

Marktintegration von Erneuerbaren – Markt statt Förderung?!

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Kora Töpfer

Senior Public & Regulatory Affairs Officer, EPEX SPOT

k.toepfer@epexspot.com, +33 1 73 03 62 07

A truly European Power Exchange

20+ nationalities in staff

302 members in 21 EU countries

7 European shareholders

51% private, 49% TSOs

8 European markets operated




8 new planned

21 borders market-coupled

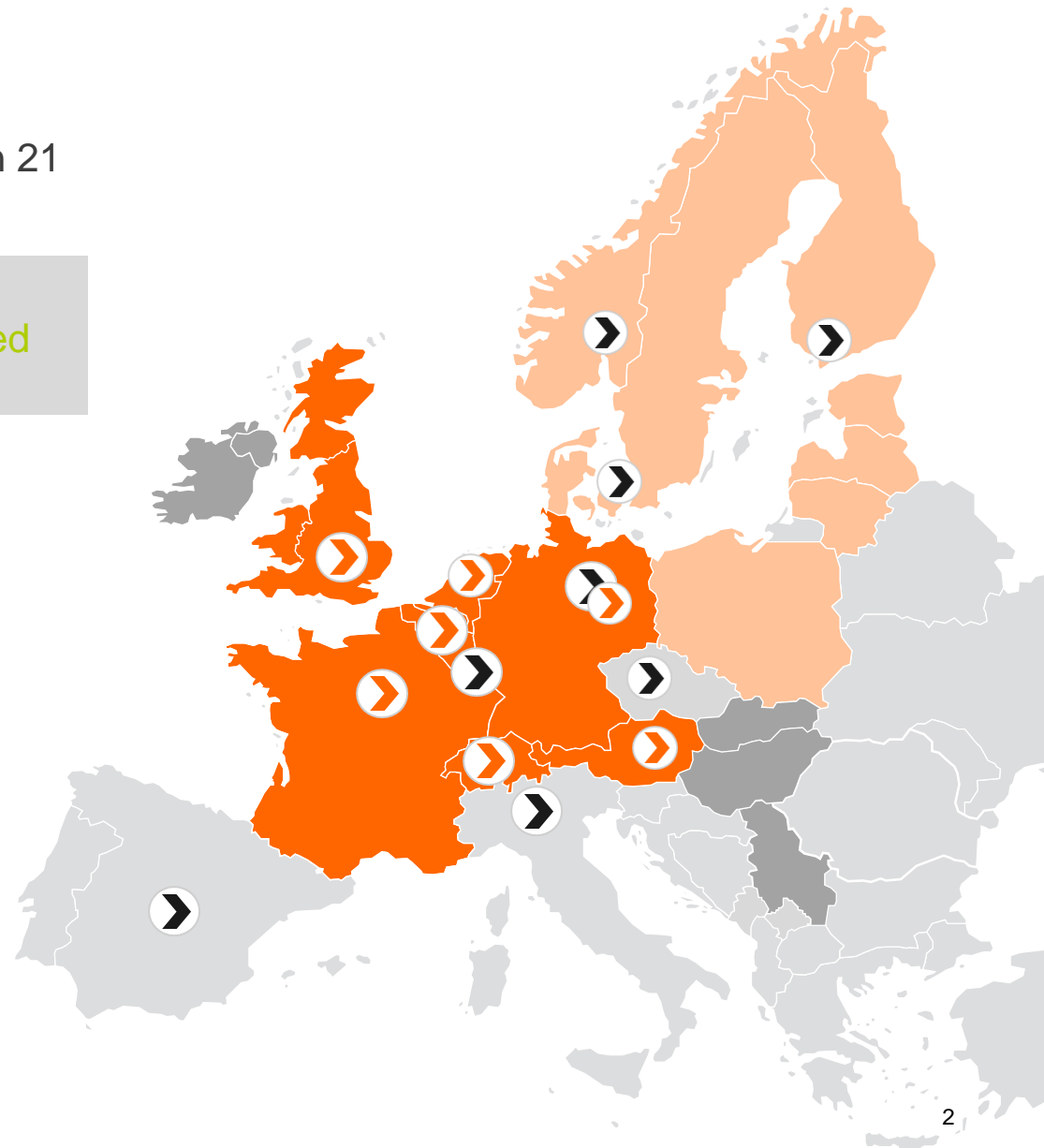
7 local offices across Europe

14 EEX Group

Markets covered under the roof of the Clearing House **ecc**

-  Current EPEX markets
-  Coming soon
-  Serviced Power Exchanges

 Local EPEX / EEX Group offices



One gateway to value the whole chain of power trading

> **eex**

> **epexspot**

**FUTURES
MARKET**



**CAPACITY
MARKET**



**DAY-AHEAD
AUCTION**



**INTRADAY
CONTINUOUS**

Year/Month/Week
before delivery

Year(s) before/
after delivery

One day
before delivery

Until 5 min before
delivery

HEDGE
fluctuations

Value
**CAPACITY &
DEMAND RESPONSE**

Value
**PRODUCTION
CONSUMPTION**

Value
FLEXIBILITY

> **ecc**

Integrated & Secure Clearing Solution

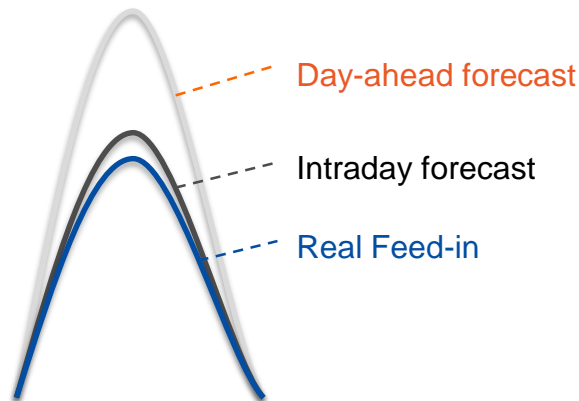
A multifold use of the intraday market

Traditionally, main reasons for intraday trading are

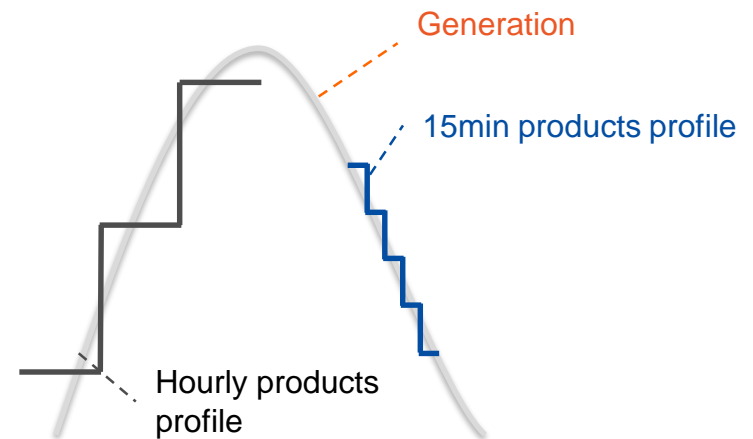
- 1 Adjust purchase and sale based on the results of the day-ahead auction
- 2 Run and plan power generation closer to delivery
- 3 Manage unforeseen events such as power plant outage
- 4 Enable arbitrage between neighboring countries

Today with increased share of renewables, **new reasons** for intraday trading are:

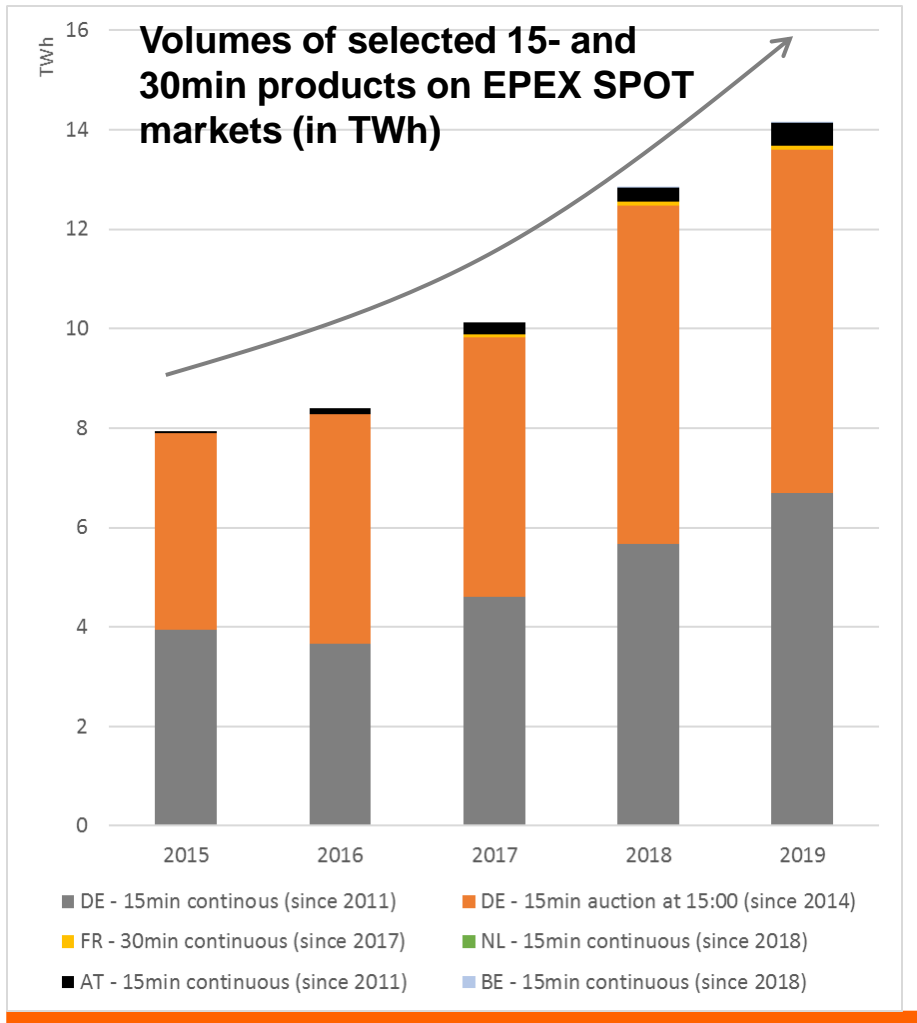
5 Balance forecast errors



6 Handle generation ramps with finer granularity products



Subhourly contracts: products responding to market needs



Success of 15-min products

— 25% of German intraday volumes traded on 15-min contracts in 2019



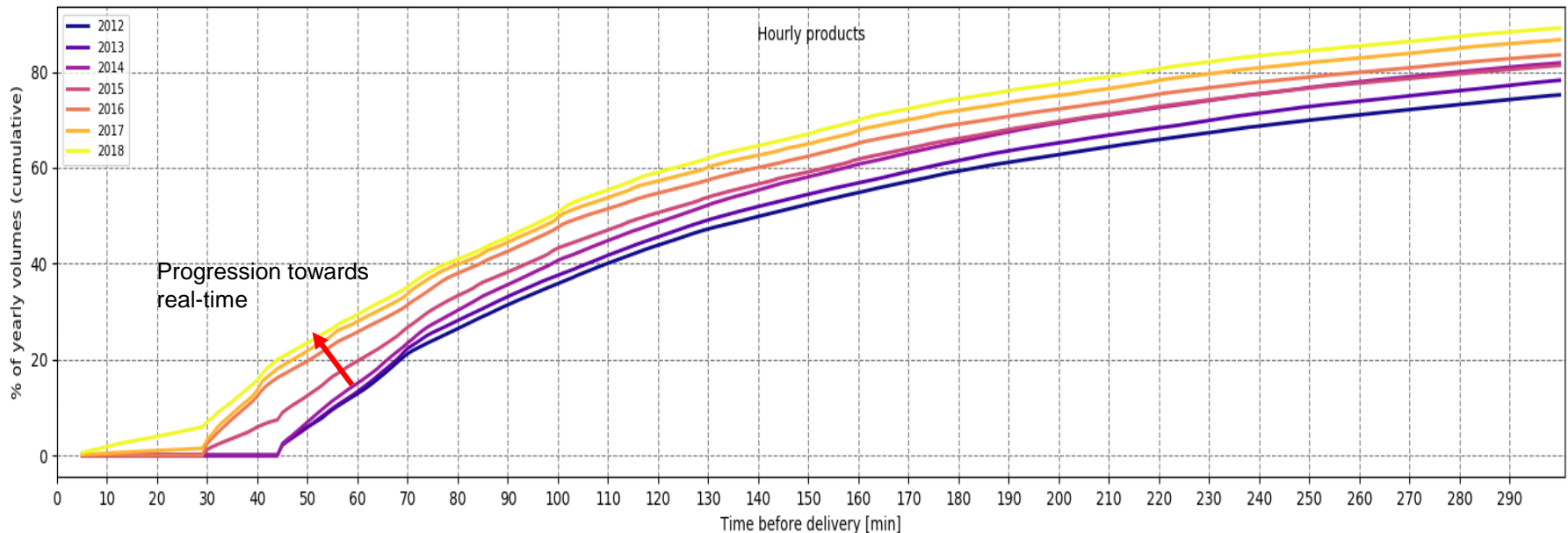
Clean Energy Package

confirms high priority for 15min products for intraday and day-ahead (Art. 7 Electricity Regulation)



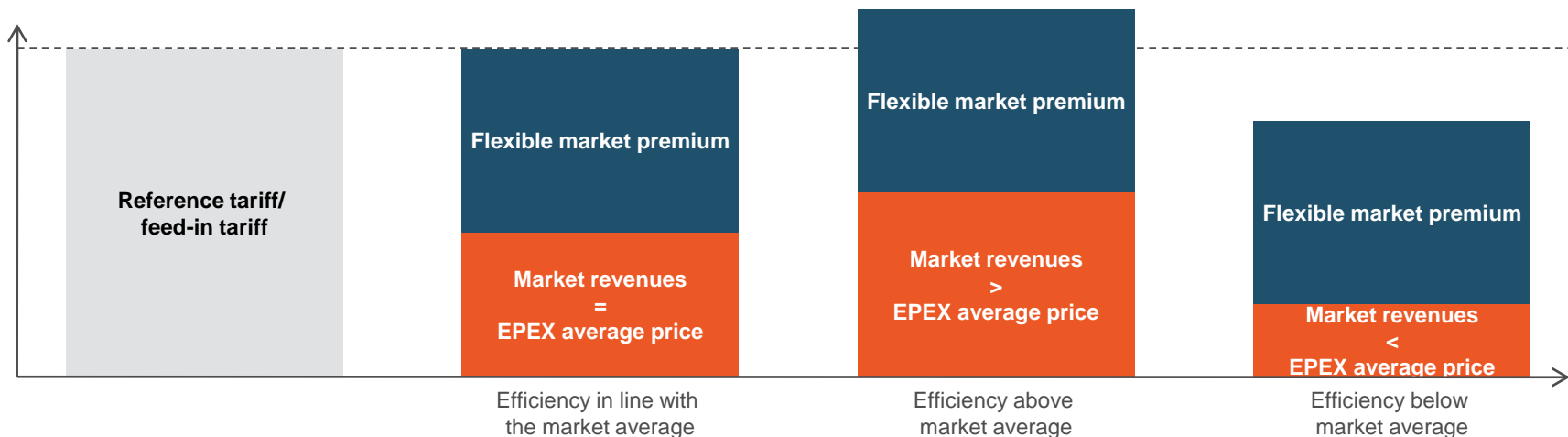
Intraday: a dynamic market, trading closer to real-time, at finer granularities

Lead time of all trades of 60min products in the German Intraday market



Source: EPEX SPOT

The functioning of the feed-in premium

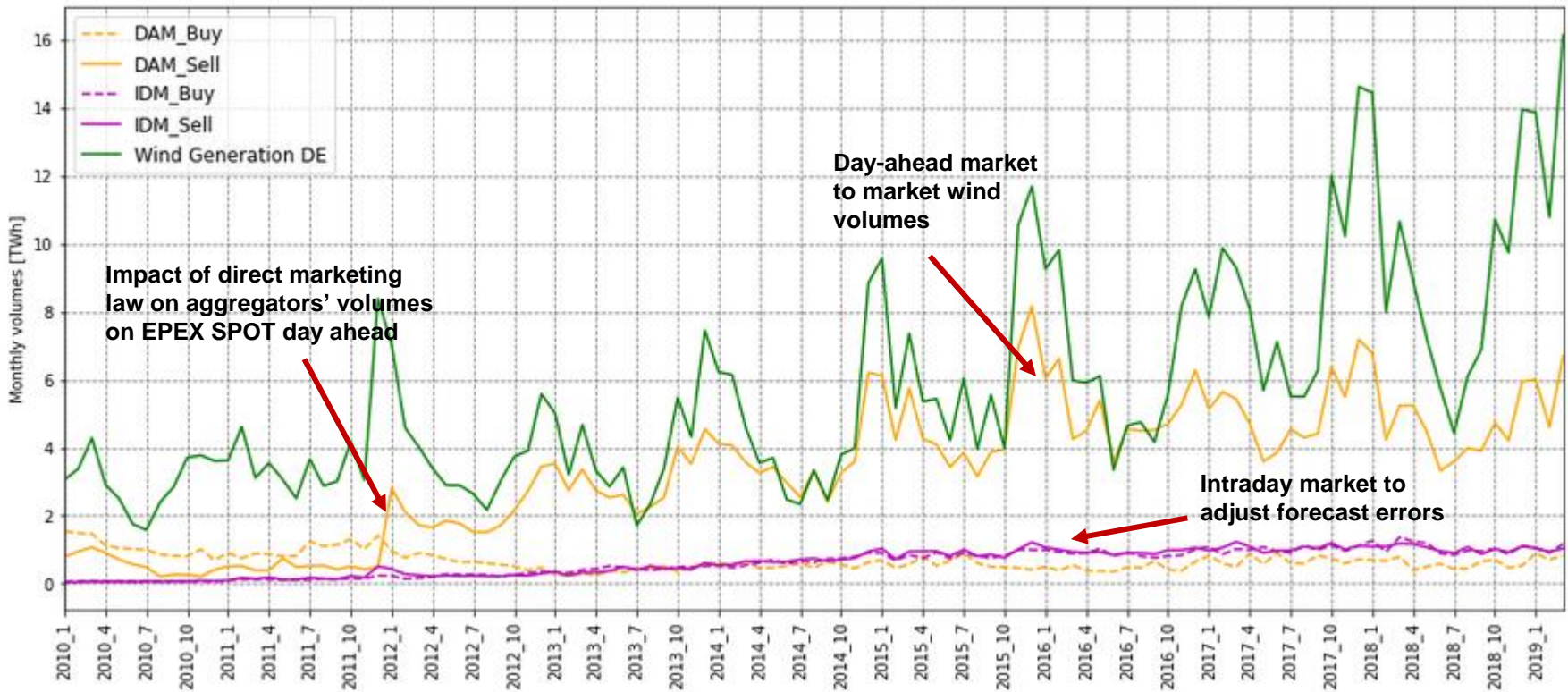


The feed-in premium sets incentives for the most efficient commercialisation of renewables at the power exchange and thus promotes the integration of renewables into the market

- ✓ Behaviour of renewable energies on the electricity market like other generation sources
- ✓ Incentives for systemic behaviour and efficient marketing
- ✓ Improvement of forecast quality
- ✓ Remote control of the renewable plants

Rise of aggregators

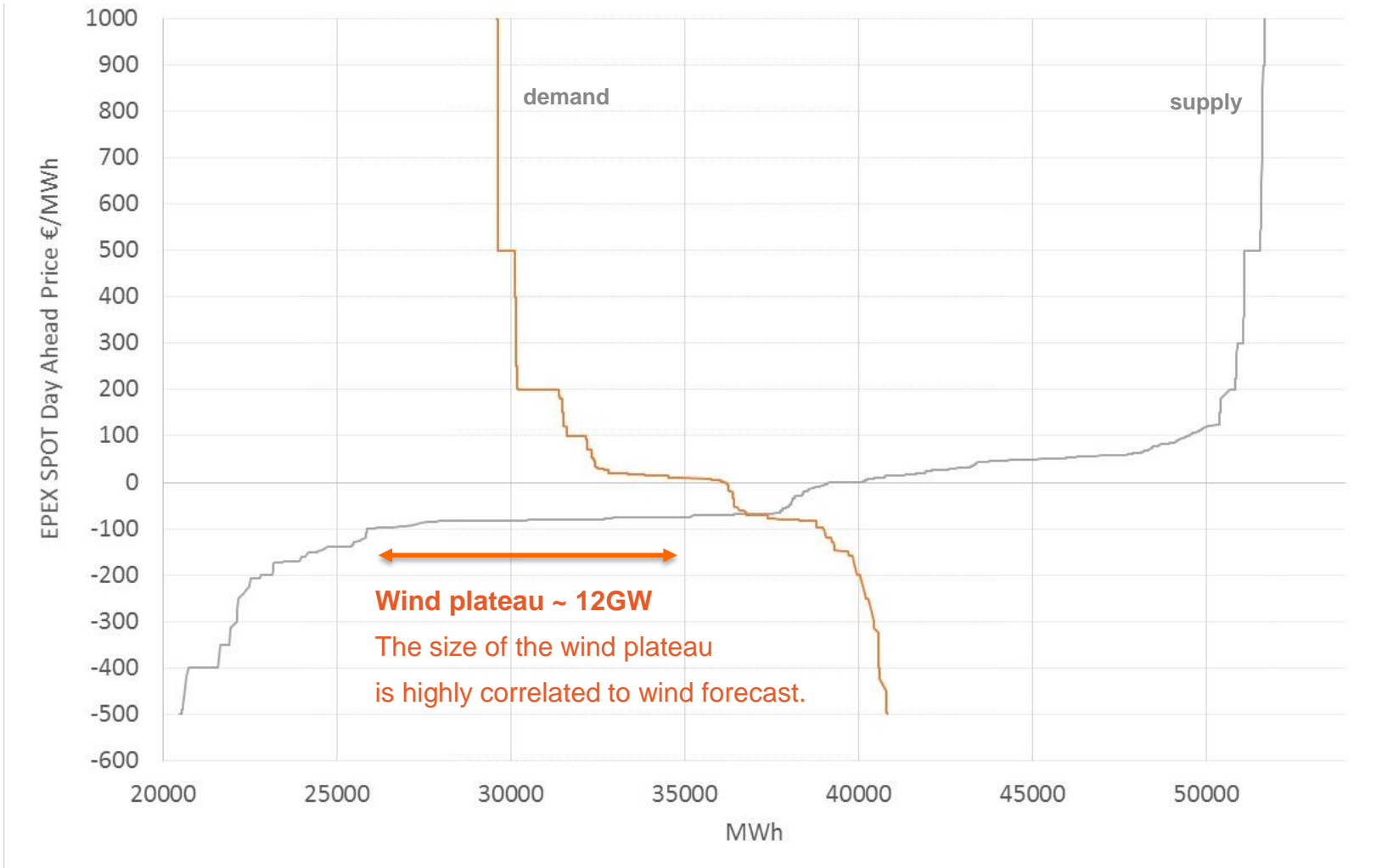
Volumes (in TWh) of aggregators* on the German spot market



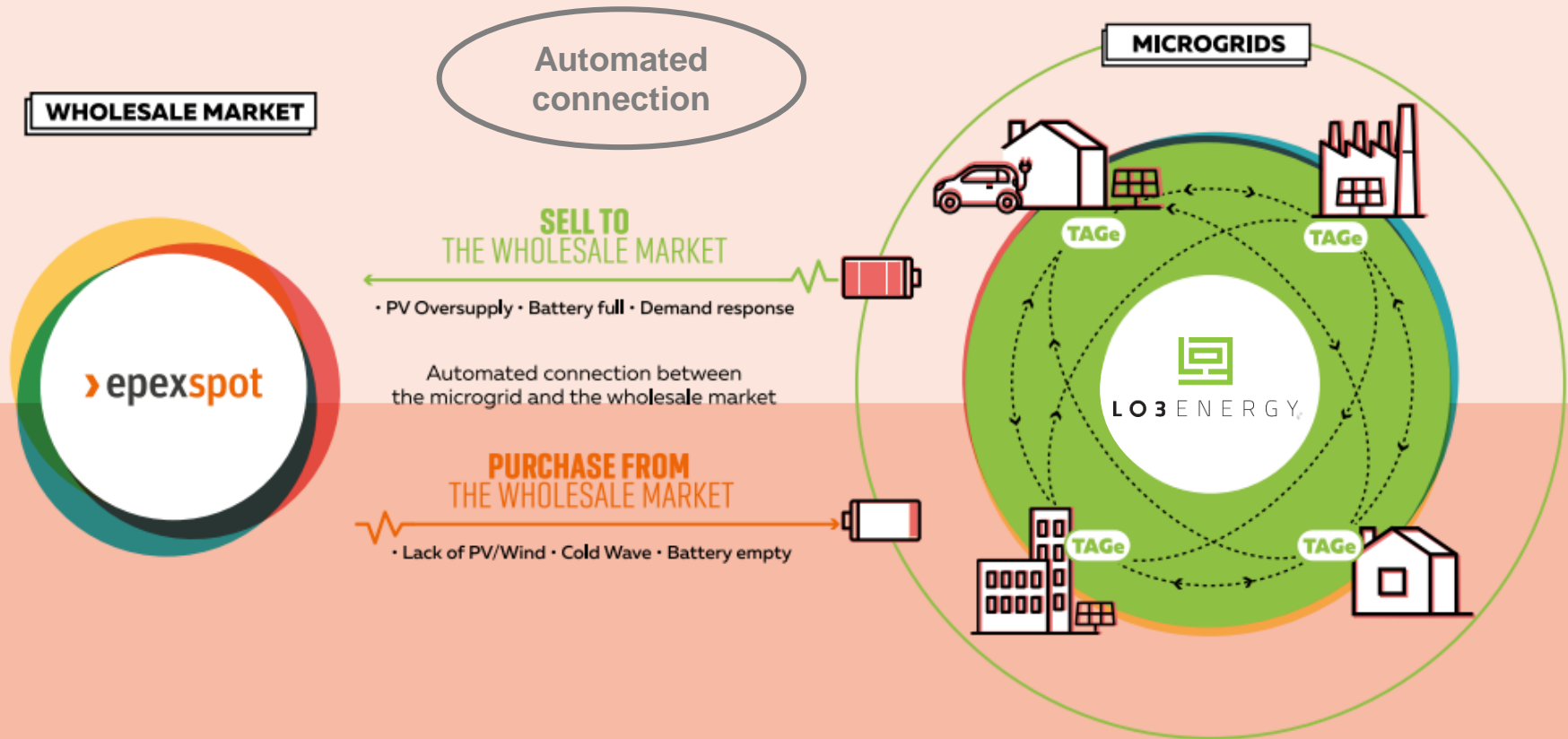
*In this charts, 22 companies whose declared main business model is aggregation of RES energy are taken into account. Therefore some utilities also acting as aggregators have been excluded.

Direct marketing works – Aggregators react to the market price signal

Aggregated curve on a windy day 26/12/2016, hour 7, price -67 EUR/MWh



From global to local: the micro-local will support flexibility needs at all grid levels



- ✓ Wholesale market
- ✓ Local flexibility markets, when and where relevant

- ✓ Microgrids
- ✓ Smart devices
- ✓ Electric vehicles
- ✓ Storage
- ✓ Any type of flexibility

Thank you for your attention!

EPEX SPOT Paris

5 boulevard Montmartre
75002 Paris
France
Tel +33 1 73 03 96 00
info@epexspot.com

EPEX SPOT London

11 Westferry Circus
Canary Wharf
London E14 4HE
United Kingdom

EPEX SPOT Bern

Marktgasse 20
3011 Bern
Switzerland

EPEX SPOT Amsterdam

Quarter Plaza
Transformatorweg 90
1014 AK Amsterdam
The Netherlands

EPEX SPOT Leipzig

Augustusplatz 9
04109 Leipzig
Germany

EPEX SPOT Brüssel

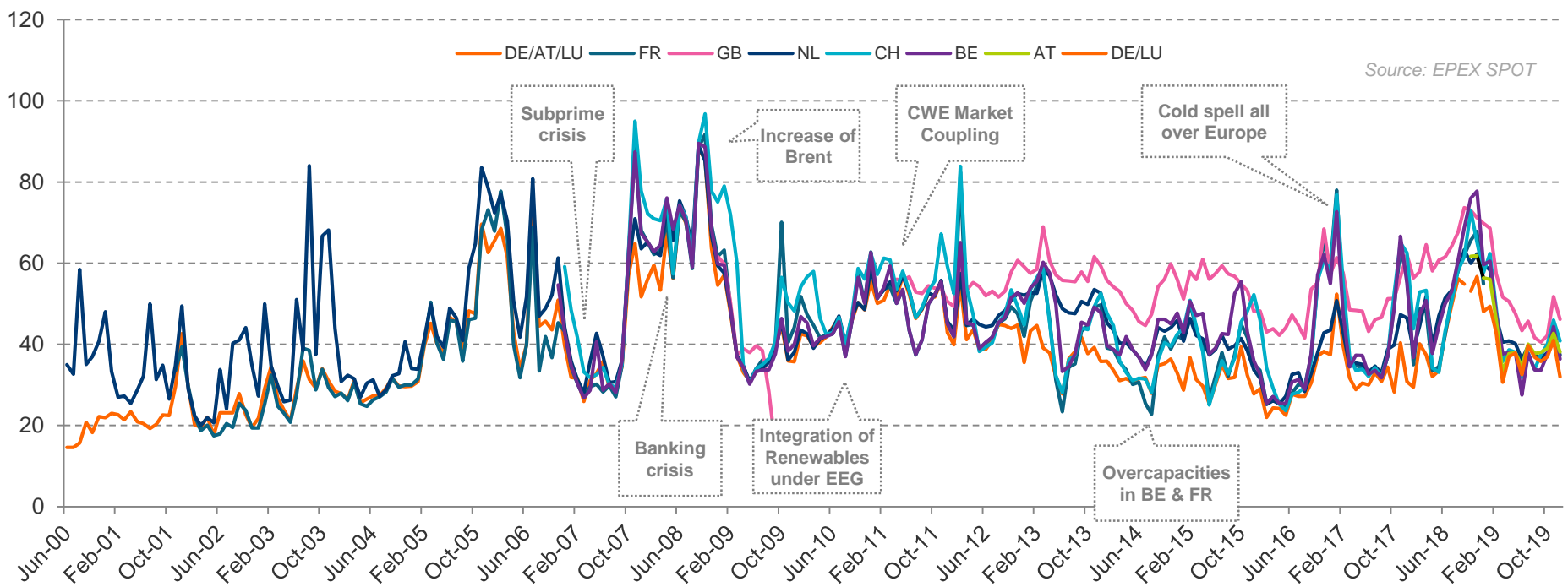
Treesquare, Square de Meeus 5-6
1000 Bruxelles
Belgium

EPEX SPOT Wien

Mayerhofgasse 1/19
1040 Wien
Austria

Backup

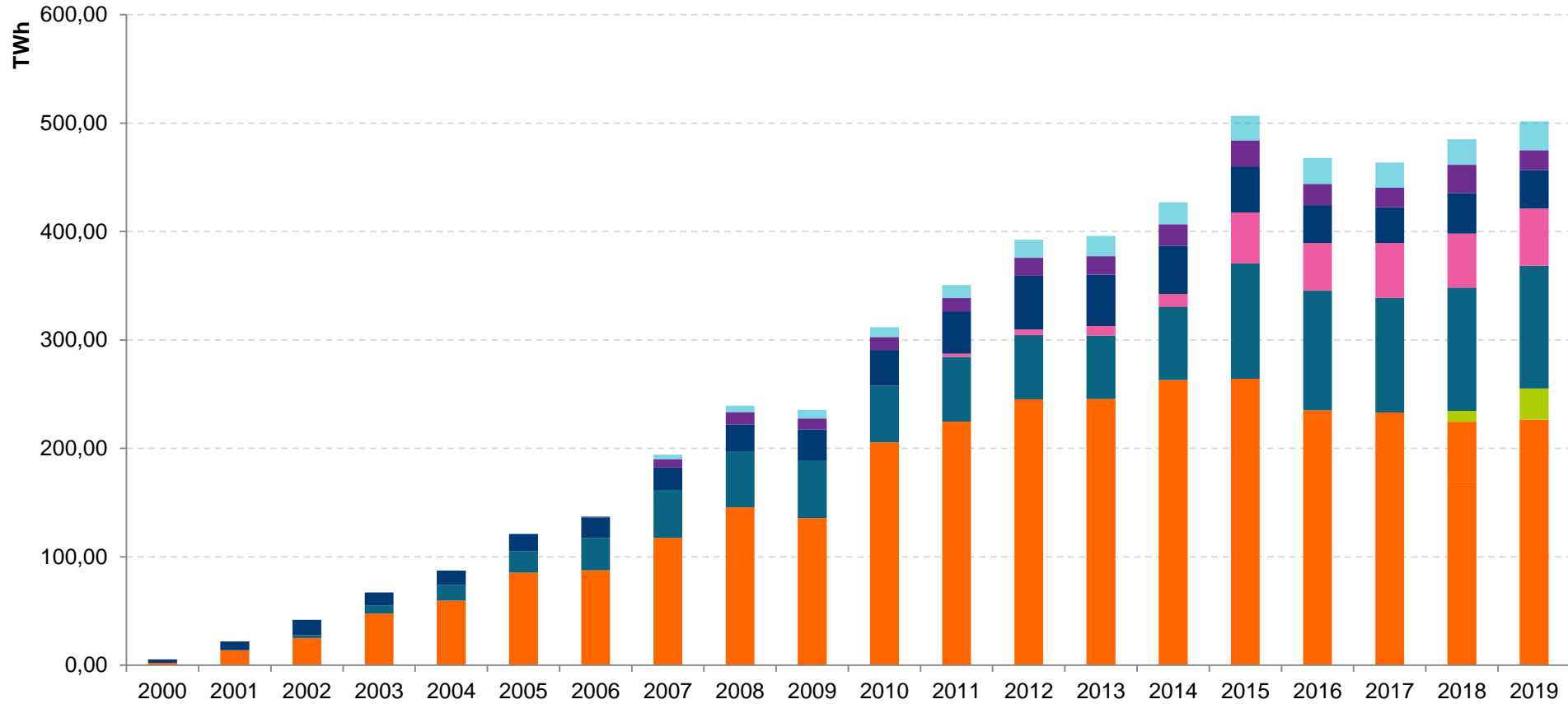
Day-Ahead markets: Price evolution



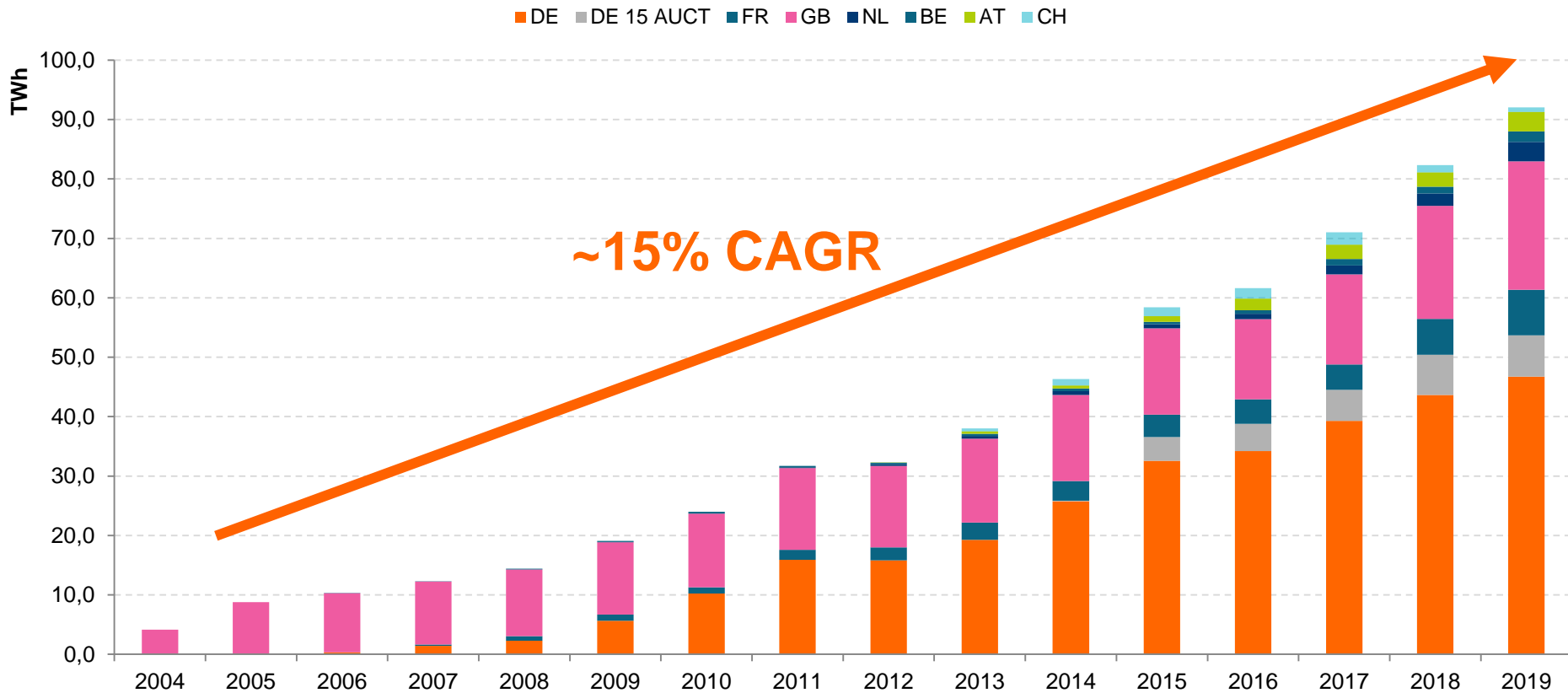
Market	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AT (Phelix AT)										59.92	40.06
DE/AT/LU (Phelix)	38.85	44.49	51.12	42.60	37.78	32.76	31.63	28.98	34.19	41.73	-
DE/LU (Phelix DE)										52.60	37.67
FR	43.01	47.50	48.89	46.94	43.24	34.63	38.48	36.75	44.97	50.20	39.45
CH (Swissix)	47.92	51.02	56.18	49.52	44.73	36.79	40.30	37.88	46.00	52.22	40.92
NL	39.16	45.38	52.03	48.00	51.95	41.18	40.05	32.24	39.31	52.53	41.20
BE	39.36	46.30	49.37	46.98	47.45	40.79	44.68	36.61	44.58	55.27	39.35
GB (in £)	-	-	47.18	44.51	49.68	42.02	40.43	40.43	45.32	57.44	42.85

Day-Ahead markets: Traded volumes

DE-AT DE-LU AT FR GB NL BE CH



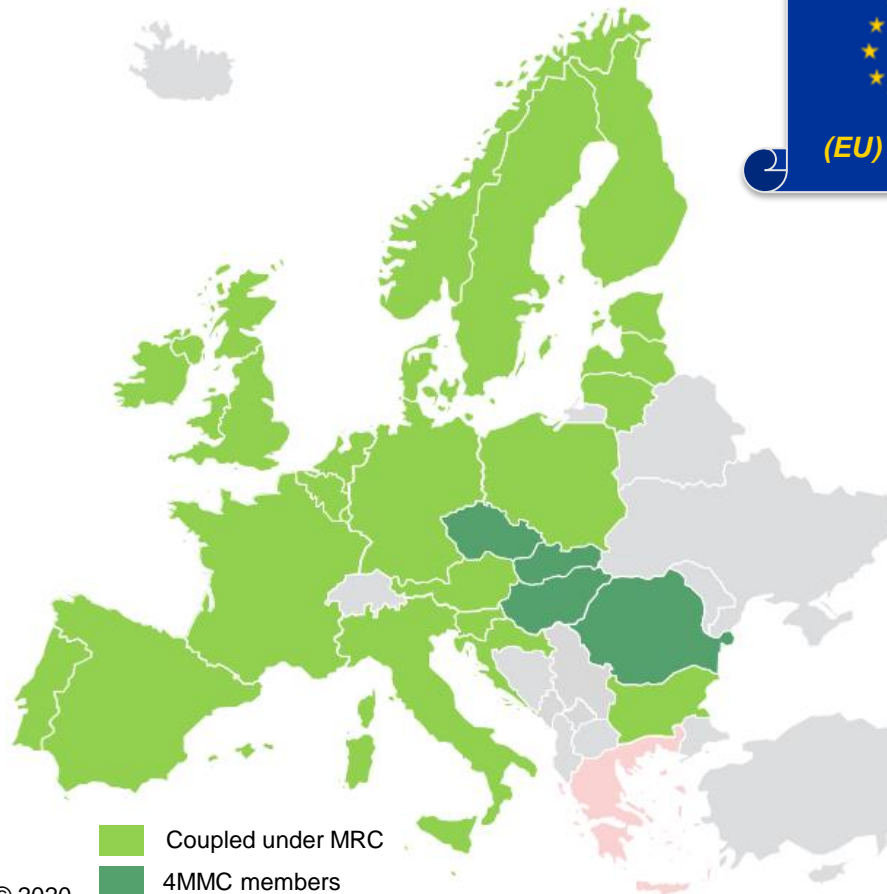
A dynamic Intraday market, trading closer to real-time, at finer granularities



- Intraday markets are very active both locally and cross-border
- Cross-border trades represent on average 20% of total traded volume

Two « Target Models » for market integration, now set in the EU Law

Day-Ahead Market Coupling

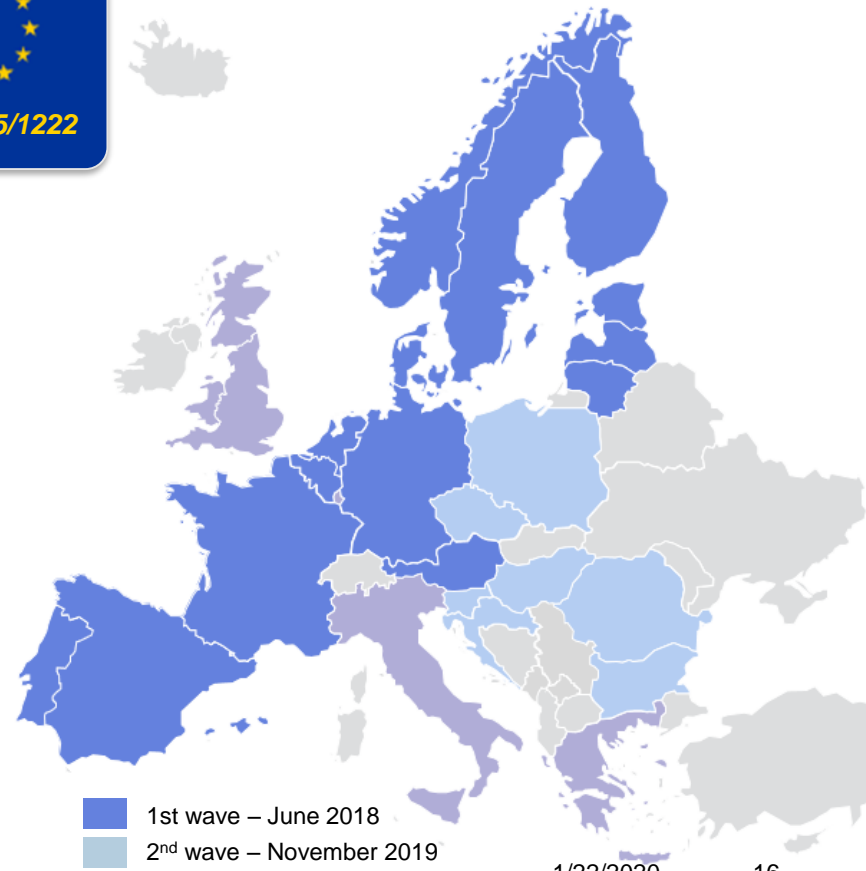


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- Coupled under MRC
- 4MMC members
- PCR members (not coupled)



Intraday Market Coupling



- 1st wave – June 2018
- 2nd wave – November 2019
- 3rd wave – TBC

1/22/2020

16

3 steps of market integration

1

Pure system integration

- Regulated remuneration (feed-in tariff)
- No reaction to market price signal
- No price risk
- TSOs in charge of commercialisation of renewables

2

Direct marketing

- Mixed remuneration from market revenues and support scheme (feed-in premium)
- Limited reaction to market price signal
- Limited price risk
- incentives for the most efficient commercialisation of renewables

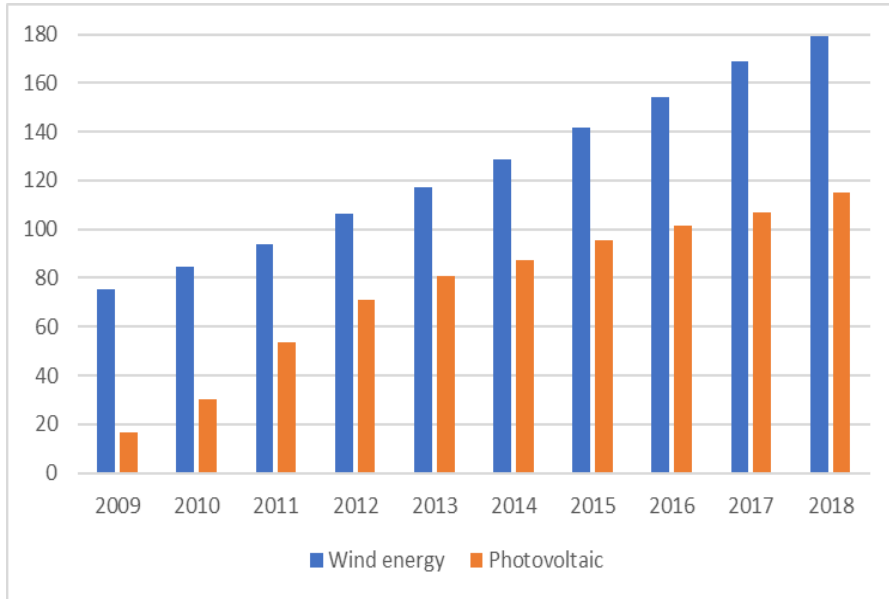
3

Full market integration

- No support scheme, but remuneration from market revenues (power exchange, PPA, GoO, etc.)
- Full reaction to market price signal
- Full market price risk
- Well-functioning carbon market needed

Power markets successfully integrate considerable amounts of renewables

Installed capacity in the EU (in GW)

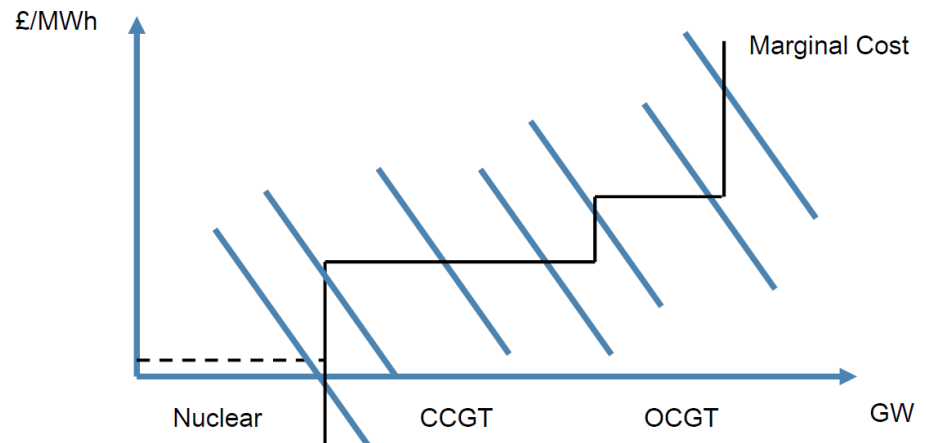


Source: IRENA, 2019

In Germany:

- **79.7 GW renewables are marketed under feed-in premium (Direktvermarktung)**
- **95% of wind and 25% of solar are marketed under feed-in premium.**

Generation mix evolution as renewables enter



Source: Source: Green and Léautier, 2015

CCGT = Combined cycle gas turbine power plant
 OCGT = Open cycle gas turbine plant