

EEX Group – developing liquid markets with growing renewables share

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Director Power Derivatives

Agenda

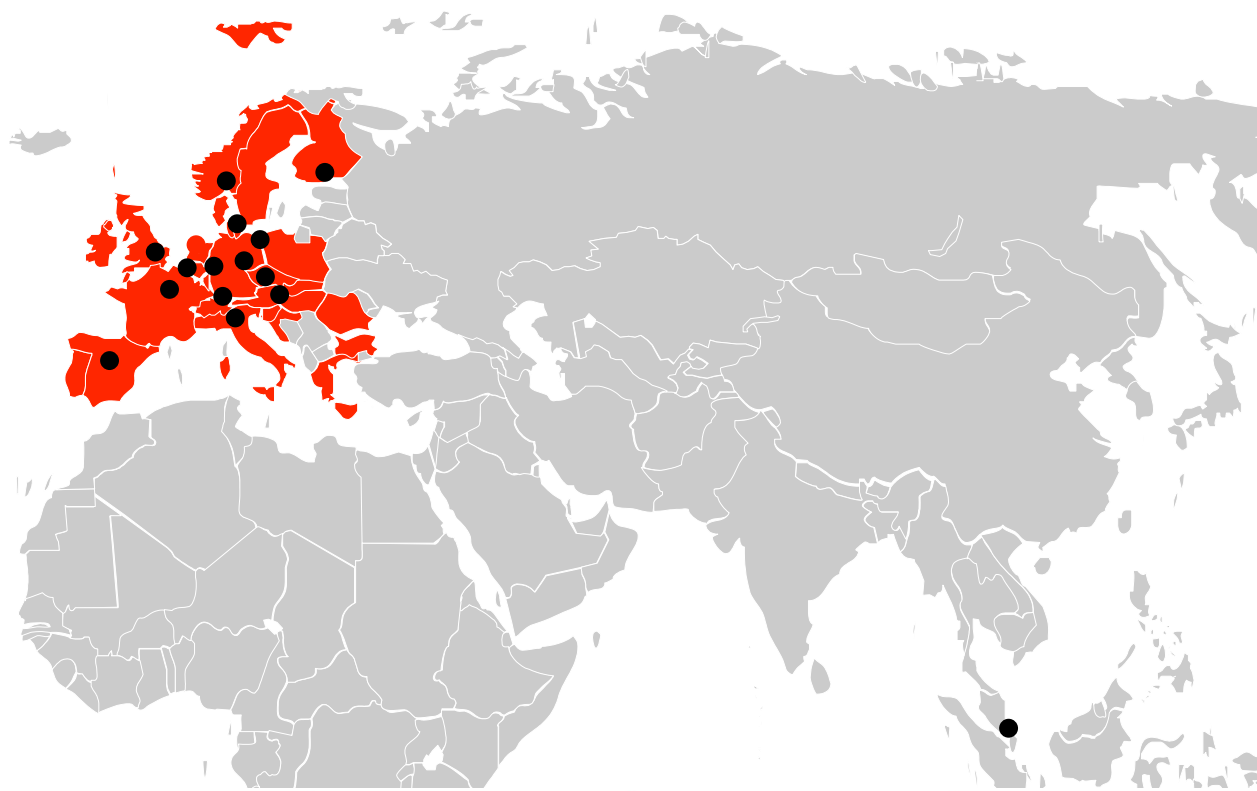
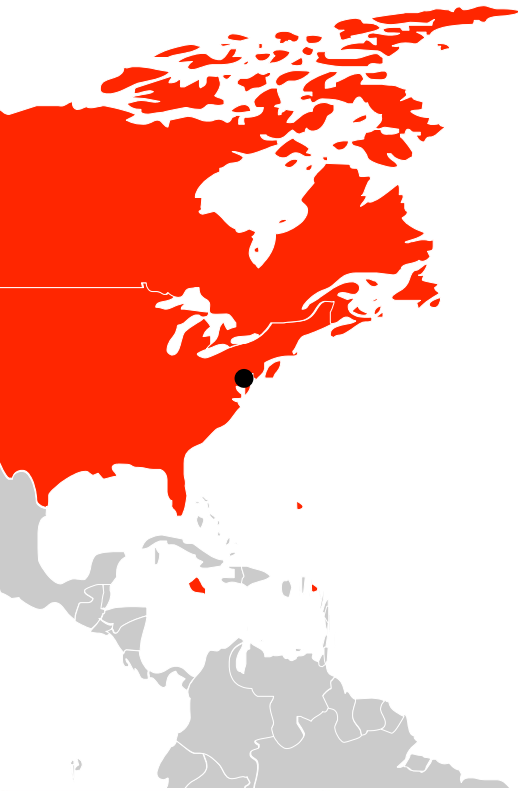
- EEX Group – the global commodity exchange group
- EEX Group's services for a market based integration of renewables
- Current trends in Europe - short-term trading and long-term hedging
- Status of the Japanese power market from EEX's perspective
- EEX in Japan – building a transparent and secure long-term market
- EEX Japanese Power Futures: product overview
- Conclusion & Next Steps

We are a Global Commodity Exchange Group

North America

Europe

Asia-Pacific



> eex

> ecc

> epexspot

> powernext

> pegas

> pxe

> nodal

> nodalclear

> eexasia

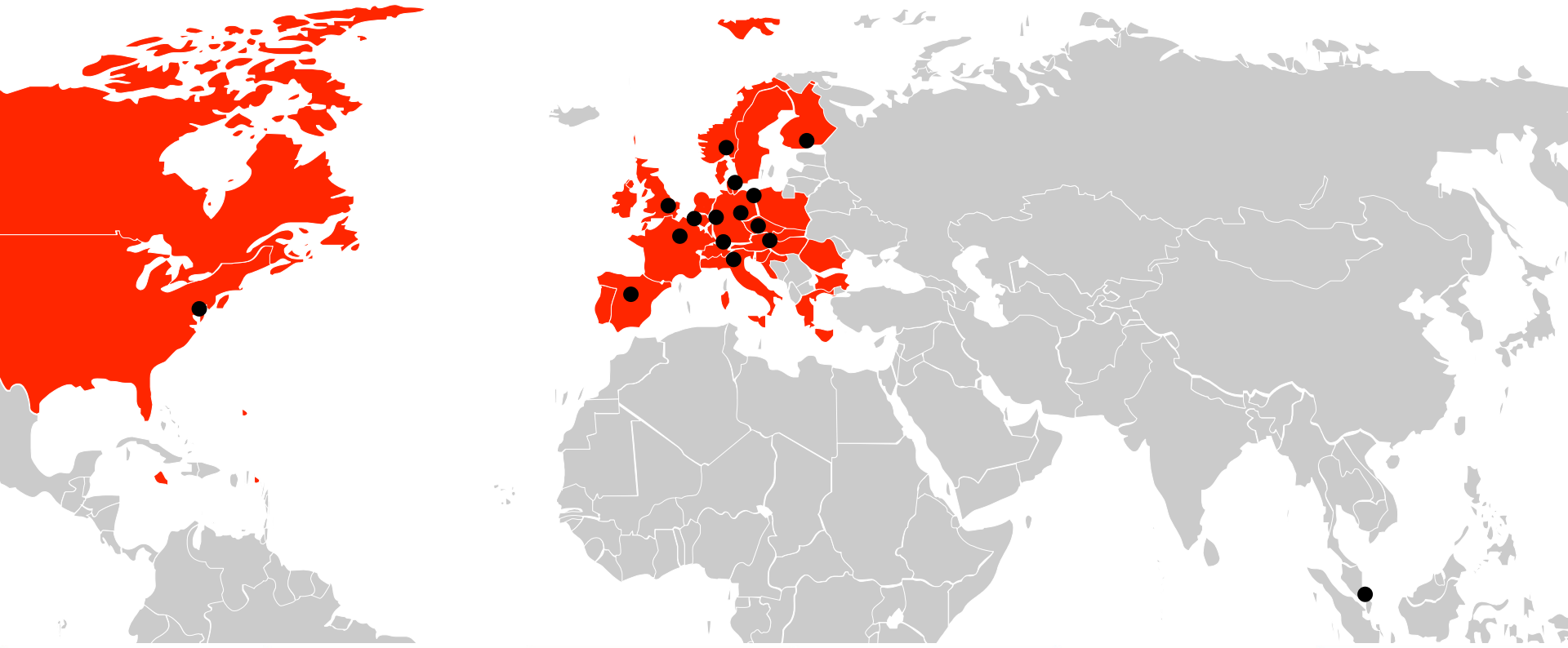
> grexel

EEX Group – Global Position

North America

Europe

Asia-Pacific



#1
in Power
Trading Worldwide

#2
in Emissions Trading
Worldwide

#3
in Natural Gas Trading
Worldwide

POWER SPOT

NATURAL GAS

POWER DERIVATIVES

AGRICULTURAL MARKETS

ENVIRONMENTAL MARKETS

› eex group

GLOBAL COMMODITIES

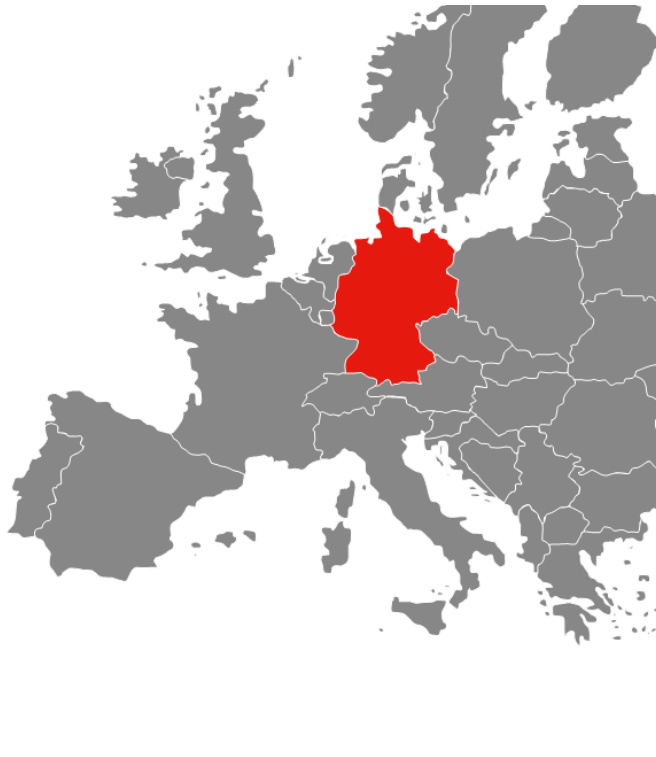
CLEARING SERVICES

**MARKETS
AND
SERVICES**

MARKET DATA SERVICES

REGISTRY SERVICES

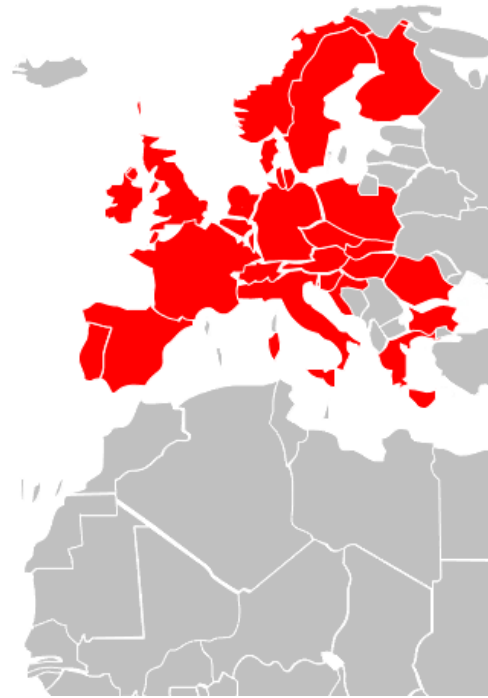
EEX – the home of power trading worldwide



Coverage
in 2000

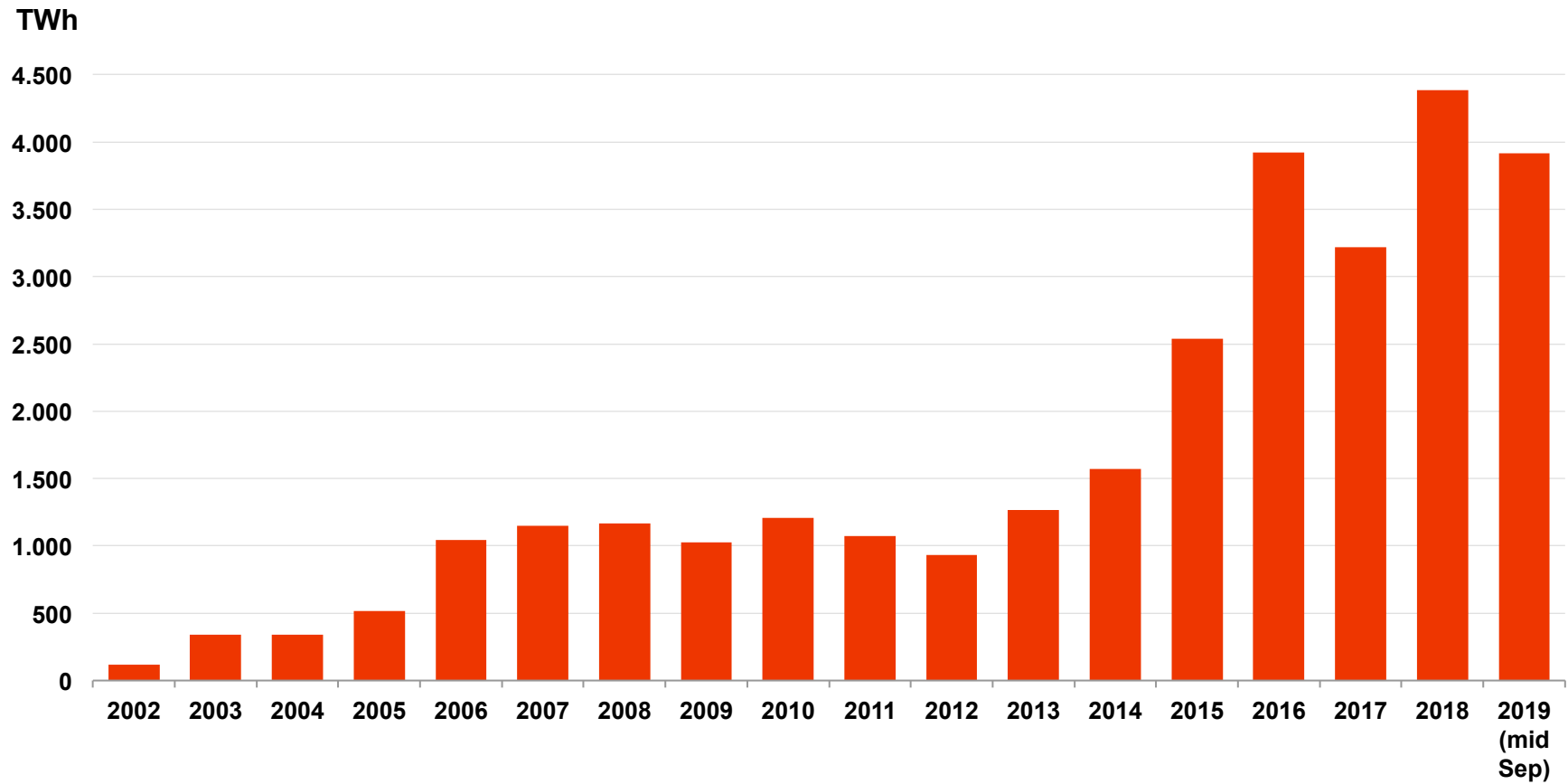


Coverage
in 2019



EEX Performance in Power Derivatives

A proven track record...



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EEX Group operates markets along the whole chain of power trading

> eex

> epexspot

**FUTURES
MARKET**



**DAY-AHEAD
AUCTION**



**INTRADAY
CONTINUOUS**

Years / Months /
Weeks before
delivery

One day
before delivery

Until 5 mins before
delivery

HEDGING

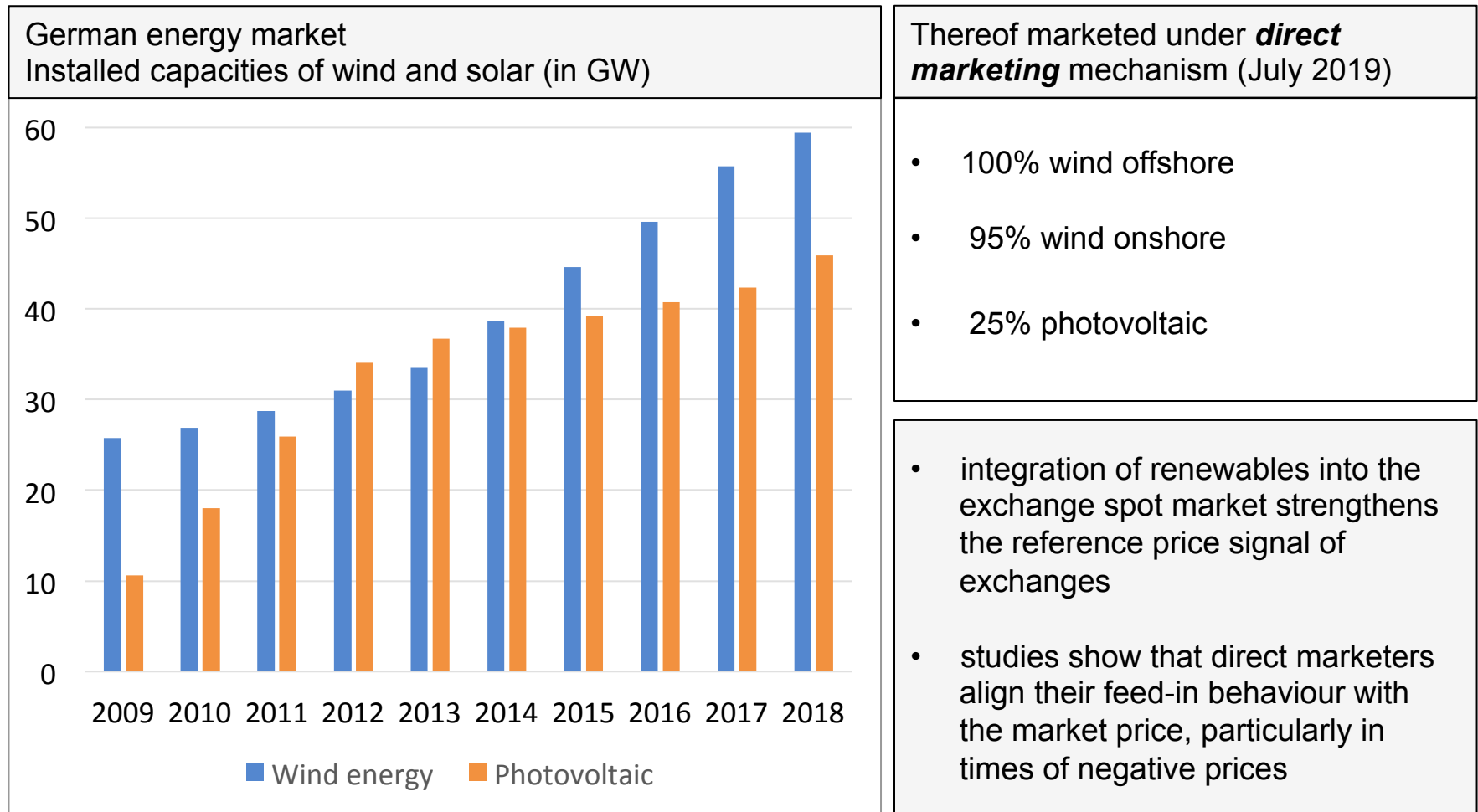
**PLANNED
PRODUCTION AND
CONSUMPTION**

FLEXIBILITY

> ecc

Integrated & Secure Clearing Solution

The pivotal role of EPEX Spot for the market-based integration of renewable energy sources



Source: REN21 (2019)

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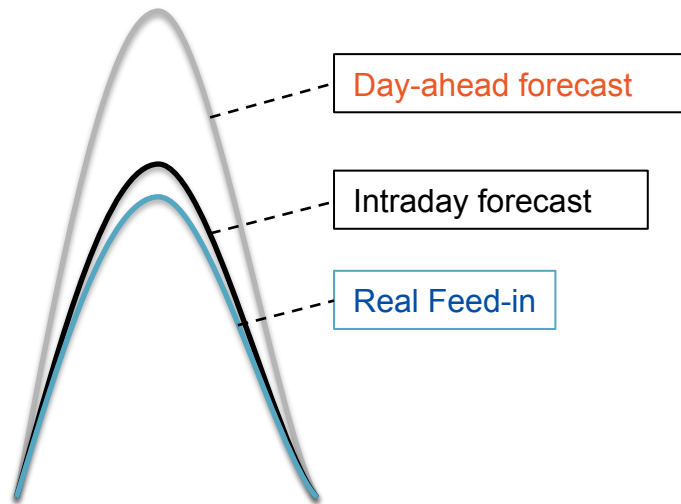
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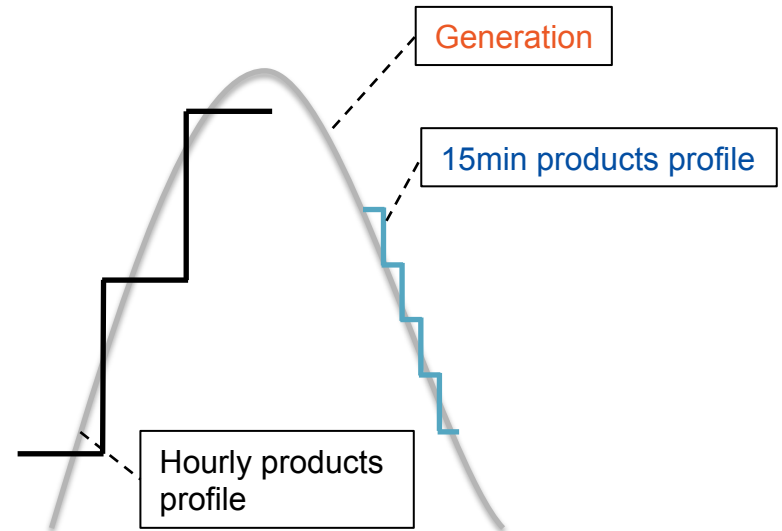
Drivers for the growth of intraday markets

Today, with an increased share of renewables in the emarket, **new reasons** for intraday trading emerge:

Balance forecast errors



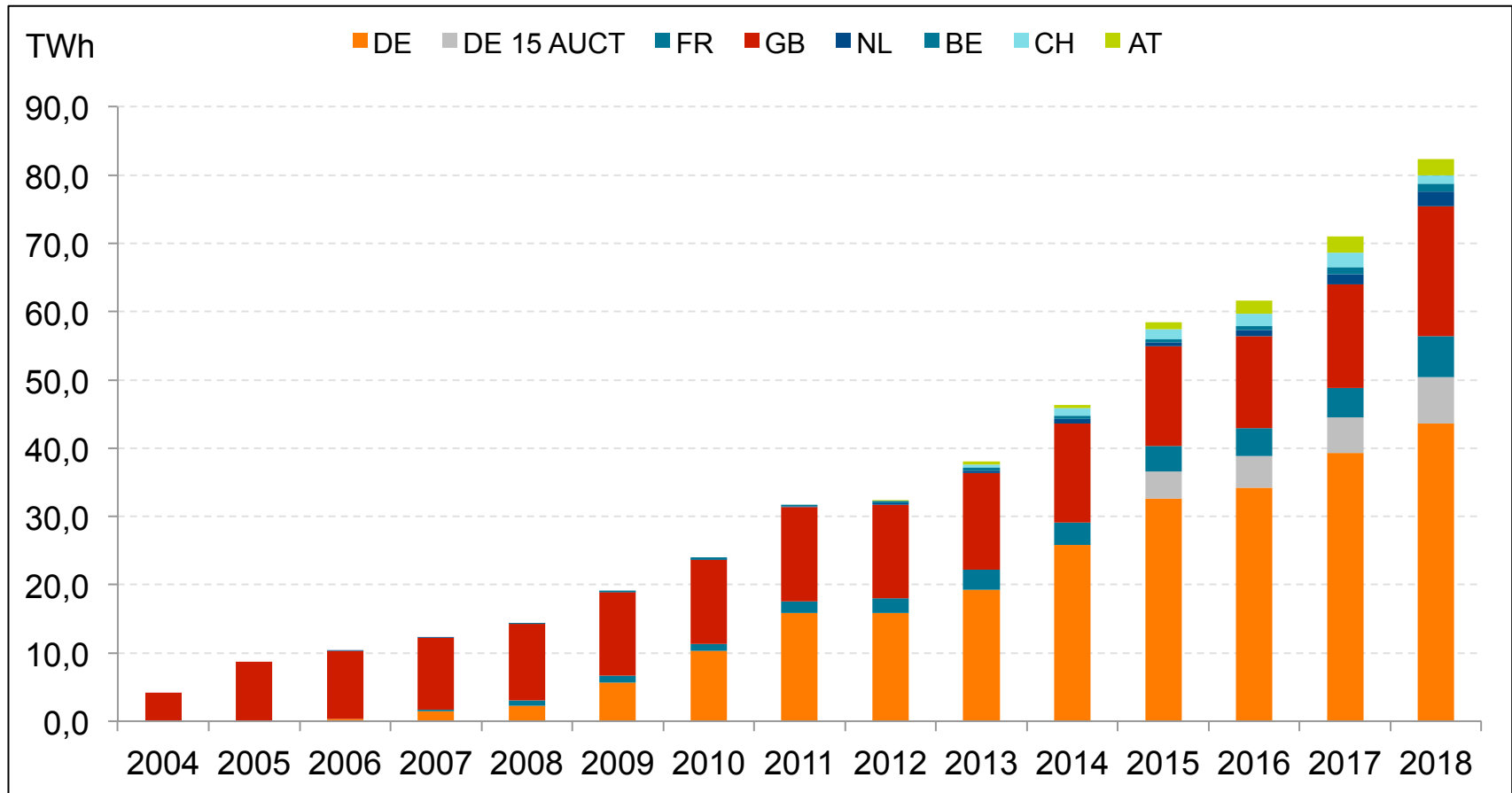
Handle generation ramps with finer granularity products



Growing share of renewables requires markets to trade closer until delivery



Volumes in intraday markets of EPEX SPOT



Power Purchase Agreements (PPAs)

A key instrument for investments in renewables

Power Purchase Agreement (PPA)

Long term contract between a party generating and selling electricity and a party purchasing electricity. Have existed for decades.

Corporate PPA

Corporate PPAs enable businesses to source electricity from generators at an agreed price, while giving producers a reliable, guaranteed buyer at a stable price.

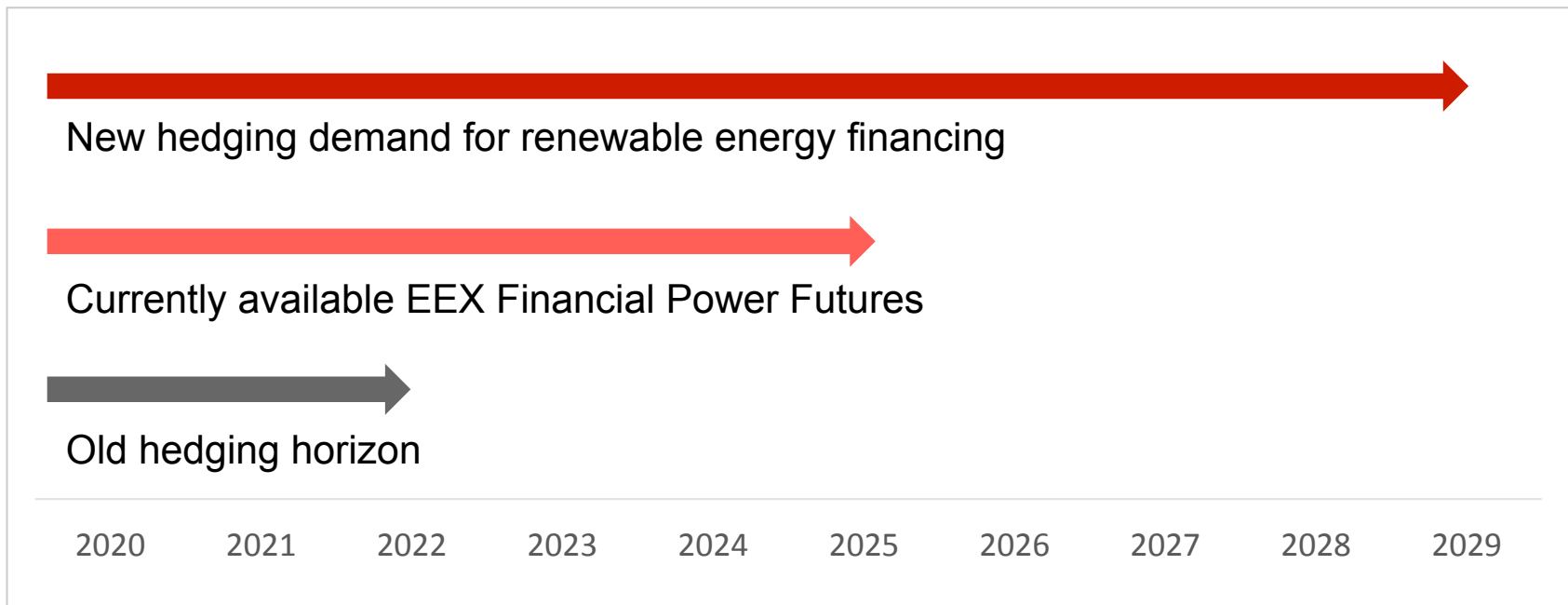
Renewable PPAs

Electricity traded between the two parties comes from a Renewable Energy power plant. **PPAs are often necessary in order to secure financing from a bank for new renewable energy projects.** Purchasers can be utilities or corporates, often attracted by 'green credentials' in having their power supply come from 100% renewable sources. **RE PPAs are often fixed for long periods, up to 15 years, to ensure revenue security for the developer.**

Long-term hedging of renewable energy assets with financial power futures

Market participants in Europe are increasingly using financial power futures in order to help secure financing from banks for new assets and/or manage long-term price risks.

Following requests from the industry, EEX is currently working to extend it's product range by listing financially settled Power Futures for up to 10 years in advance.



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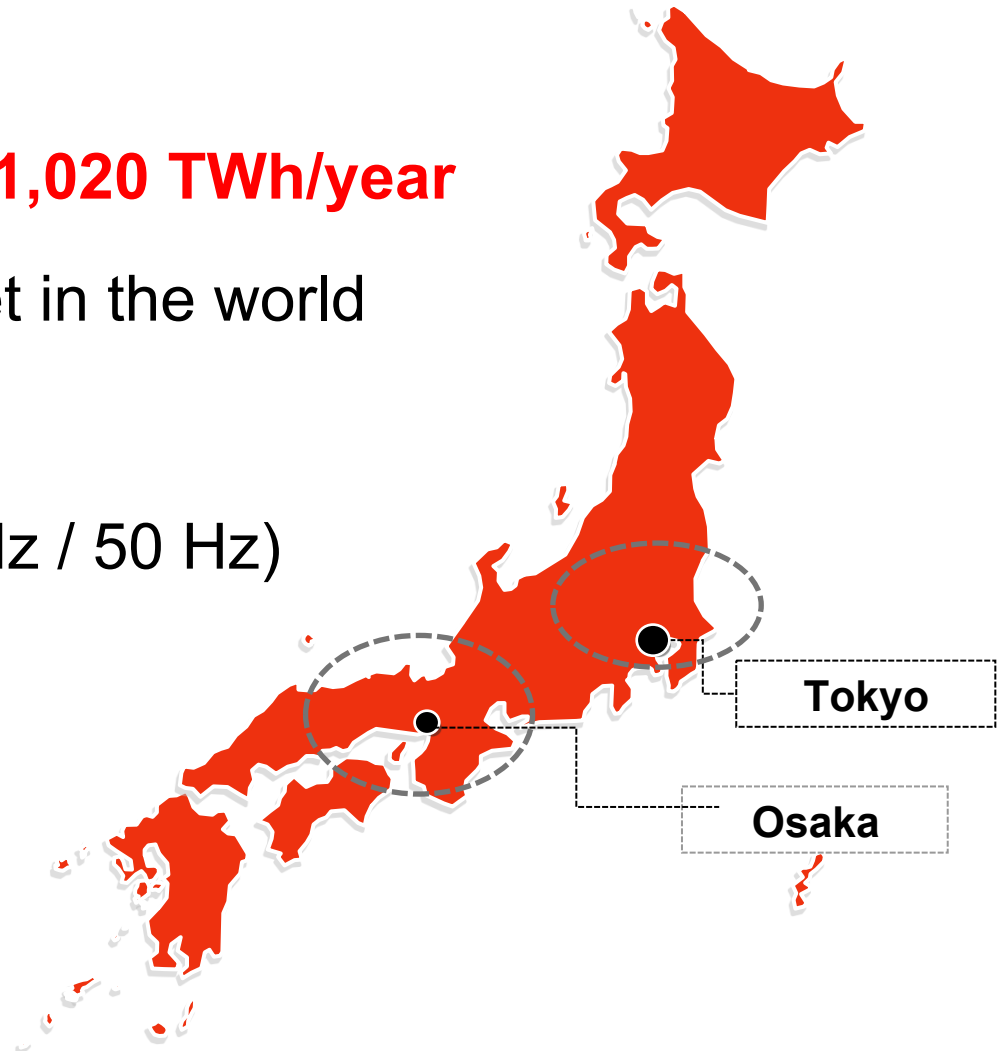
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Japan Power Market Framework

- Electricity consumption **1,020 TWh/year**
- 4th largest power market in the world
- 10 zones
- 2 frequency levels (60 Hz / 50 Hz)



Japan Power

JEPX spot auction – average daily volume



Source: Article "Power Futures Seen as the Future of Faded Commodity Exchange", Bloomberg 2019

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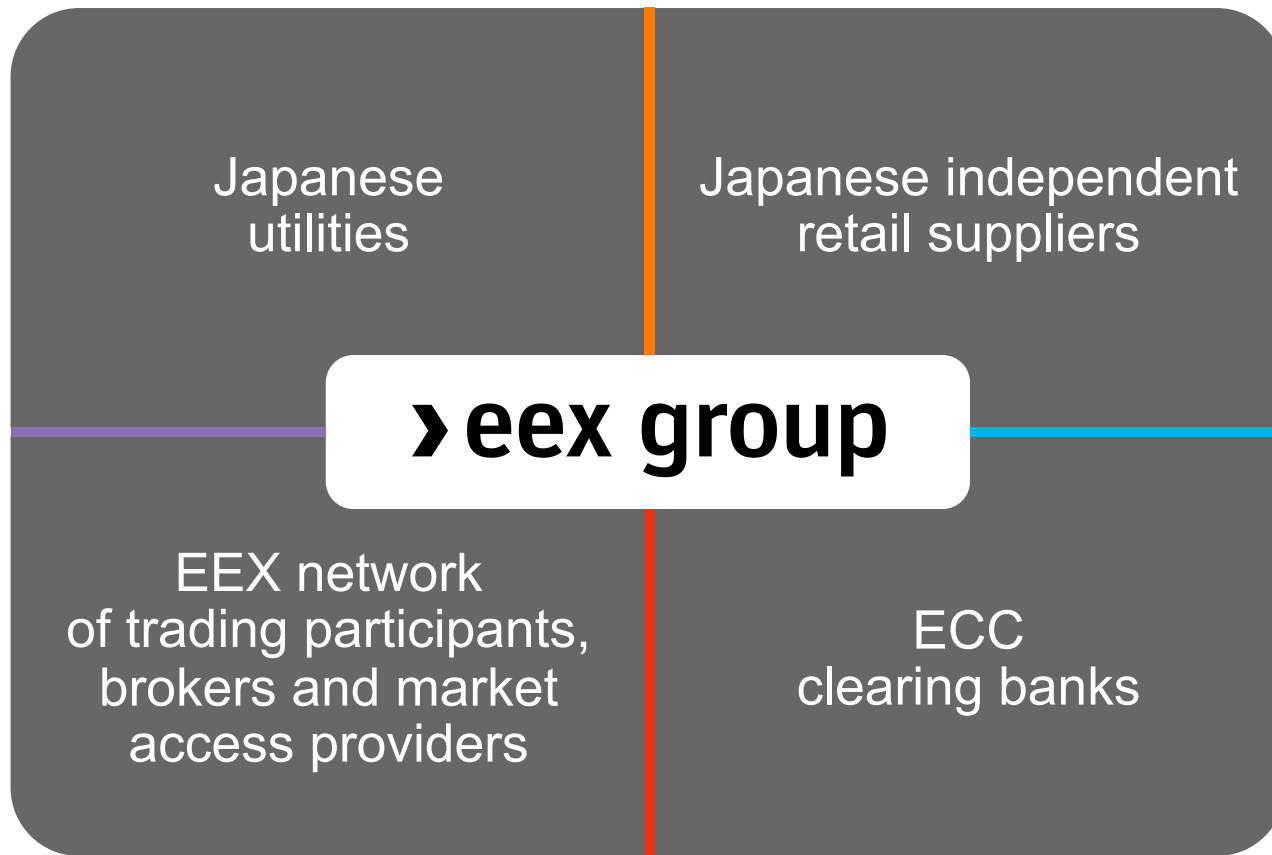
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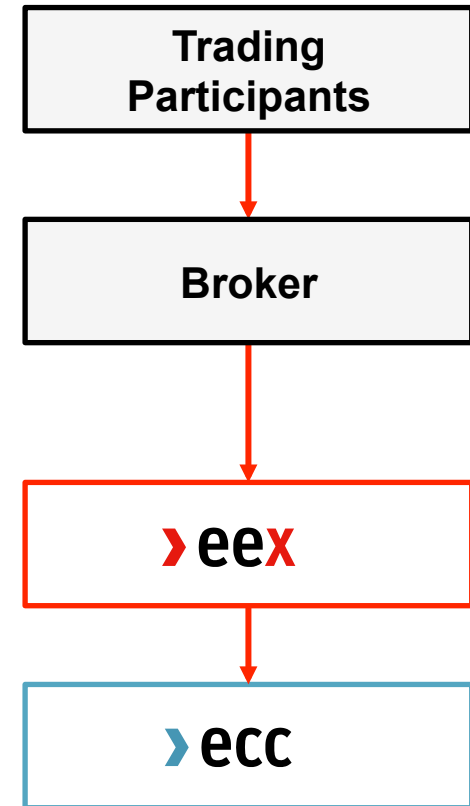
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Connecting the Japanese Power Community



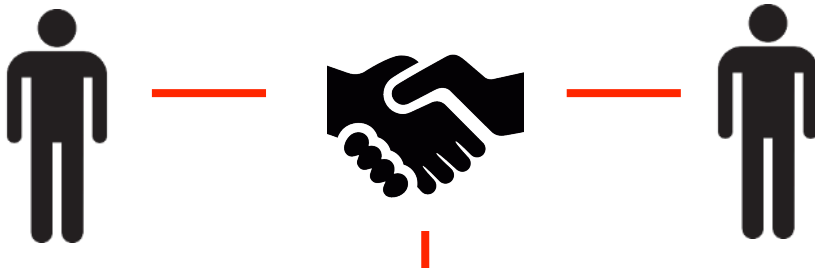
Developing an OTC-cleared market for Japan

- Combining the current trading paradigm (OTC bilateral) in the Japanese market with the **security** and **transparency** of a cleared venue
- Cash-settled power futures are the **ideal trading and hedging instrument** for financial and physical players
- Transactions will be **arranged by brokers** and are subsequently registered at EEX
- **No central orderbook** for Japanese power at EEX
- **METI** confirmed that EEX can provide a clearing service for Japanese Power Futures under the Japanese Commodity Derivatives Act



The concept of clearing

Clearing assures the proper fulfilment of each contract concluded or registered at EEX



After a trade has been concluded, it will be cleared by ECC. In doing so, ECC serves as the contractual partner for both buyer and seller.



ECC ensures the fulfilment of each trade and mitigates the counterparty risk.

Benefits of clearing

- Transparency
- Reliability
- Security (Risk Mitigation)

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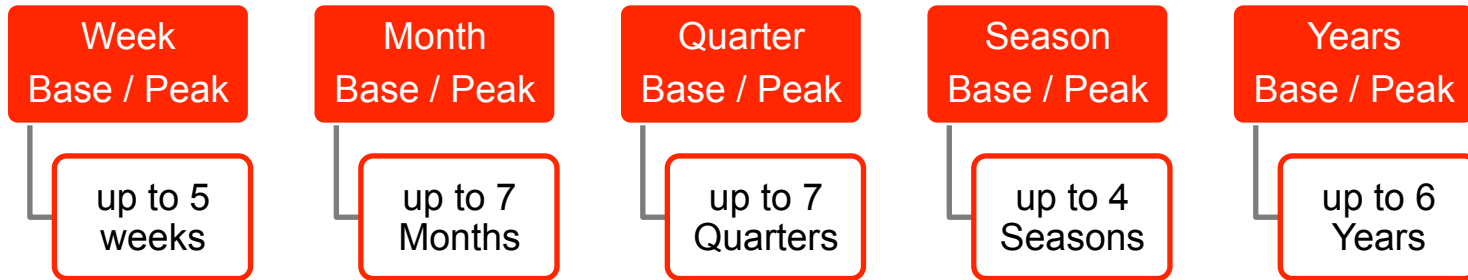
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EEX Japan Power Futures - Product Details

Kansai Area

Tokyo Area



Product Specifications:

Currency:	Japanese Yen
Pricing:	in Yen/kWh
Minimum price fluctuation:	Yen 0.01 per kWh
Contract Size:	1 MW (1,000kW) x number of hours in delivery period
Minimum lotsize:	1 contract

- Peak definition: int. standard, Mo-Fr 08:00am – 08:00pm
- Existing EEX trading calendar

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EEX Japanese Power Futures

Bringing best-practices from Germany to Japan

- Proven track record in building liquid power markets
- European power markets are perfect blue-print for Japan
- Well-established clearing model with global distribution
- Local presence in Japan



EEX Japanese Power Futures

Next Steps



TOKYO 2020



- Product Launch: Q1/Q2 2020
- Series of webinars in cooperation with Bloomberg
- Numerous stakeholder meetings and seminars in Japan
- Dedicated workshops in Tokyo and Singapore in Q4 2019

Thank you

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