

Market integration of renewable power [RP] in Germany

- some hints for Japanese RP market -

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Agenda

- Introduction
- Institutional system and situation of RP market in Germany:
Market Premium Model/Direct Marketing/FIP, VPP and PPA
- Our experiences in the RP market in Germany (and Europe)
- Considerations for activating the Japanese RP market

zec.power - Making dispersed renewable energy sources a great power.

- ZECPOWER Inc. was jointly founded by in.power GmbH in Germany and ZEC (Zero Energy Company) Inc. in Japan, in January 2020.
- in.power began trading power on the EEX in 2007 and has been selling directly on the EPEX SPOT since 2009. in.power has been selling renewable power directly to the market even before the FIP (Market Premium Model/Direct Marketing) started.
- ZEC has developed a number of solar power plants since around 2012 utilizing civil funds and other financial resources, and has extensive experiences in renewable power, particularly solar power in Japan.



in.power network – Vision

in.power

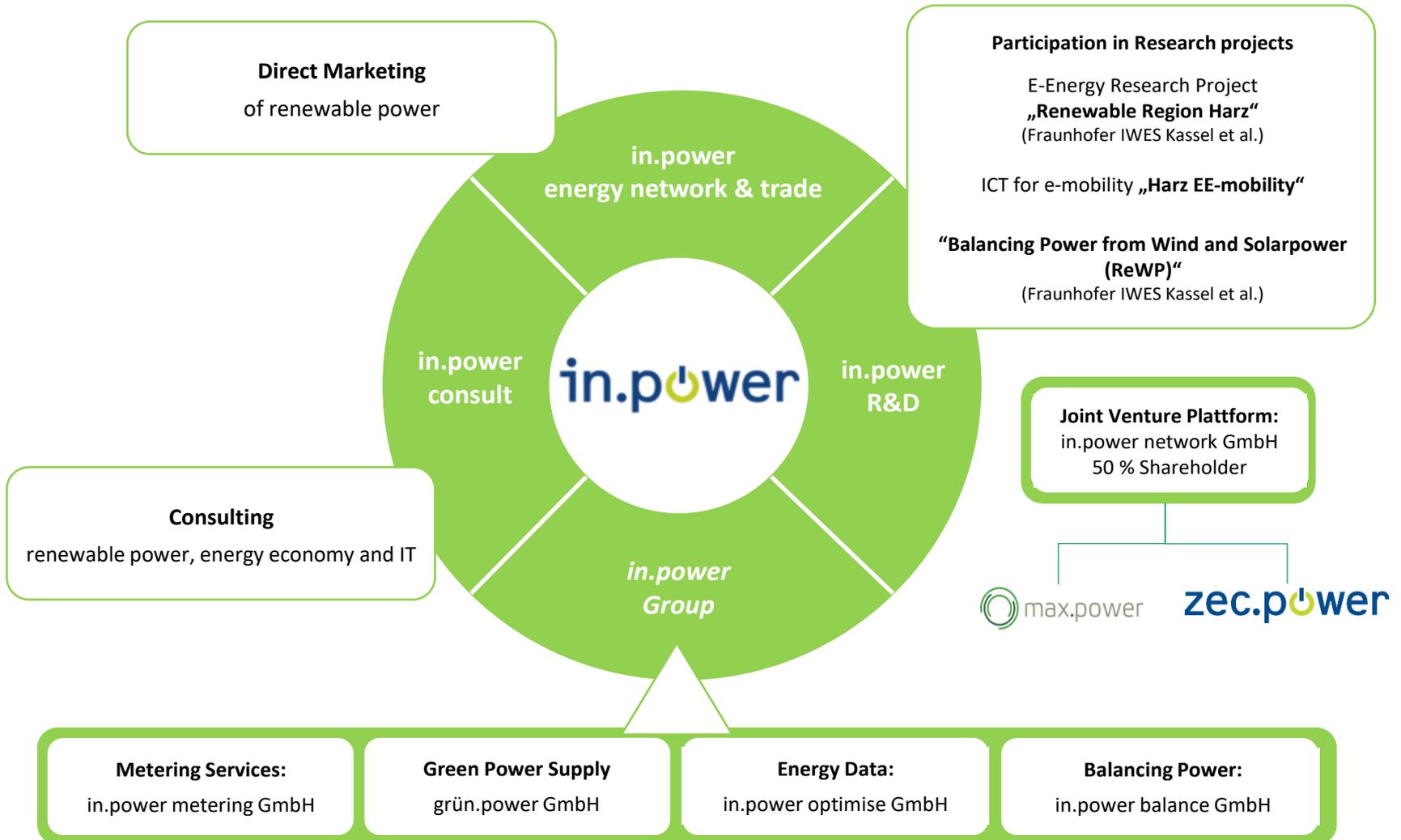
Develop and realise new ways for energy systems within partnerships

Long-Term Goal:

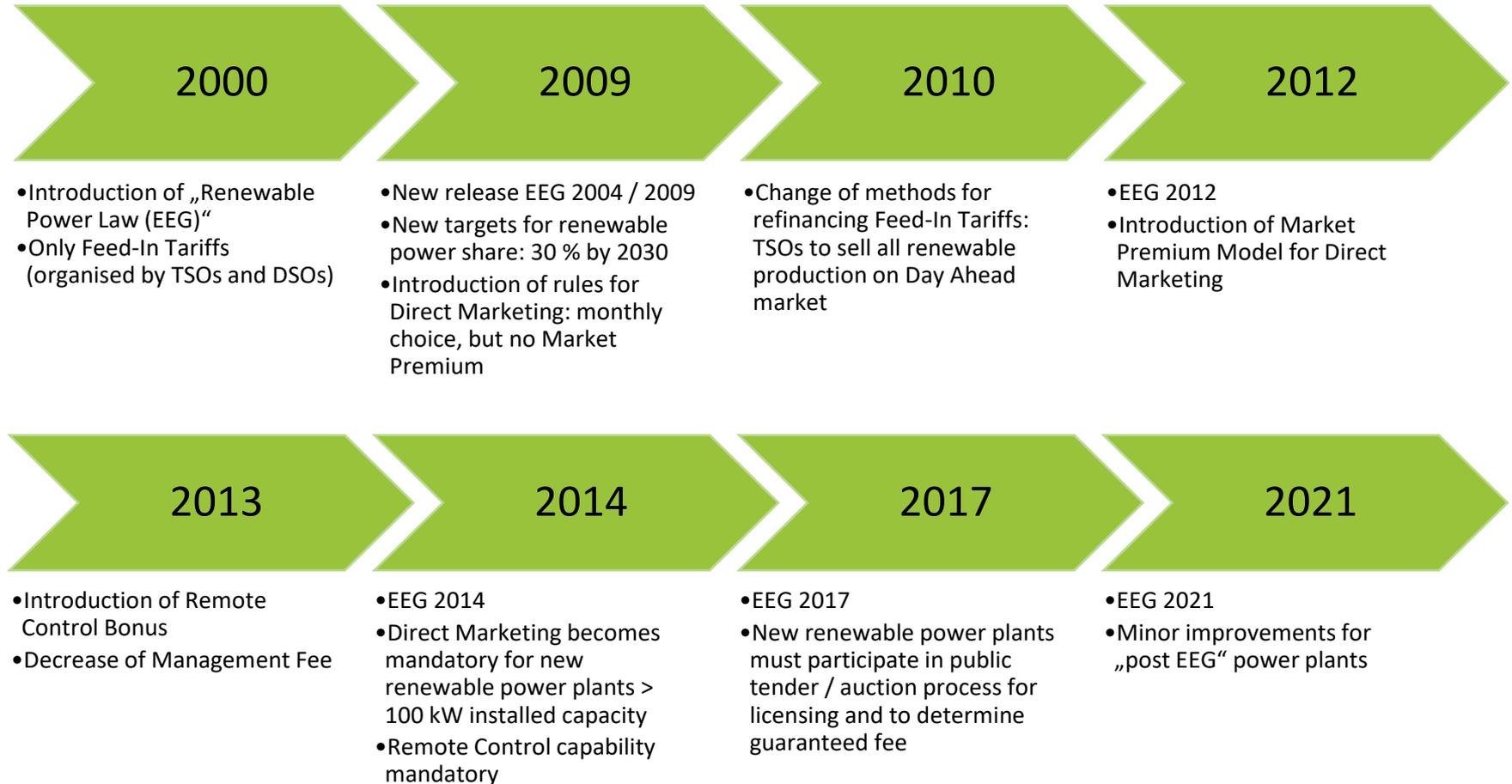
Establish an energy system based on 100 % renewable and environmentally friendly power

15+ years of experience in market and system integration of renewable power in Germany

in.power network - Group



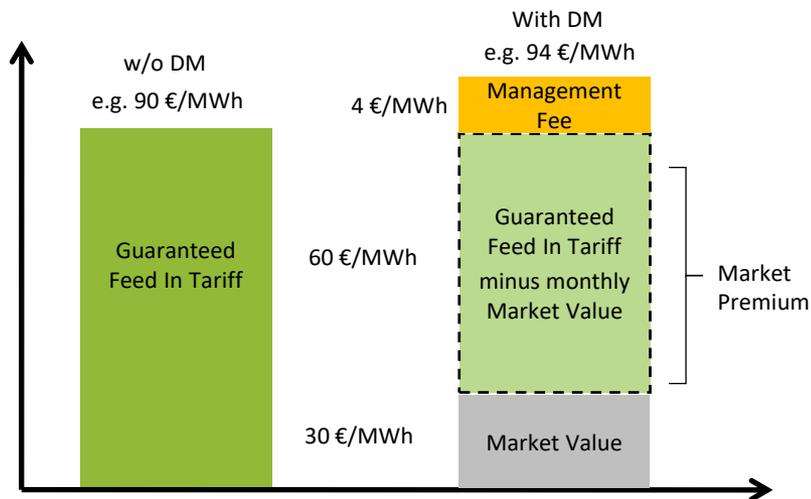
Regulatory milestones of Direct Marketing of Renewable Power in Germany



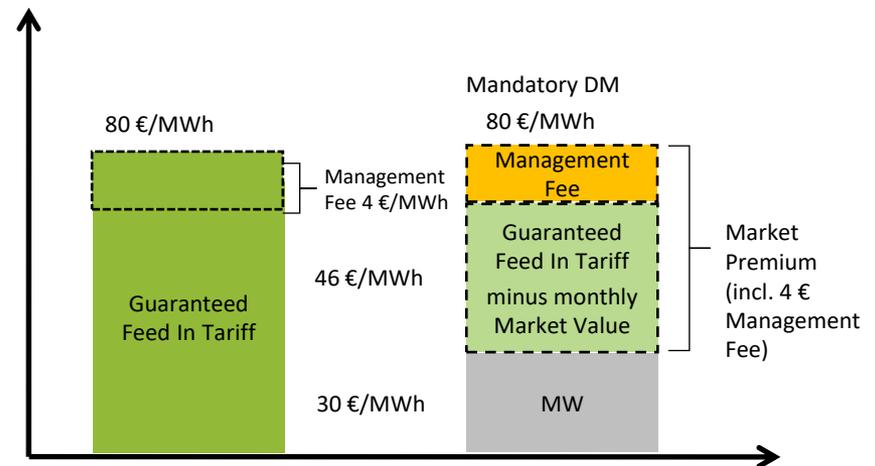
Market Premium Model

- Aggregator is responsible for trading power:
 - Pays market value („MV“) to power plant owner based on monthly published average
 - Usually all risks of trading and balancing has to be covered by Aggregator
- DSO pays market premium („MP“) to power plant owner

Power Plants with optional Direct Marketing



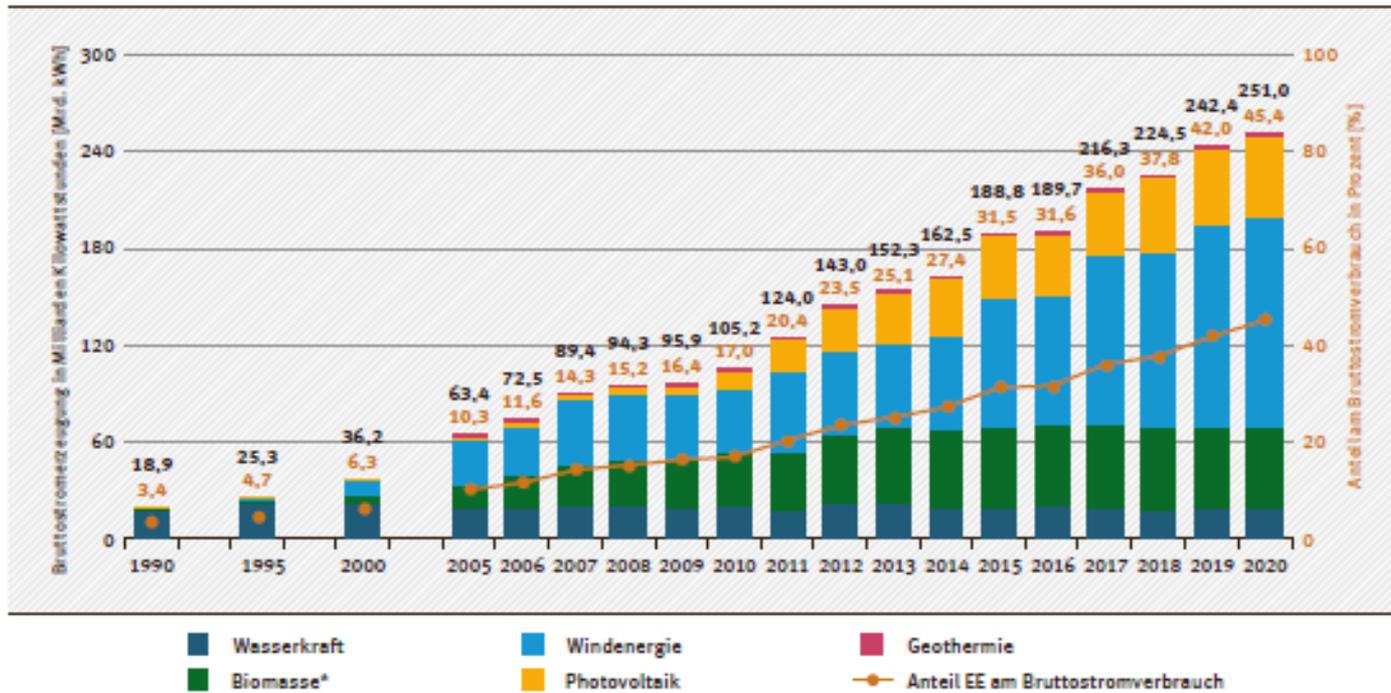
Post 2014 power plants with mandatory DM



Renewable Power - 1

Abbildung 1

Entwicklung der Stromerzeugung aus erneuerbaren Energien



* inkl. feste und flüssige Biomasse, Biogas, Biomethan, Deponiegas, Klärgas, Klärschlamm sowie dem biogenen Anteil des Abfalls

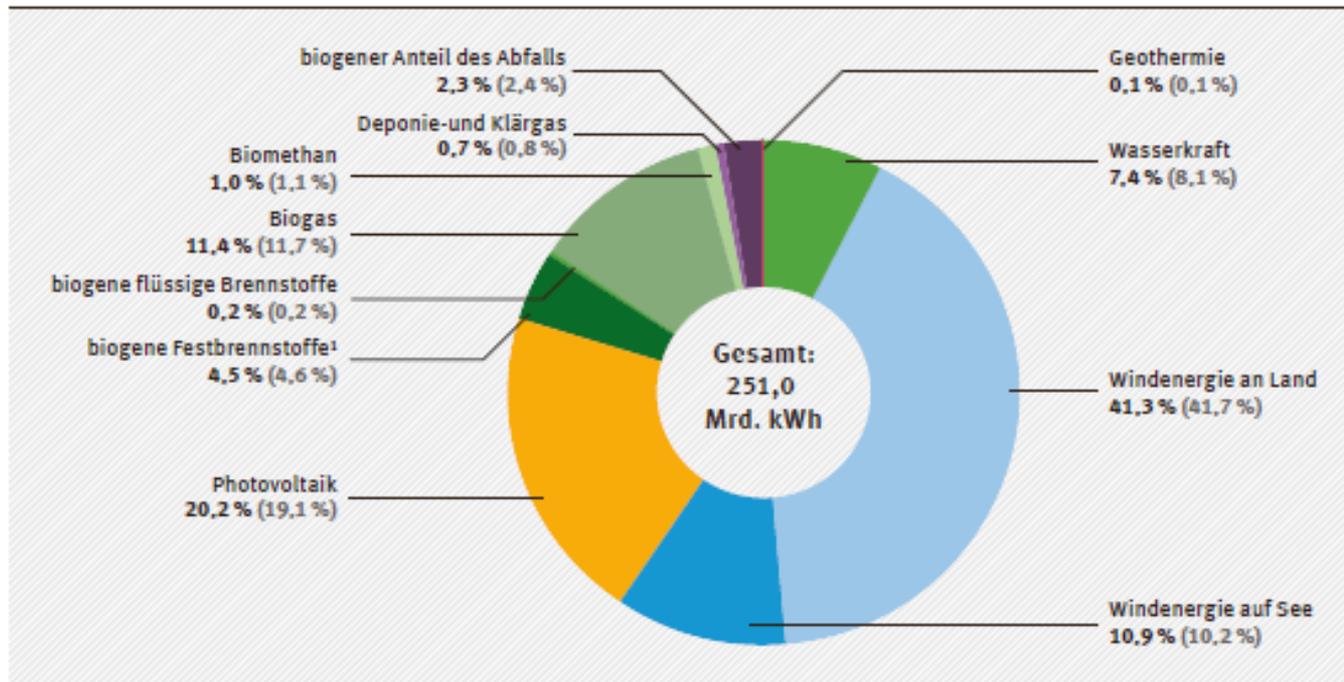
Quelle: Arbeitsgruppe Erneuerbare Energien-Statistik (AGEE-Stat)

Renewable Power by production

Abbildung 2

Stromerzeugung aus erneuerbaren Energien im Jahr 2020

Anteile in Prozent [%], Werte für das Vorjahr in Klammern



¹ inkl. Klärschlamm

Quelle: Arbeitsgruppe Erneuerbare Energien-Statistik (AGEE-Stat)

Share of Direct Marketing

„green power privilege“ – stopped in 2012

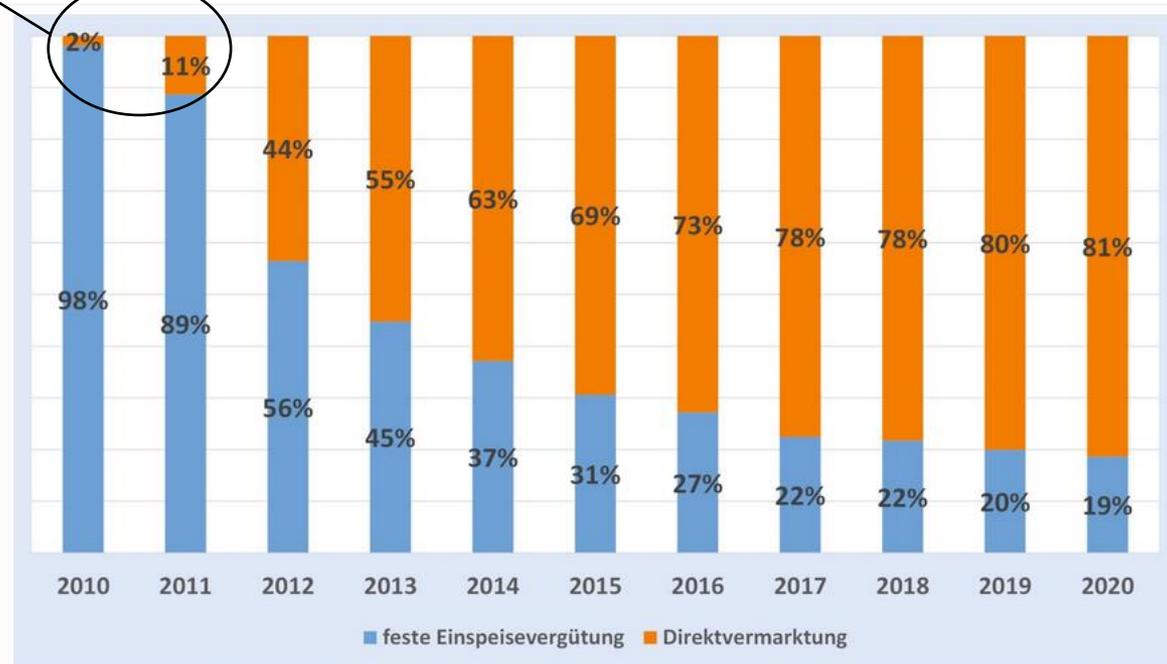
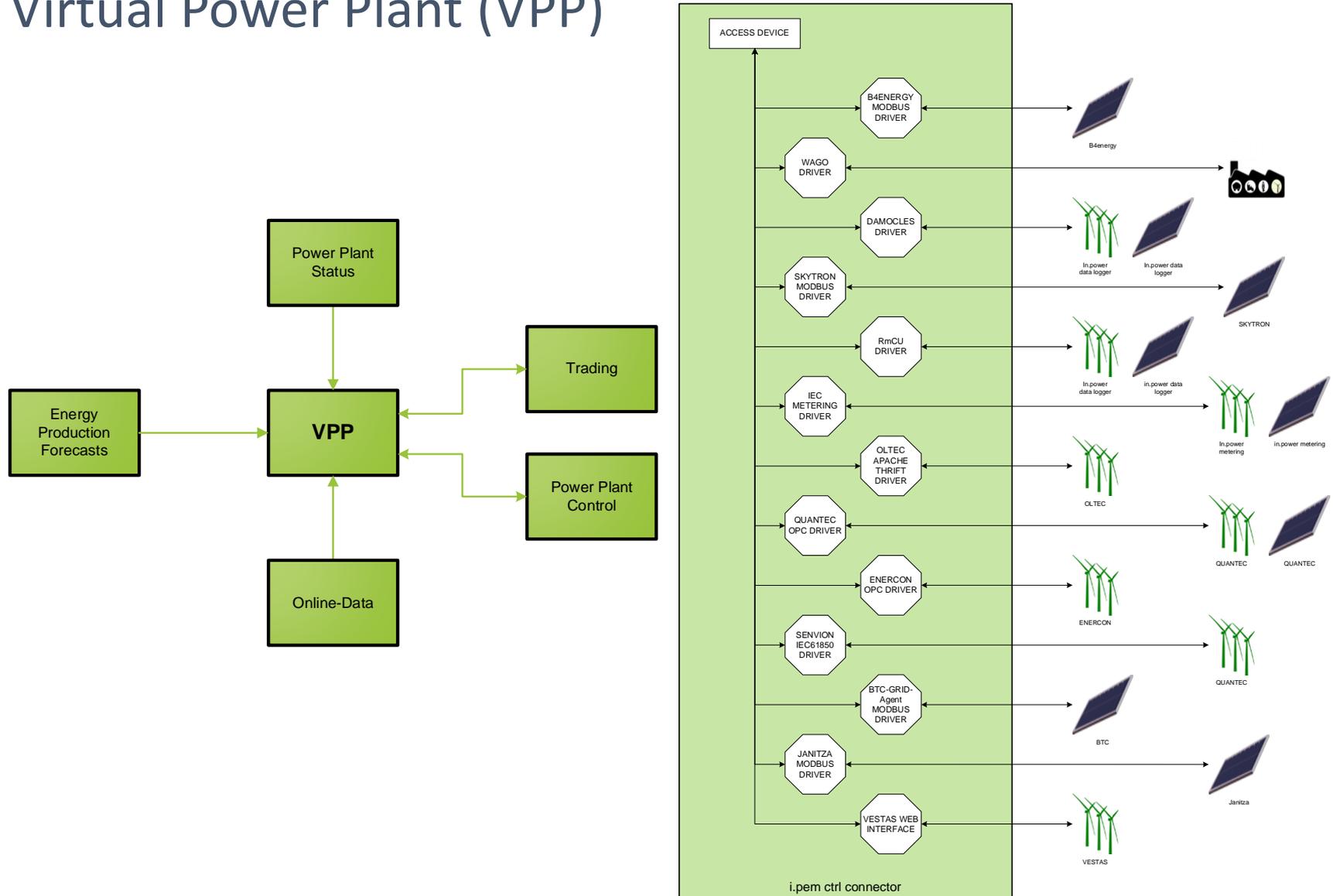


Abbildung 1: Entwicklung der Jahresarbeit nach fester Einspeisevergütung und Direktvermarktung (inkl. Sonstiger Direktvermarktung und Grünstromprivileg bis 2014) 2009-2019. Quelle: BMWi (2020)

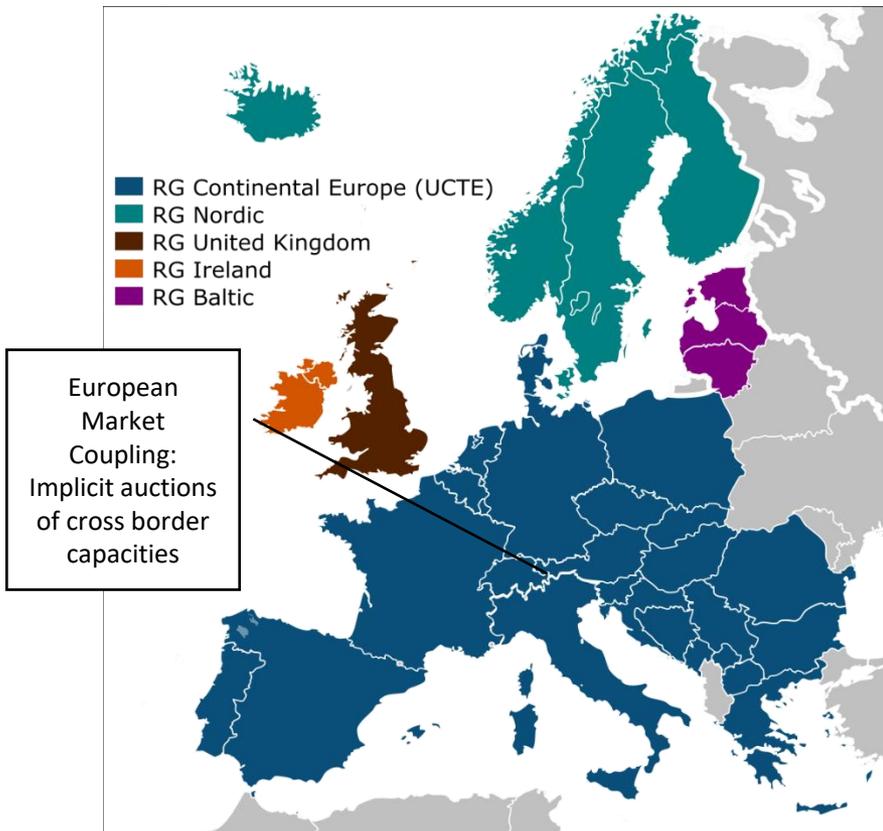
<https://www.energieagentur.nrw/blogs/erneuerbare/beitraege/fachbeitrag-direktvermarktung-erneuerbarer-energien/>

Virtual Power Plant (VPP)



Power trading in Germany and Europe

European Transmission Grid



Source: https://de.wikipedia.org/wiki/Europ%C3%A4isches_Verbundsystem#/media/File:ElectricityUCTE.svg

German Transmission Grid



Source: <https://www.amprion.net/>

Experiences of 10 years Direct Marketing RP in Germany - 1

- Advantages of Direct Marketing
 - Success of participation in Direct Marketing (prior to mandate) by possibility to return to feed in system
 - Balancing accountability by Aggregator (no parallel system for RP anymore)
 - Development of complex “eco system”, e.g. Forecasting Services, Integration Services
 - Improvements in forecasting quality compared to pre-2012
 - Cost reduction for RP system
 - E.g. lower profile costs:
2012: 12€ /MWh (“Management Fee” as result of evaluation of TSO profiling costs)
since 2015: 4 € / MWh Management Fee
 - Power trading:
 - Increased volume and flexibility
 - Short term trading moves closer to balance power
 - Infrastructure available for “post-EEG” era

Experiences of 10 years Direct Marketing RP in Germany - 2

- Challenges

- Power trading market design („Merit Order“) is not favourable towards RP in all market scenarios
- Aggregator taking all market and balancing risks
 - Due to historical reasons as well as competition plant owners take almost no forecasting and balancing risks
 - Thus missing incentive to operate plant following market conditions
- High level of regulation
 - Inflexible process within grid assignments
 - Lack of market incentives leads to regulation on detailed technical level (e.g. mandatory remote control capability)

Considerations for Japanese Market

- Incentivise participation in direct marketing by allowing low entrance levels
 - Possibility to return to status quo ante (FIP -> FIT)
 - Limit regulations to minimum
- Standardised processes across transmission grids
- Vitalization of the JEPX Intraday market
 - E.g. Introduction of flat rate, lowering transaction fee

Thank you!