

MARKET REPORT 2021

CURRENT TRENDS AND DEVELOPMENTS OF
THE MARKET AND GRID SITUATION

PRESENTATION OF KEY FINDINGS

WEBINAR 28/05/2021

Welcome to the presentation of the Amprion Market Report 2021

Dr Hendrik Neumann
Chief Technical Officer (CTO), Amprion GmbH

Information on the course of the webinar

- ▶ All participants are automatically muted
- ▶ Questions can be asked at any time via the chat
- ▶ Questions that we cannot answer due to time constraints will be answered afterwards via e-mail (registration e-mail)



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AGENDA

Welcome and introduction

09:30-09:35

Dr Hendrik Neumann

Presentation of the key findings

09:35-10:15

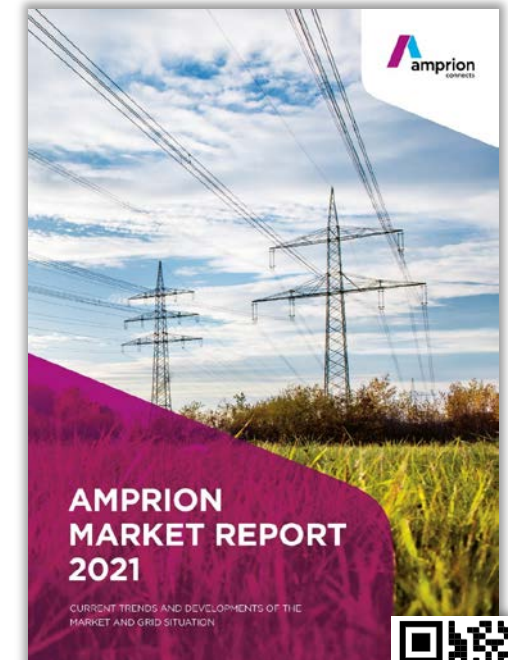
- ▶ Overview
- ▶ Current trends in the electricity generation in Germany
- ▶ Impact of the Covid-19 pandemic
- ▶ Market analysis
- ▶ Grid analysis
- ▶ Future developments
- ▶ Conclusion & outlook

Lena Breuer
Dr Peter Lopion

Q & A session

10:15-10:30

Answering questions from the chat



Presentation of the key findings

Lena Breuer, International Affairs, Amprion GmbH

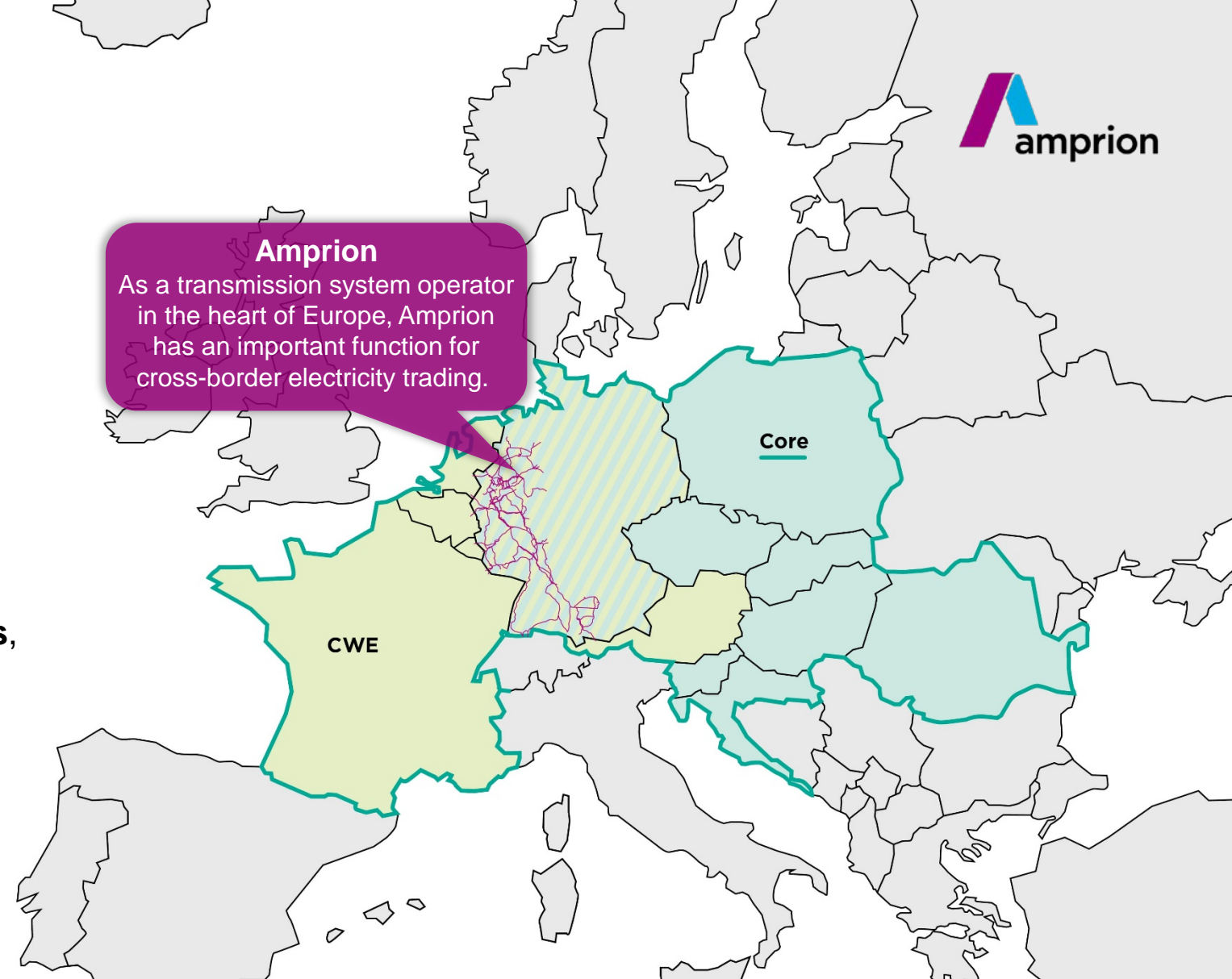
Dr Peter Lopion, International Affairs, Amprion GmbH

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OVERVIEW

The Amprion Market Report presents the current developments of the European electricity market

- ▶ It provides evidence of the **dynamic electricity market environment** in which Amprion operates together with many other institutions in Europe
- ▶ Amprion is strengthening and steadily enhancing the **cooperation with other TSOs, power exchanges and market parties** in Central Western Europe (CWE) and beyond (e.g. in the Core project)
- ▶ The focus of the report lies on Amprion & Germany as well as **Flow-Based Market Coupling (FB MC)**

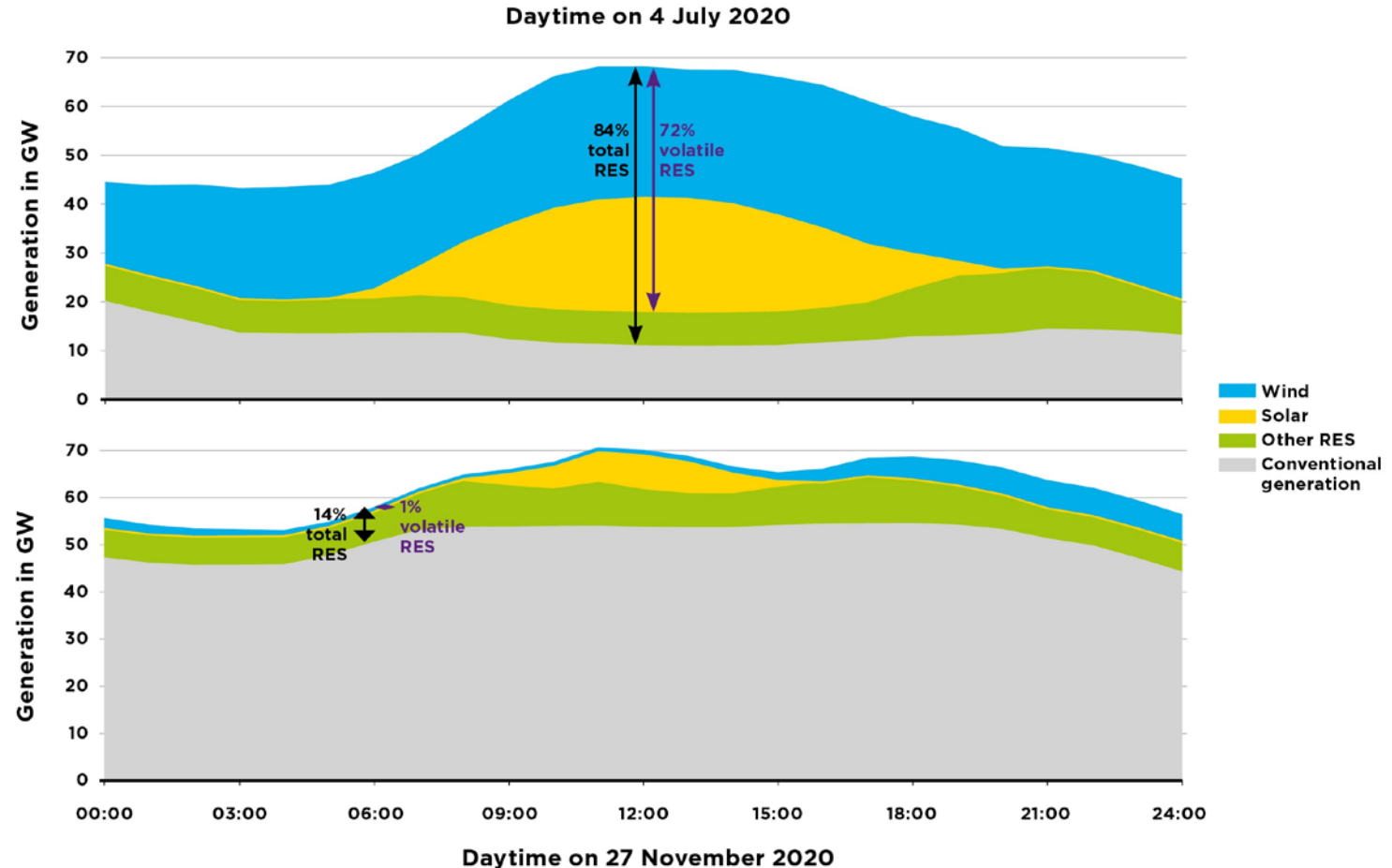


▶ Amprion connects electricity markets across borders

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CURRENT TRENDS IN ELECTRICITY GENERATION IN GERMANY

- ▶ The share of electricity generated from renewable energies (RE) reached almost 50% in 2020
- ▶ But **availability of RE varies significantly** depending on the time of day, season and general weather conditions
- ▶ Extreme examples in 2020:
 - ▶ **Highest share** of RE net electricity generation on 4 July at 12 p.m.: **84% (total), 72% (solar & wind)**
 - ▶ **Lowest share** of RE net electricity generation on 27 November at 6 a.m.: **14% (total), 1% (solar & wind)**



▶ Aspects of system stability must be consistently taken into account in system design

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IMPACT OF THE COVID-19 PANDEMIC

Focus on the energy sector

- ▶ **Lowest gross electricity consumption (544 TWh)** of Germany since 1999
- ▶ **Highest share of renewable energies in net electricity generation (49%)** of Germany ever
- ▶ **Lowest day-ahead electricity prices (€32/MWh)** since introduction of FB MC in CWE in 2015
- ▶ **Lowest gas prices (€12/MWh)** since 2004
- ▶ **Highest electricity imports (31 TWh of DA SCE*)** of Germany since introduction of FB MC in CWE
- ▶ **Highest price convergence (52% at max. ± €1/MWh)** in CWE since introduction of FB MC in CWE
- ▶ **Highest amount of hours with negative electricity prices** in Germany (298 h) since introduction of FB MC in CWE

* Day-ahead scheduled commercial exchanges

▶ 2020 – an exceptional year in every respect

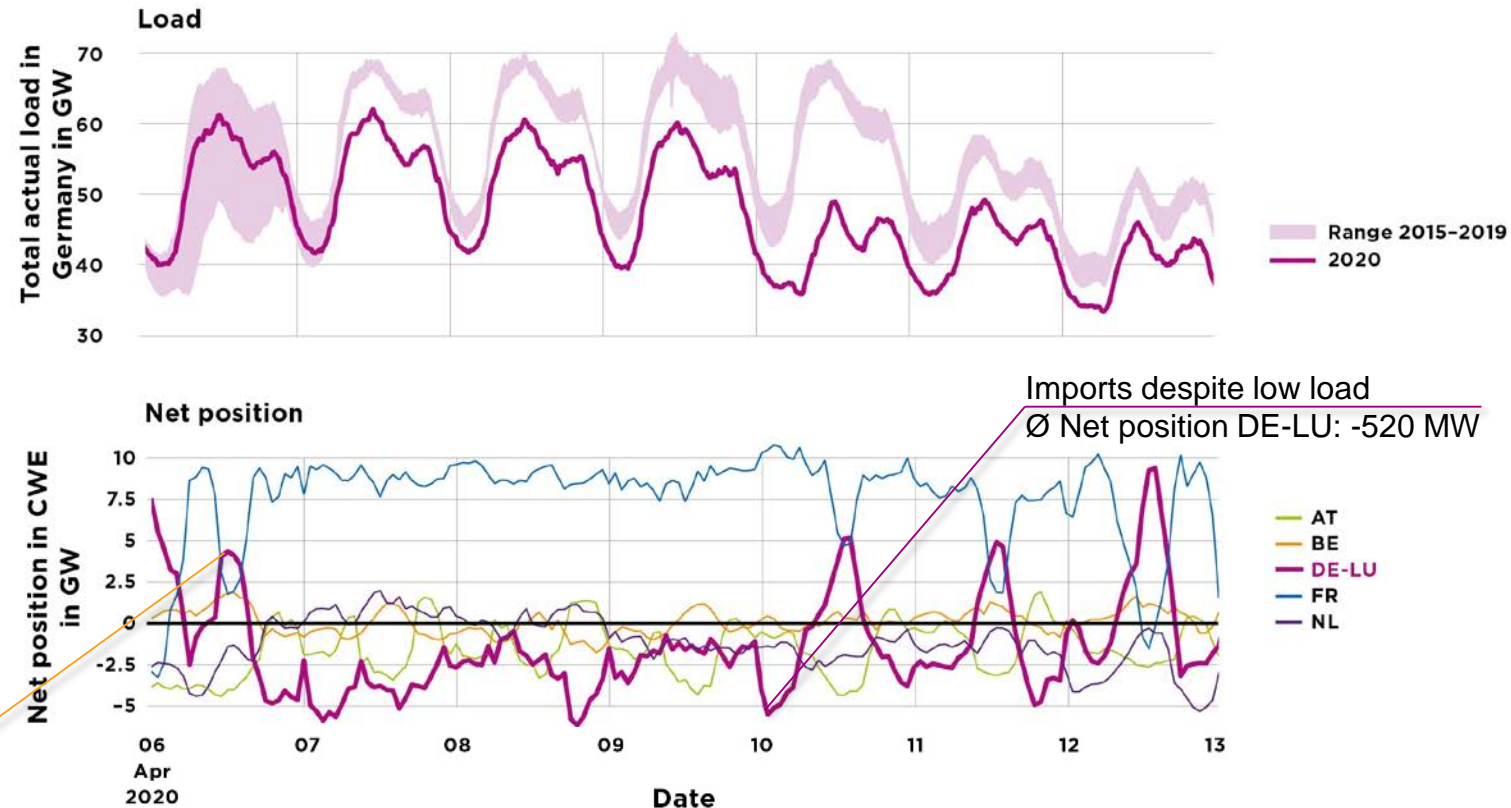
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IMPACT OF THE COVID-19 PANDEMIC

Exemplary week 'Lockdown' (06/04 - 13/04/2020)

- ▶ **Actual total load decreased significantly in Germany** (in April & May about -10%; over the whole year: -3%)
- ▶ **Significant change in the German electricity mix** (-23% coal, -14% nuclear, +8% gas, +23% solar & wind)
- ▶ **Another reason besides RE expansion and low load is the decrease in natural gas prices** (-24% compared to 2019, -36% compared to 2018)
→ shift in the merit order

Exports highly dependent on PV generation



- ▶ The corona pandemic made 2020 an exceptional year difficult to compare with previous years

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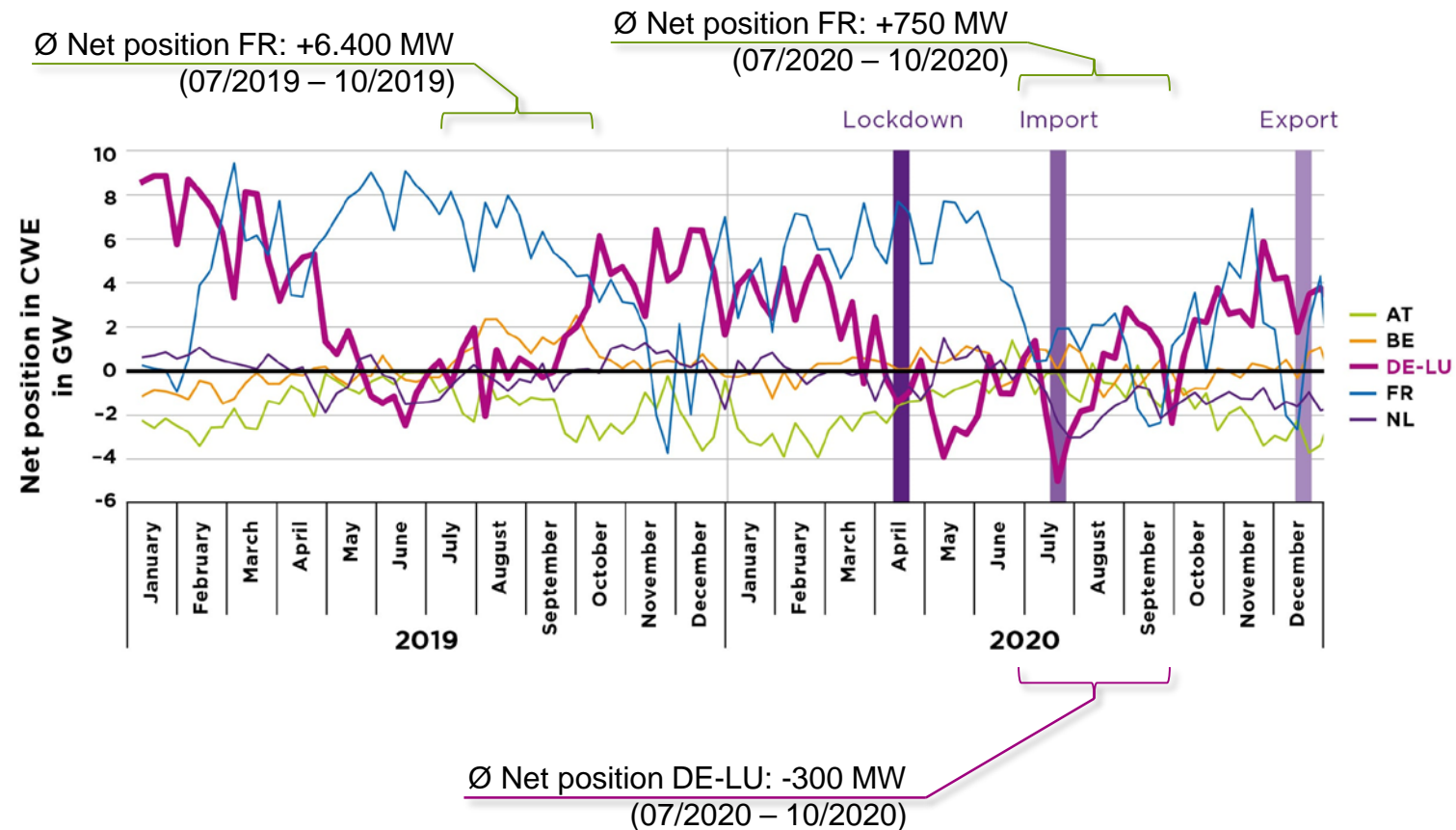
MARKET ANALYSIS

Exports & Imports in CWE

- ▶ Trend towards net imports of Germany during summer months; net exports during winter months
- ▶ Net position of France during summer 2020 much lower than in the past years
- ▶ ↑ German electricity **imports increased to 30.9 TWh¹** (+36.8% compared to 2019)
- ▶ ↓ **Decreasing exports to 53.2 TWh¹** (-10.3 % compared to 2019)
- ▶ Consequently, electricity net exports decreased to **22.3 TWh¹** (-39.3 % compared to 2019)
- ▶ Focus on 3 exemplary weeks

¹ Day-ahead scheduled commercial exchanges

Net positions (NP) in CWE – weekly average (2019 & 2020)



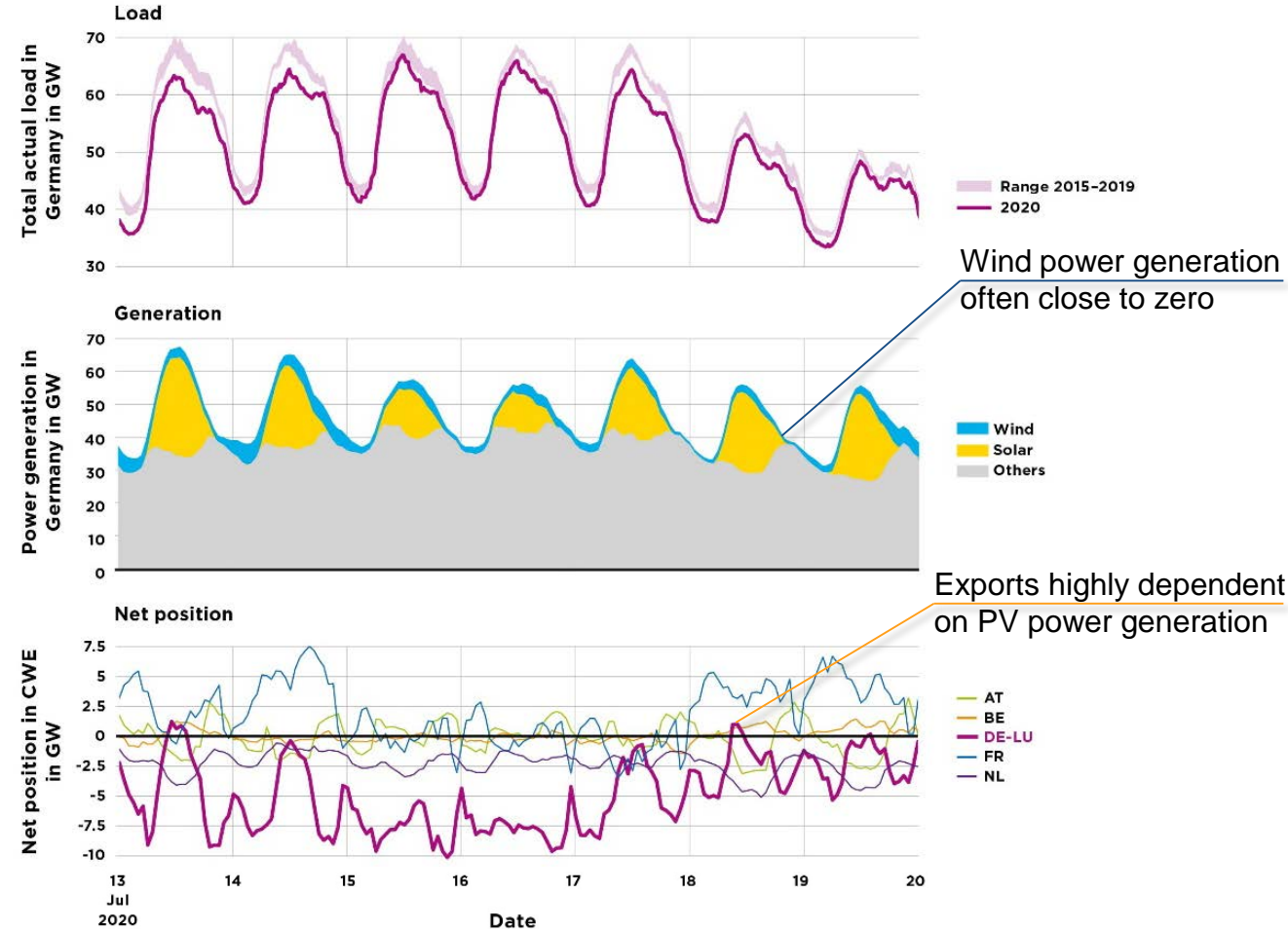
▶ Low NPs of CWE bidding zones and increasing dependency of Germany on imports during summer 2020

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MARKET ANALYSIS

- ▶ Summer 2020 – DE becoming a net importer
 - ▶ **General findings ('Import' week 13/07 - 20/07)**
 - ▶ **Actual total load about to converge to the level of previous years** (Ø -5 % compared to 2019)
 - ▶ **Very low wind power generation during the whole week** (Ø 3.1 GW wind power generation in DE)
 - ▶ **On 15/07 and 16/07 also low PV power generation** (peak generation of 15 GW – usually about 30 GW)
 - ▶ **Ø DA price of €35/MWh in CWE** (Ø DA price in CWE in 2020: €32/MWh)
 - ▶ **Very high price convergence in CWE: maximum price deviation of ± €1/MWh in 75% of the hours**
 - ▶ **No trade limiting network elements of Amprion monitored during this week**

Exemplary week 'Import' (13/07 - 20/07/2020)



- ▶ High imports from France, Netherlands, Switzerland and Denmark during summer 2020

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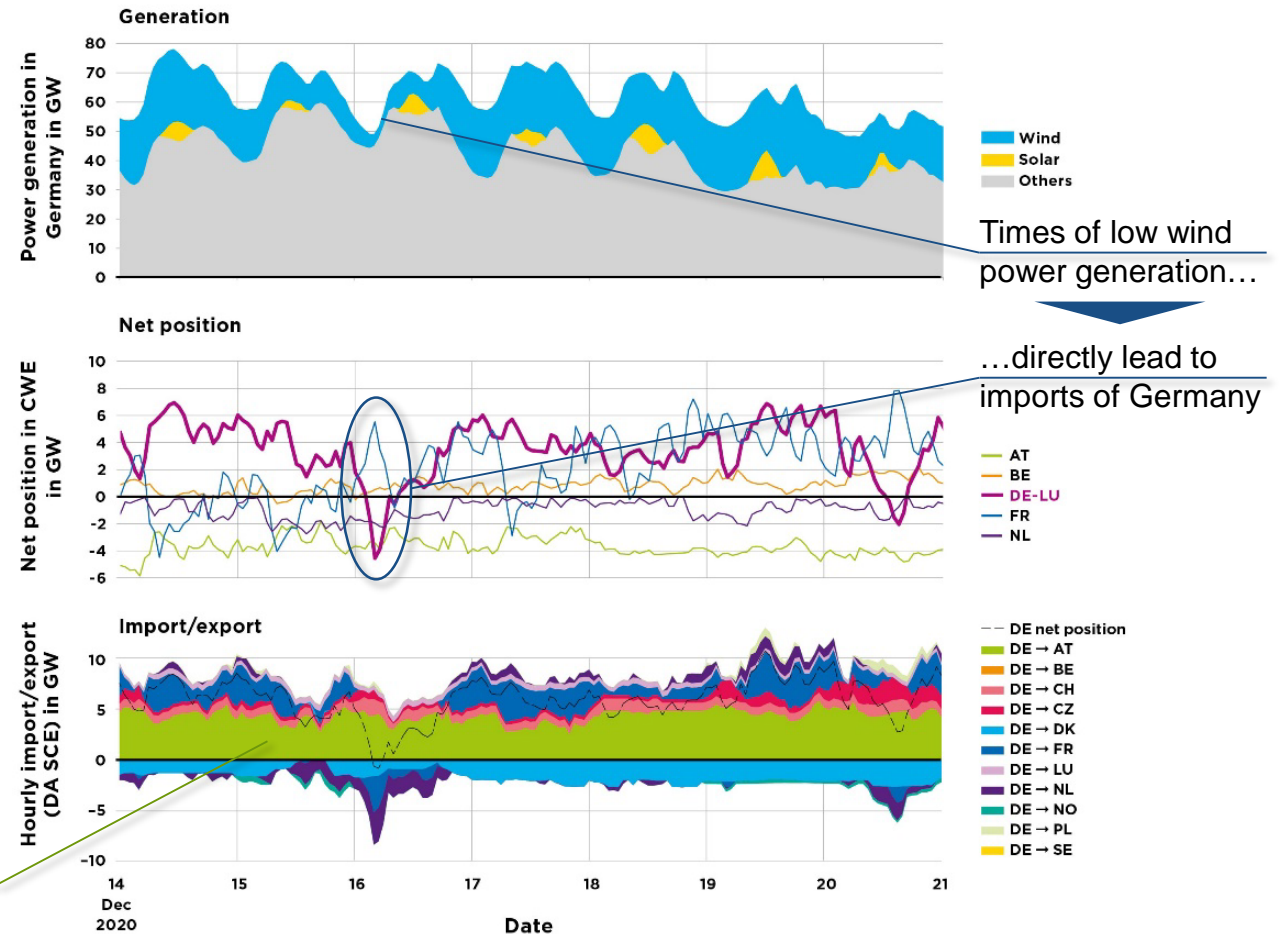
MARKET ANALYSIS

► Winter 2020 – wind power as driver for exports

► General findings ('Export' week 14/12 - 21/12)

- Actual total load reached level of previous years
- Very high wind power generation in Germany (Ø 19 GW)
- As usual low PV power generation in December
- Ø DA price of **€46/MWh** in CWE (Ø DA price in CWE in 2020: €32/MWh)
- Very low price convergence in CWE: maximum price deviation of **± €1/MWh** in only **23% of the hours**
- Overall high amount of trade limiting network elements during this week. Share of Amprion's internal network elements: **7.2%**

Exemplary week 'Export' (14/12 - 21/12/2020)



► High wind generation led to high exports during winter 2020

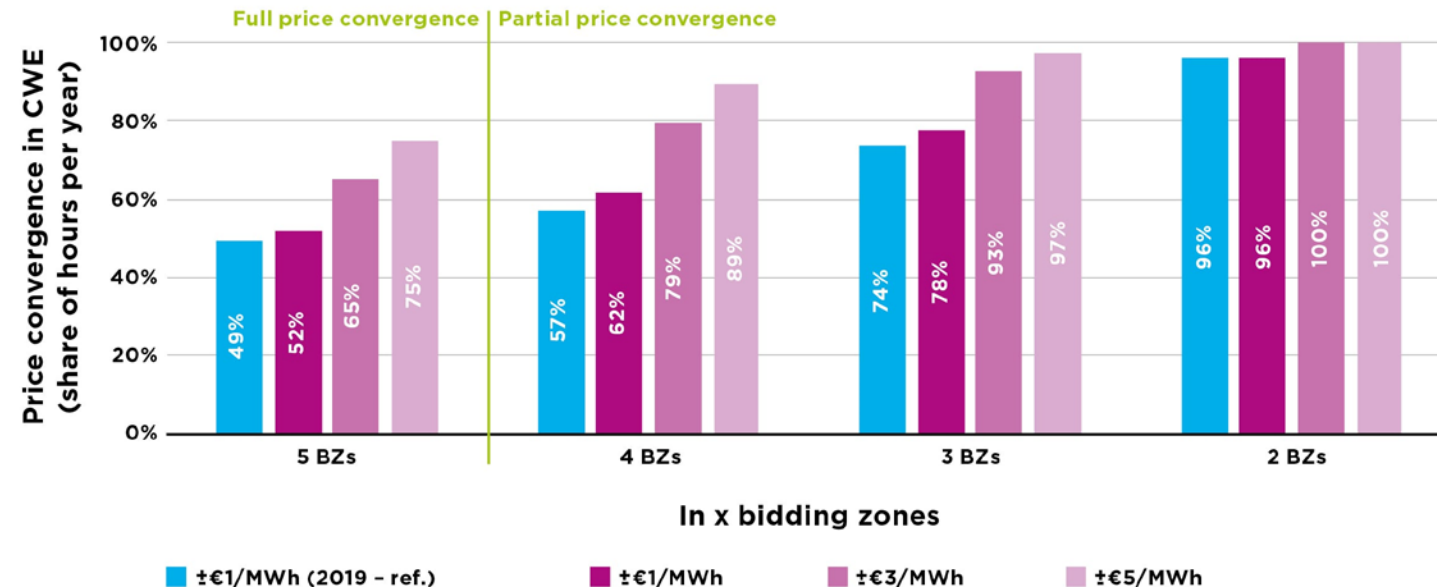
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MARKET ANALYSIS

► Increasing trend of price convergence in CWE

- **Significant reduction of Ø DA price in CWE (-19.1% compared to 2019)**
- **Ø DA price in CWE in 2020: €32/MWh**
(Ø DA price in DE-LU in 2020: €30.5/MWh)
- Increase of price convergence in CWE to **52% of the hours in 2020 with full price convergence** (max. deviation of ± €1/MWh)
- Increase in **hours with negative prices** in DE-LU up to **298 h** in 2020 (compared to 211 h in 2019)

Price convergence in CWE in 2020



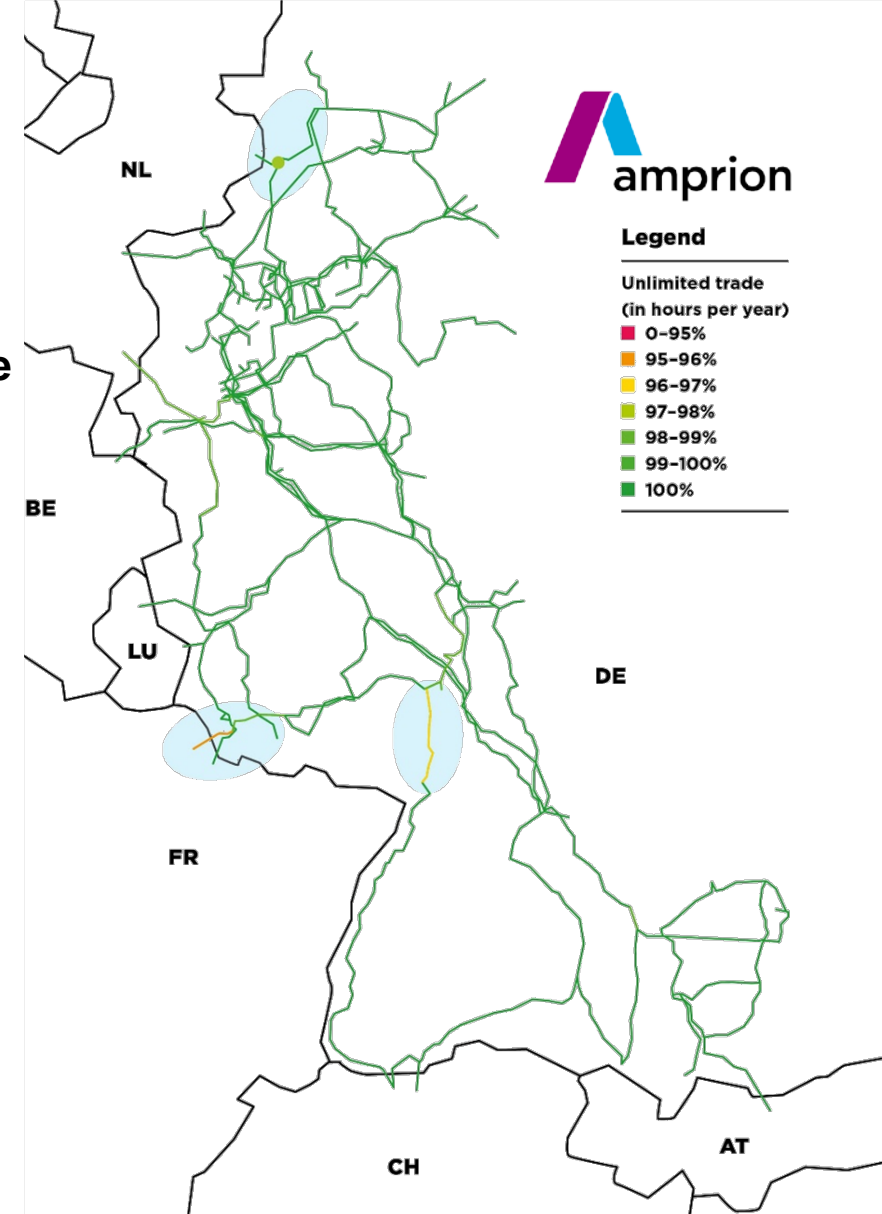
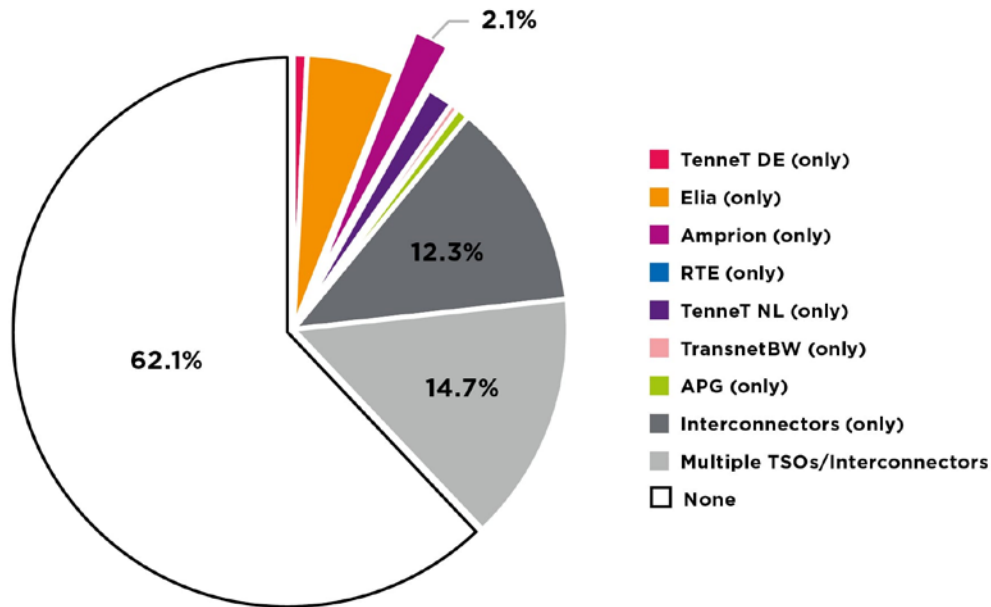
► Lowest average DA prices and highest price convergence since introduction of FB MC in CWE

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MARKET ANALYSIS

▶ Trading possibilities in CWE

- ▶ Market situations in which solely **Amprion's internal network elements were limiting trade in CWE only occurred in 2.1% of the hours in 2020**
- ▶ In around **74% of the hours in 2020, there were no limitations of trade in CWE** related to the grid or only related to the capacity of interconnectors



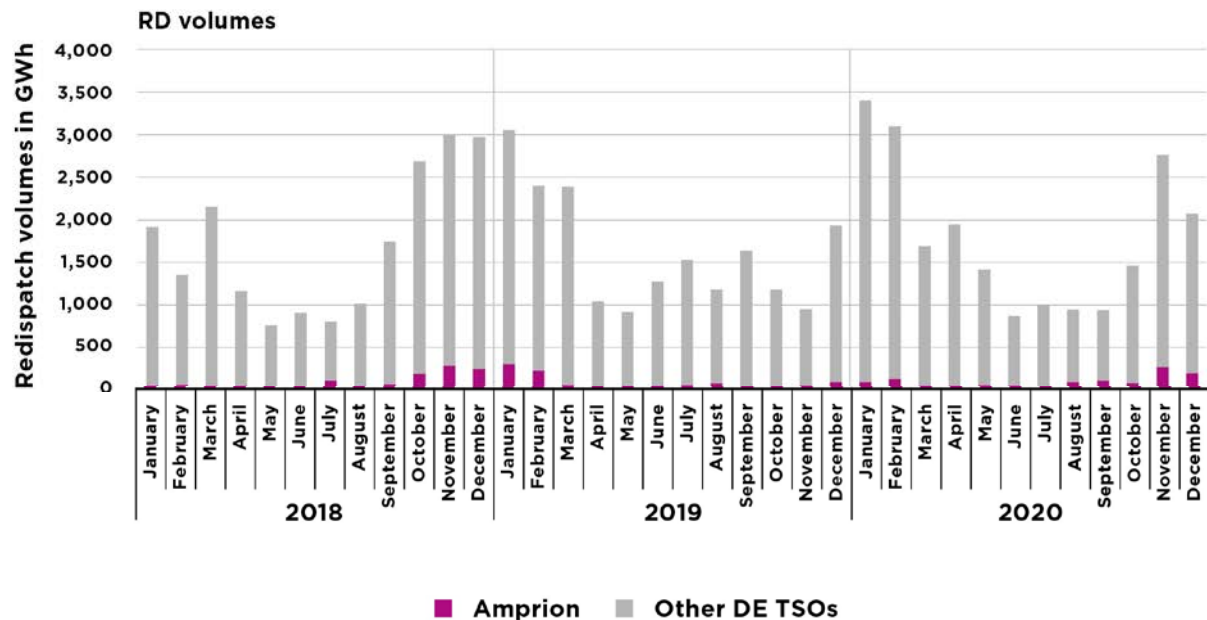
▶ Capacity made available to the CWE market remains high, enabling liquidity in the European electricity market

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GRID ANALYSIS

► Redispatch

- Slightly increased redispatch volumes compared to 2019 (again at the level of 2018)
- **Voltage induced redispatch increased in the last year (tenfold compared to 2019)**



► Challenges regarding voltage control

- **High power flows due to high wind power generation** from Northern to Southern Germany
- Leading to **high utilization of the transmission grid** and a high reactive power demand
- Amprion is planning to build **22 new reactive power compensation units** with a total capacity of almost 5.200 Mvar

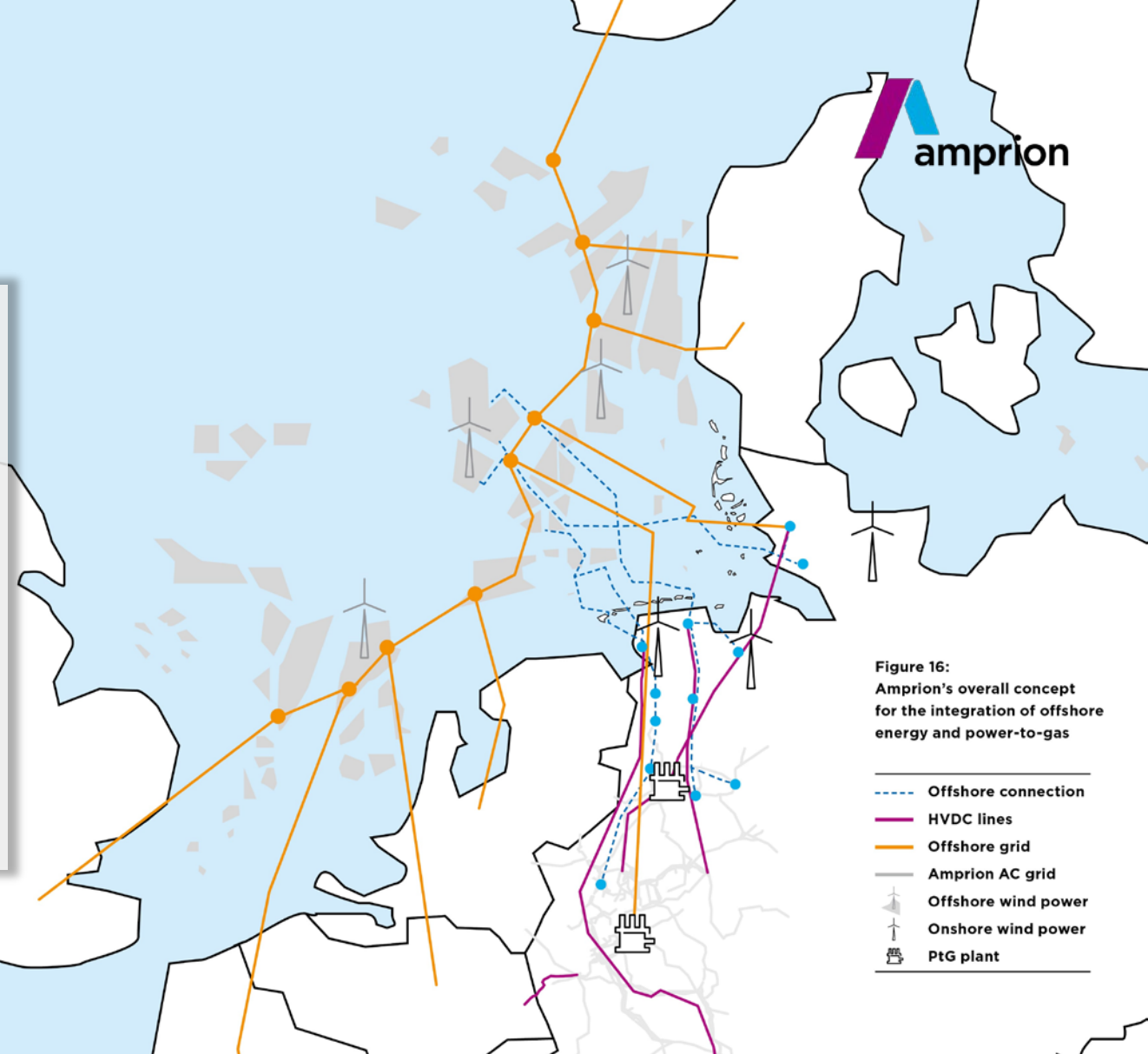
► Increasing challenge in voltage control due to high share of renewable energies in the grid

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FUTURE DEVELOPMENTS

► Current projects, plans & initiatives

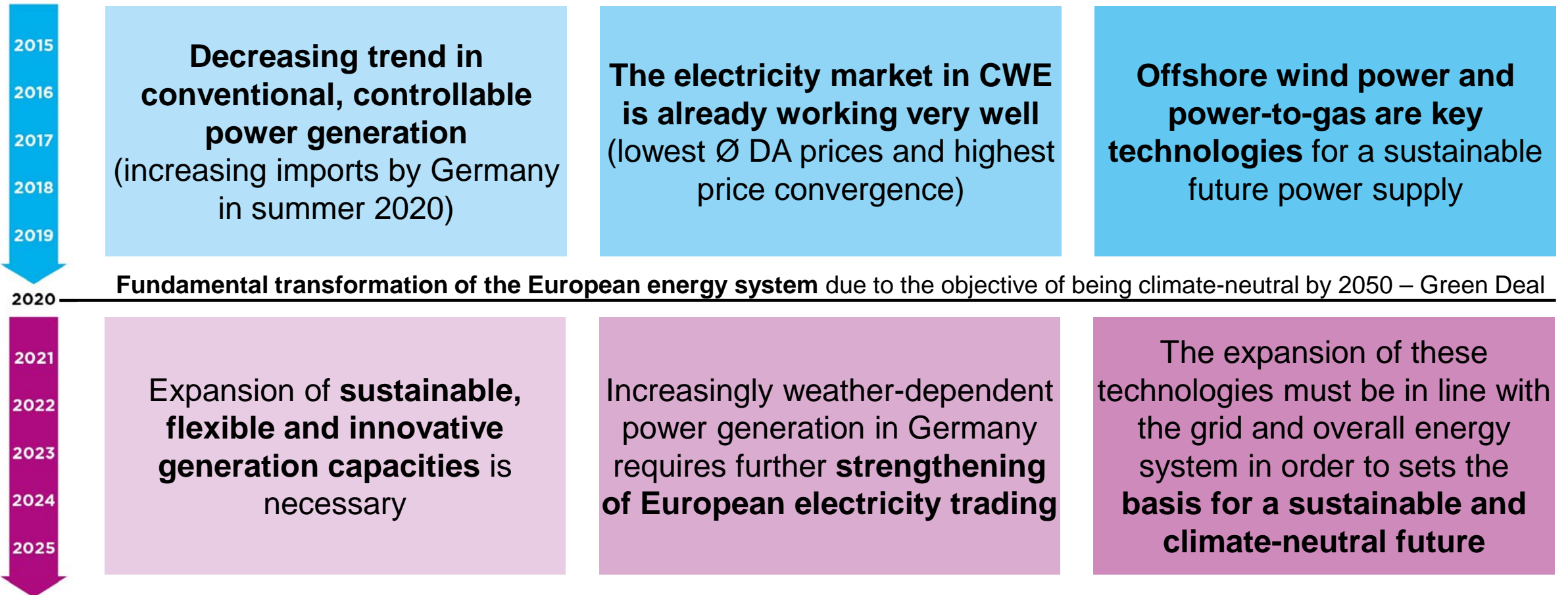
- Highlight 2020: ALEGrO go-live in November
 - Future grid development (e.g. A-Nord)
 - Power-to-Gas concepts (e.g. “Hybridge” project)
 - Offshore initiative “Eurobar”
- The massive **offshore wind power expansion**, **PtG concepts** and **grid expansion** need to cope with the requirements related to the Green Deal
- Offshore wind power and PtG plants **have to be implemented into the overall energy system in an efficient way**



- Amprion is investing 24 billion euros over the next 10 years in order to enable the further integration of renewable energies and to strengthen international trade

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CONCLUSION & OUTLOOK



► The current dynamic developments in the electricity system and market will continue over the next decade

Q & A session

**THANK YOU VERY MUCH FOR YOUR
PARTICIPATION IN OUR WEBINAR!**

In case you have any further questions, please do not hesitate to contact us at:

MarketReport@Amprion.net

We are looking forward to your message.

The report is available for download on our homepage:

<https://www.amprion.net/Market/Market-Report/Market-Report-2021/>

