renewable Development (Grid Connection & Utilization)

Issues on grid connection and grid utilization

- ❖ Similar to the land constraint issue, most sites close to grid connection points are already occupied by existing power generation plants.
- ❖ Utilizing the existing grid system is of significant importance in achieving the 2030 renewable energy target. One such measure is the “non-firm” connection rule.
- ❖ Under the “non-firm” connection rule, a new power generation plant can be connected to the grid even if there is no free grid capacity, on condition that its output will be first in line to be curtailed without compensation in the event of grid congestion.
- ❖ The unpredictability of how much un-compensated curtailment will happen for a renewable project connected to the grid under the “non-firm” connection mechanism, or how the curtailment will impact the project’s revenue, is cited as a big concern by the renewable developers.

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Major Issues: Limited Procurement Options (Overview of Renewable Electricity Procurement Methods)

Onsite RE power generation

- Renewable power generation system at consumer company site.
- **Onsite RE power generation system usually can only meet part of the consumer's electricity consumption.**

Green electricity from retailers

- Consumers need to pay premium for green electricity.
- Consumers cannot designate power generation plant.

Environmental Attribute Certificate (EAC)

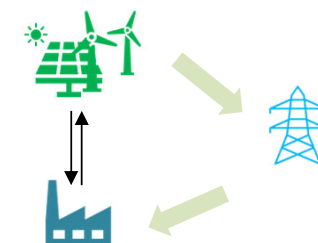
- EACs in Japan include: Non-fossil Fuel Certificate (NFC), J-credit, Green Electricity Certificate.
- Most EACs issued in Japan are NFCs.
- EACs without tracking information cannot be used for reporting under international initiatives such as RE100.

***NFC: Non-fossil Fuel Certificate**

Offsite corporate PPA : direct Power Purchase Agreement (PPA) between consumer company and renewable power generator
***PPA: Power Purchase Agreement**

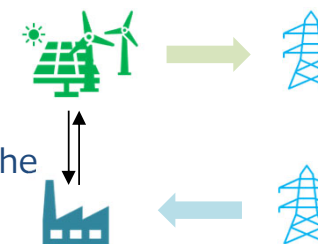
Physical PPA

- **Physical delivery of RE electricity from generator to consumer company.**
- Wheeling contract with grid operator.
- **RE electricity and associated EAC (NFC in Japan) is sold in a set.**



Virtual PPA (VPPA)

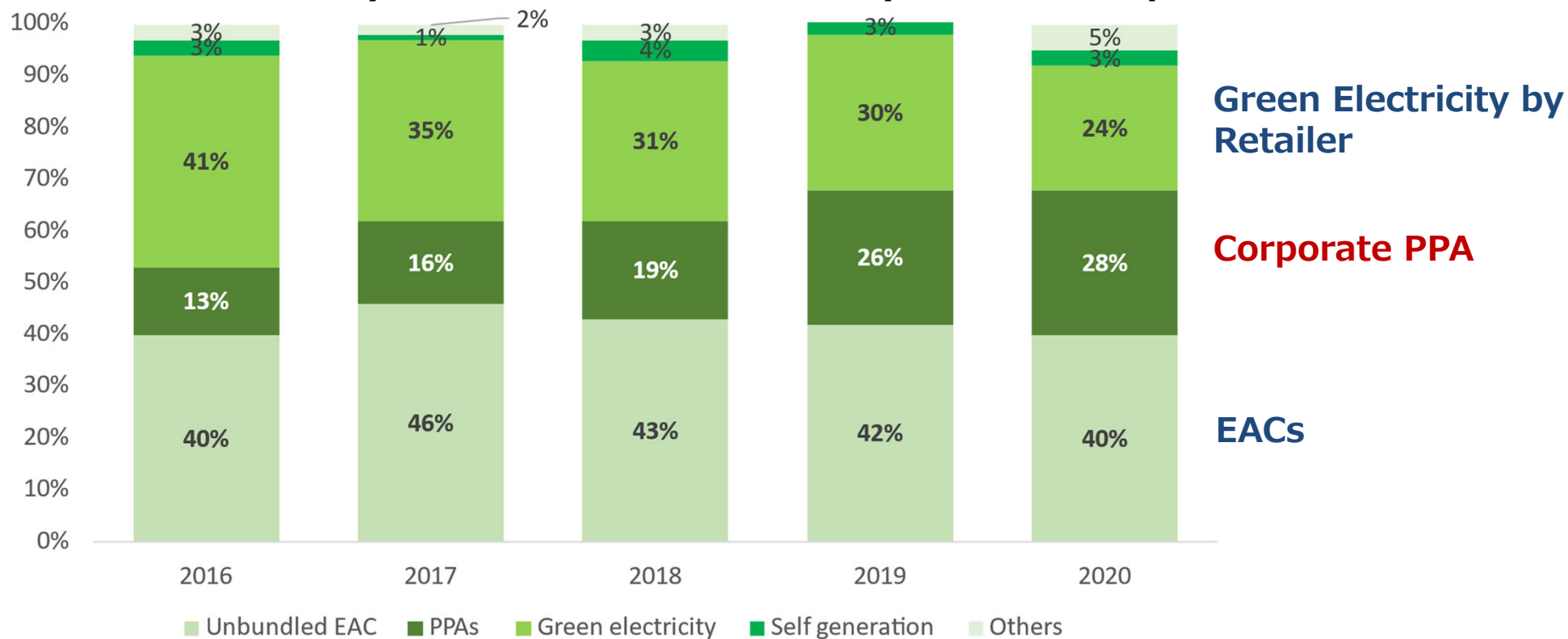
- **Physical delivery of RE electricity from generator to consumer company is not needed.**
- Even without physical delivery of electricity, the consumer company and generator sign an electricity purchase contract (electricity and associated EAC (NFC in Japan)).
- VPPA enables consumer company more flexibility in renewable electricity procurement (free from constraint of location).



Major Issues: Limited Procurement Options (Overview of Renewable Electricity Procurement Methods)

❖ Globally, share of purchasing renewable electricity through corporate PPA in growing.

Renewable Electricity Procurement Methods by RE100 Companies

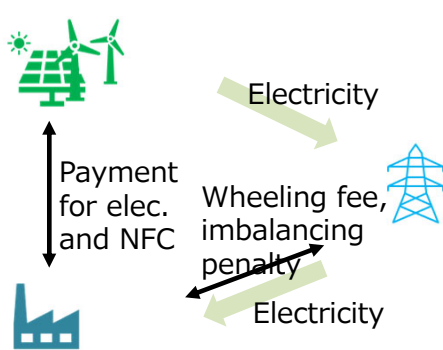


EAC=Energy Attribute Certificate (日本の場合は、非化石証書等) ; PPA=Power Purchase Agreement
出所 : RE100

Major Issues: Limited Procurement Options (Corporate PPA)

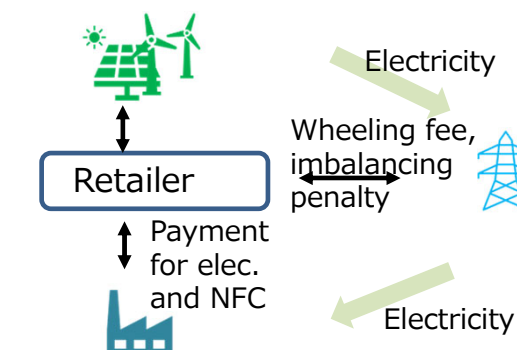
- ❖ Buyer's credibility and capacity to guarantee a long-term electricity purchase agreement is cited to be the biggest concern for corporate PPAs
- ❖ For corporate PPAs to be an attractive choice for renewable power generators, they need to promise a revenue level equivalent to that of FIT and FIP projects.

- **Self-wheeling rule**
- **Non-FIT/FIP project is eligible**
- Need to sign wheeling contract with grid operator and know-how on balancing
- Buyer is exempted from FIT surcharge



Direct

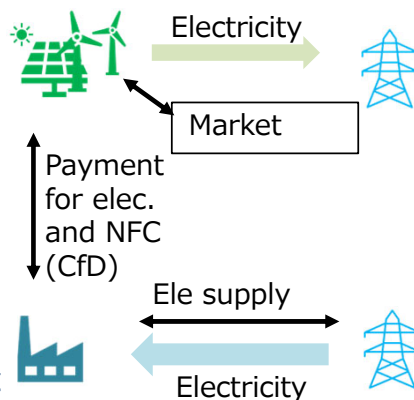
Physical PPA



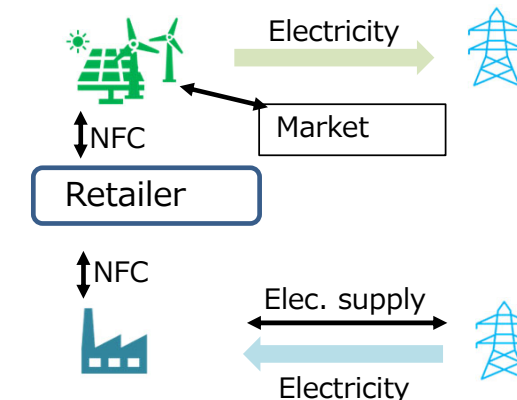
Indirect

- Wheeling contract and balancing is conducted by retailer
- Buyer needs to pay FIT surcharge
- **Most corporate physical PPAs recently are indirect PPA**

- Non-FIT project
- **Consumer company needs to have direct transaction of non-FIT NFC with generator.**
- If consumer company concludes VPPA contract the direct transaction of non-FIT NFC is permitted
- Tracking of NFC is required
- Globally, most VPPAs are direct VPPA



Virtual PPA



- **Consumer company does no need to have direct transaction of non-FIT NFC with generator**
- Tracking of NFC is required

Major Issues: Limited Procurement Options (NFC market and tracking)

FIT NFC

(Market for Renewable Attribute)

*FIT projects

- Transaction method: Auction
- Consumer companies and brokers can participate in FIT NFC auction

Non-FIT NFC

(Market for Full-fill Sophisticated Act Mandate-with renewable attributes)

*FIP projects, non-FIT/FIP renewable projects, post-FIT projects

- Transaction method: Auction, direct contract
- Consumer companies with a VPPA contract can have direct transaction of non-FIT NFCs with renewable power generators when the renewable projects meet certain criteria

- ❖ NFC tracking system, covering both FIT NFCs and non-FIT NFCs, is managed by JEPX.
- ❖ Further improvement is needed to make the NFC market and NFC tracking system be as developed as REC (Renewable Energy Certificate) in the United States or the GO (Guarantee of Origin) system in Europe

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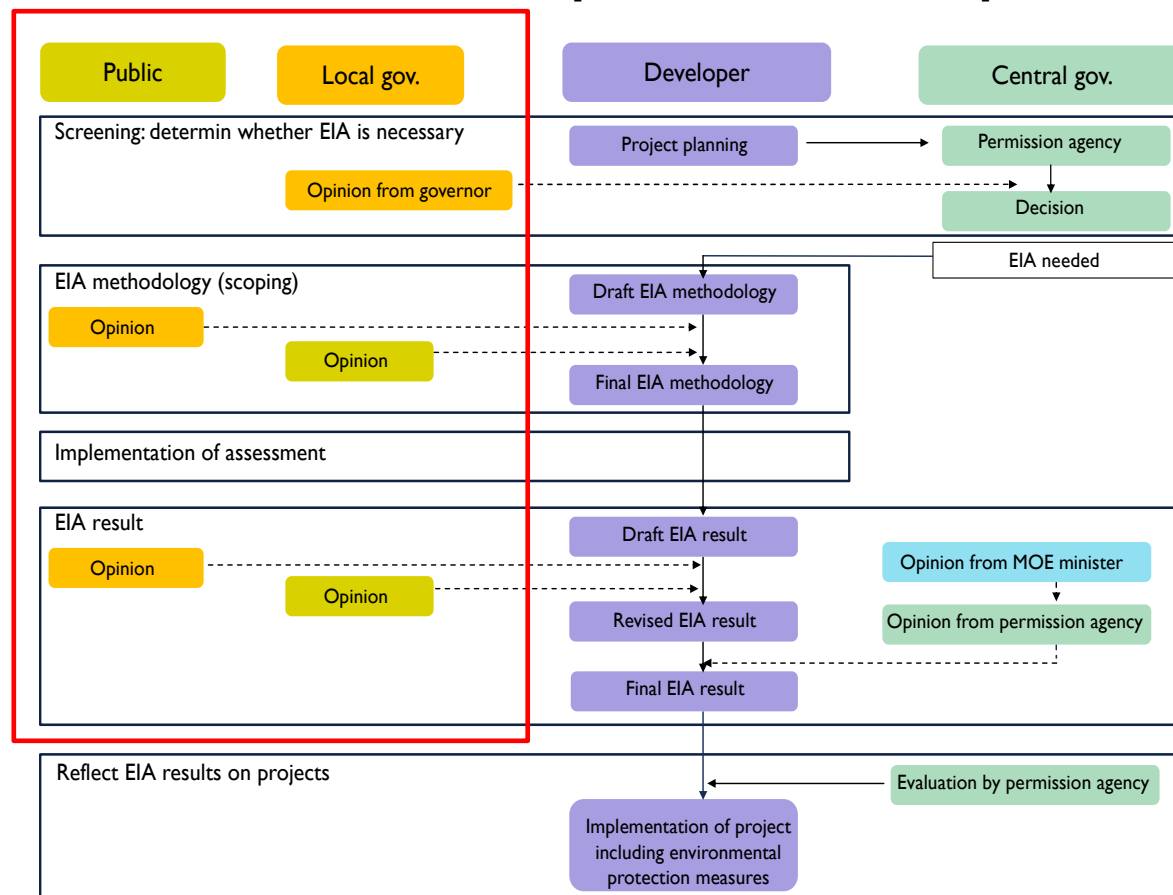
(3) Policy Recommendation

Policy Recommendation: Cost Reduction & Expand Renewable Supply

(1) Accelerate the implementation of local decarbonization initiatives and collect information on land ownership and required conditions for land acquirement approval during the wide area zoning process

- ❖ One measure to reinforce local decarbonization based on the is Wide Area Zoning (revision of Act on Promotion of Global Warming Countermeasures)
- ❖ National and prefectural environmental regulations, as well as local environmental and social concerns, are the major issues to be considered in the zoning process.
- ❖ Japanese Environmental Impact Assessment process can be expected to be streamlined with the implementation of Wide Area Zoning.
- ❖ On the other hand, during the wide area zoning process, information collection regarding land ownership and providing the information to renewable developers can help bring down renewable power generation cost.

Overview of EIA procedures in Japan



Source: <https://www.cas.go.jp/jp/seisaku/jouhouwg/hyoka/dai1/sankou6.pdf>

Policy Recommendation: Cost Reduction & Expand Renewable Supply

(2) Improve grid integration condition for renewable projects

- ❖ To improve the predictability of grid connection and grid utilization **data regarding power generation plants as well as the grid operation status need to be properly disclosed to electricity market participants.**
- ❖ **Germany's Market Master Data Register (MaStR) is a good example.**
 - All electricity and gas market participants are required to register with MaStR.
 - Plant information, including the name, address, location, technology, performance value registered with MaStR is made available to the public.

The screenshot shows the homepage of the MaStR (Marktstammdatenregister) website. The header includes the logo of Bundesnetzagentur and MaStR. The main content area features a welcome message and a section titled "What do you want to do?" with four options: "Start registration", "Sign in with my account", "Register operator change", and "View public data". A sidebar on the left contains navigation links for Home page, units, market players, data download, Help, and FAQ. A search bar is also present in the sidebar.

Source: <https://www.marktstammdatenregister.de/MaStR>

Policy Recommendation: Improvement of Environment for Corporate RE Procurement

(3) Develop a user-friendly NFC market and improve the renewable tracking system

- ❖ **Several factors that can be improved regarding the NFC market and the NFC tracking system include:**
 - Providing required information to consumer company for verifying additionality
 - Revising the current NFC effective period to one year after the generation period of the NFC
 - Making the tracking system compatible with the latest international standards such as RE100 criteria
- ❖ **Further improvement of the renewable tracking system and NFC market**, to make a system as developed as REC in the United States or GO in the Europe the **relevant rules regarding the renewable tracking system and NFC market need to comply with those of the whole electricity system.**

(4) Scale up the corporate PPA (physical and virtual) market. Rapidly disclose relevant market regulation revision information companies and develop government guidance for corporate PPA

- ❖ **Detailed information of such market rule revision should be disclosed and reached to the companies rapidly.**
 - For example, the latest rule revision of the NFC market enables consumer companies with a VPPA contract to have direct transaction of non-FIT NFCs with renewable power generators when the renewable projects meeting certain criteria.
- ❖ **Government guidance is also helpful for scaling up corporate PPA market**
 - In a corporate PPA, the buyer's credibility is an important factor in assessing the bankability of the renewable project. The lack of expertise on evaluating emerging schemes can also make banks hesitant in financing corporate PPA for renewable projects. Government guidance on evaluating the bankability of corporate PPA can facilitate the financing of such renewable projects.

Policy Recommendation: Improvement of Environment for Corporate RE Procurement

(5) Introduce consumer relief measures to reduce FIT surcharge burden

- ❖ Japan has introduced auctions and has moved from FIT to market mechanism based FIP mechanism to reduce FIT surcharge.
- ❖ **In the short term, newly contracted corporate PPAs contribute little to the reduction of the FIT surcharge caused by projects already approved.**
- ❖ **Further consumer relief measures are needed.**
 - One example is Germany's case. As a consumer relief measure, the German government has abolished the FIT surcharge as of July 1, 2022 and has instead set up a climate fund to support renewable energy (to pay already existed FIT surcharge). The fund will be financed by revenue from carbon pricing and the government budget.

Thank you!