RE-Users Summit 2019

Options to RE Users in Japan

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Japan power outlook
Japan power mix

Japan to add 340GW of RE by 2050

Source: BloombergNEF
PV module prices have fallen 83% since 2010

Source: BloombergNEF, Maycock
Wind turbines are down 32% since 2010

Wind turbine price (2017 mEUR/MW)

Source: BloombergNEF, Lawrence Berkeley National Laboratory (LBL), ExTool study (Neij et al. 2003), Vestas annual reports
Cost coming lower than fossil fuels

$/MWh (real 2017)

Utility-scale PV
Onshore wind
CCGT
Coal

Japan power mix

太陽光は新設の一番安い電源
RE procurement options
RE procurement options

RE procurement options in Japan today

1. Self-generating renewable energy
2. Purchasing renewable electricity through licensed electricity retailers (Green tariffs)
3. Purchasing renewable energy or emission reduction certificates
Option 1: Self-generating, Self-consuming

Cumulative households coming off FiT

Volume of PV graduating from FiT (GW AC)

Million households graduating from FiT

Source: BloombergNEF, METI. Note: in previous publications we estimated that 547,000 households with 2.15GW of PV will come off the buyback program in 2019. This was an estimate based on a chart published by METI.
Option 2: Purchasing through retailers (Green tariffs)

再エネプレミアムプランの電源構成
（平成30年度 計画値）

- バイオマス 0.7%
- 太陽光 0.3%
- 水力（3万kW未満） 79.5%
- 水力（3万kW以上） 19.5%

Source: Tepco, Shikoku Electric
Option 3: Certificates

1. Green Energy Certificates
2. J-Credits
3. Non-fossil Certificates
RE procurement options

Non-fossil certificate auction

a) Entities that can participate
b) Tracking source
c) Floor price: 1.3 yen/kWh

Non-fossil certificate auction results

Source: BNEF
Changing economics

FiT from PV and cost of non-fossil electricity

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<th>PV FiT in 2012</th>
<th>PV FiT in 2018</th>
<th>Commercial power price</th>
<th>Industrial power price</th>
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<td>JPY/kWh</td>
<td>40</td>
<td>18</td>
<td>17</td>
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Source: BloombergNEF
What to choose?

1. Self-generating renewable energy
2. Purchasing renewable electricity through licensed electricity retailers (Green tariffs)
3. Purchasing renewable energy or emission reduction certificates
Global RE procurement
Global RE procurement

What’s missing in Japan: Corporate PPA

Global Corporate PPA volumes by region

Source: BloombergNEF  Note: All data in this report is up to through November 2018. Volumes are for offsite deals only.
Top offtakers by capacity (MW), broken down by sector

- Google LLC: 3,254
- Facebook: 2,519
- Norsk Hydro ASA: 1,411
- Microsoft Corp: 1,321
- Amazon: 1,219
- Wal-Mart: 1,044
- Apple Inc: 995
- AT&T Inc: 823
- Alcoa Corp: 806
- ACT Government: 669
- US Department of Defense: 663
- ExxonMobil: 500

Source: BloombergNEF  Note: ACT is Australian government
Global RE procurement

PPA location

Source: BloombergNEF  Note: Bubble size based on PPA capacity (MW)
Global RE procurement

Case studies

Case Study: Walmart Goes All In on Supply Chain

by Kyle Harrison / 28 Aug 2018

Executive Summary
Walmart has established itself as an early mover in the renewable energy space, with plans to source 100% of its electricity needs from renewables by 2025. This is part of its broader sustainability strategy, which also includes goals for reducing waste and improving supply chain efficiency.

Walmart’s current progress:
- 2019: 19.4% renewable energy
- 2020: 28.5% renewable energy

Microsoft Makes an Impression Yet

by Kyle Harrison / 24 Mar 2018

Executive Summary
On March 22, Microsoft announced a major milestone in its efforts to become a carbon negative company by 2050. The company is now using 100% renewable energy for its operations, a significant step forward in its sustainability efforts.

Microsoft clean energy

Top 10 European PPA deals by volume (MW) since 2013

EXECUTIVE SUMMARY

What Drives Europe’s Top Three Corporate PPA Markets?

by Helen Debnutt / 15 May 2018

Executive Summary
The number and volume of power purchase agreements being signed in Europe is on the rise. However, almost all of the recent activity has been in just three countries: the Netherlands, Norway and Sweden. This note examines why these three have emerged as the main centers. It looks at policies, regulations, electricity markets, risk control characteristics, and business environments, and asks whether the trio can remain magnets for PPA deals in the years ahead. (Figure 3 in this note was corrected on May 24, to reflect the fact that at the time of publishing, there had been no new corporate PPAs signed in the rest of Europe in 2018.)

Top 10 European PPA deals by volume (MW) since 2013

By the Numbers

2.7 GW
PPA contracts signed in the Netherlands, Sweden and Norway since 2013: over half of all PPA activity in Europe in the same period.

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