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Agency for the Cooperation  
of Energy Regulators



# What has been achieved and how will the cross-border electricity trade develop in the future

**Alberto Pototschnig**

*Director ad interim*

**Changes in the electricity market and their impact  
Vienna, 7 October 2019**

# The Clean Energy Package Beyond the Single Energy Market

**1st Package**  
 "First common  
 rules for the  
 internal market  
 and  
 liberalisation"

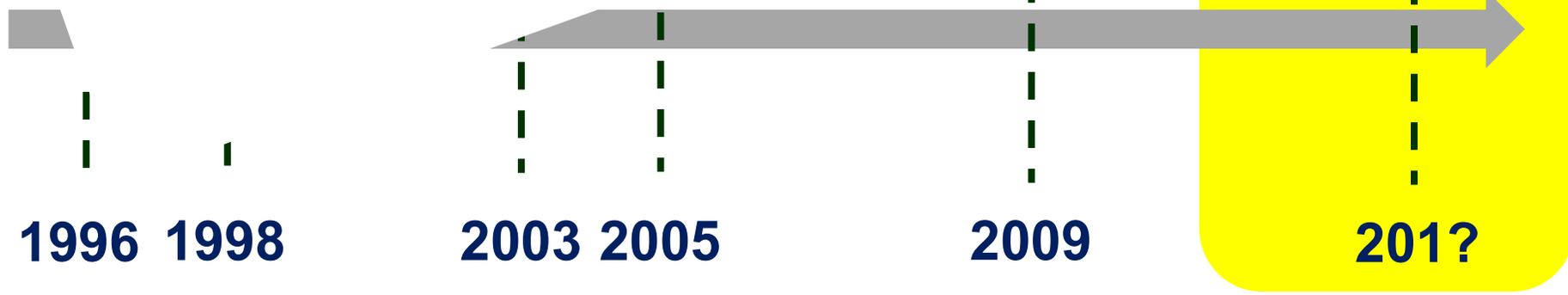
**2nd Package**  
 "Speeding up  
 liberalisation  
 and market  
 integration"  
 Full market opening  
 obligation to

**3rd Package**  
 "EU-wide  
 Institutional &  
 Regulation"

**Revolution  
 or  
 Evolution?**

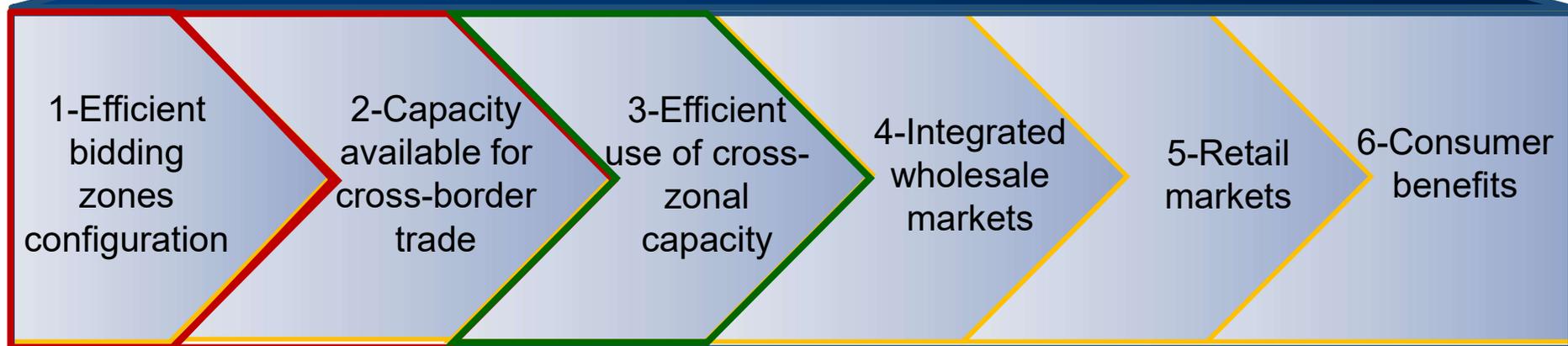
independence &  
 powers; establishment  
 of ACER & ENTSOs

the  
 electricity market  
 design to promote  
 flexibility and  
 enhance supply  
 security

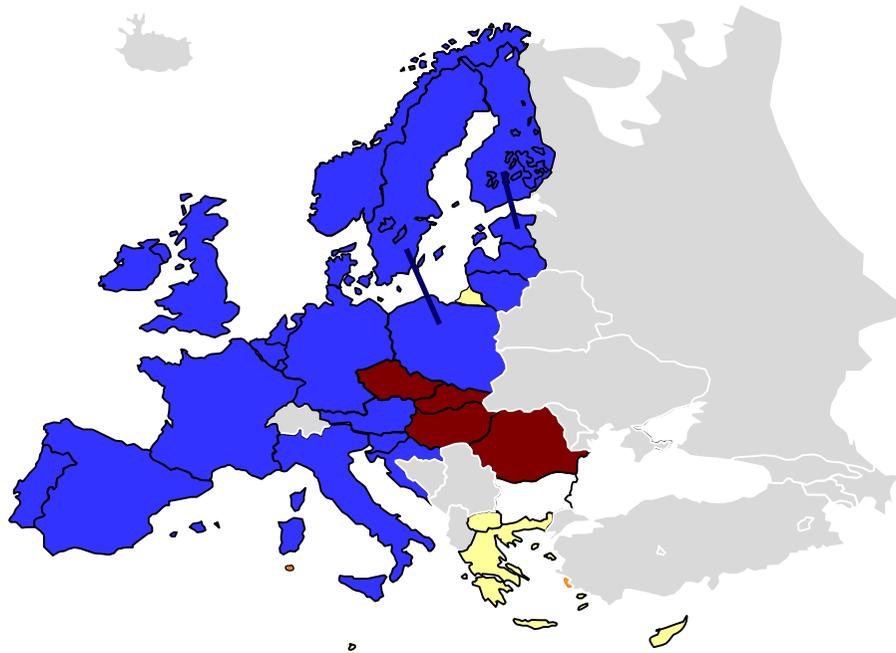


# An efficient Internal Electricity Market for the benefit of EU energy consumers

## Integrating the IEM



# The EU internal electricity day-ahead market



## Today:

**80%** of borders coupled

**46** borders coupled in a single coupling

**3** borders coupled separately

**12** borders still waiting to be coupled

## Final goal:

EU-wide day-ahead market coupling  
with implicit auctions

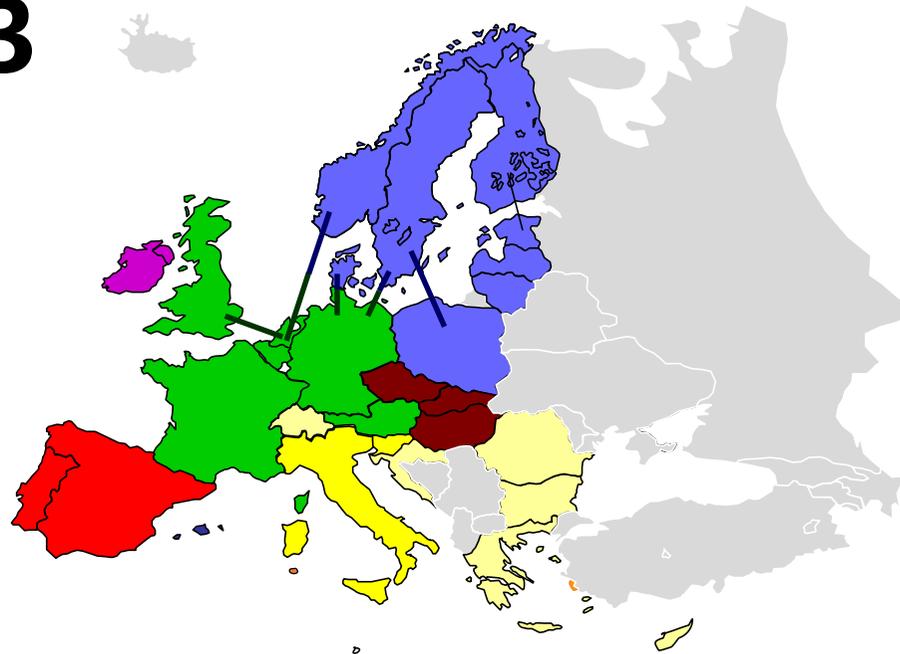
**PCR = Price  
Coupling of  
Regions**

**4M MC =  
4M Market  
Coupling**

**Not coupled  
yet**

# Day-Ahead Electricity Market Coupling: a Success Story!

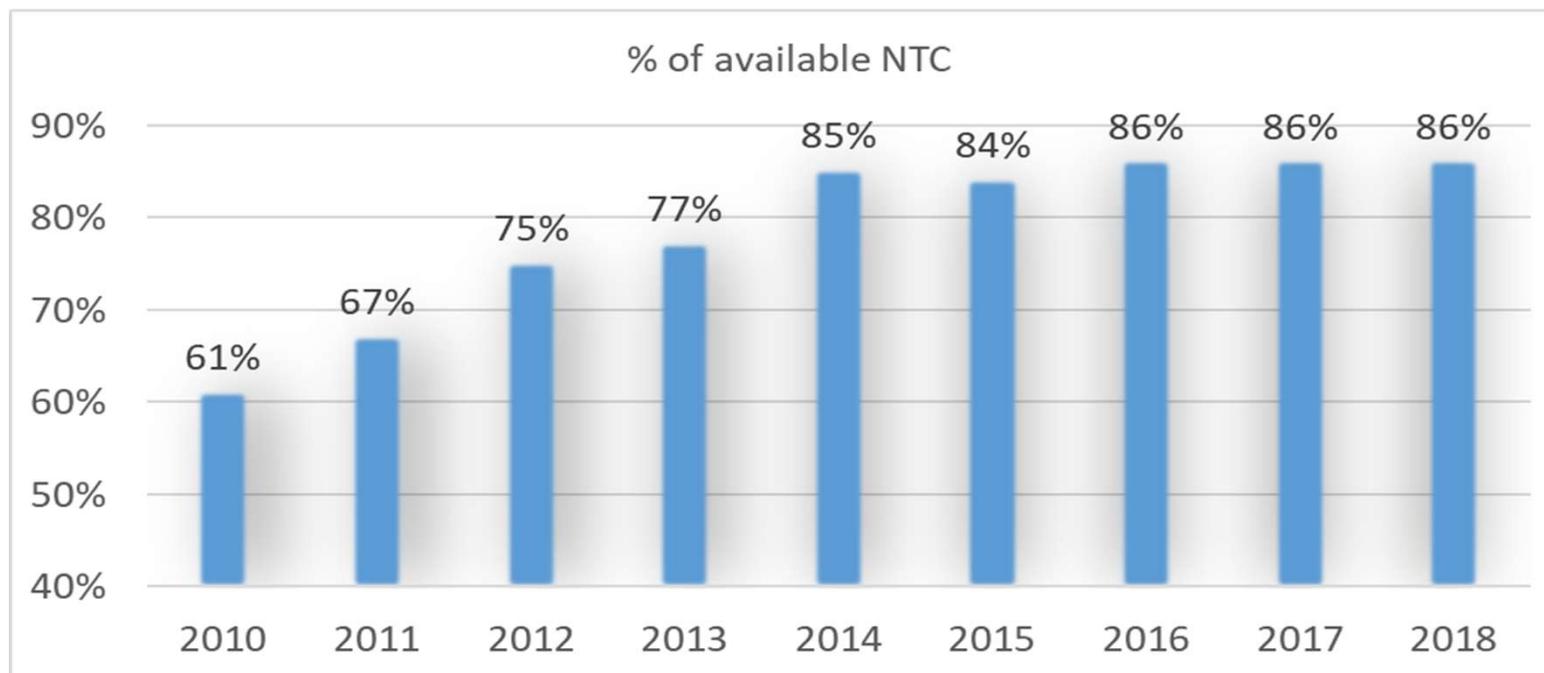
**2013**



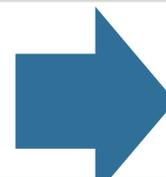
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## Significant improvements in the efficiency of the use of cross-border capacity in the day-ahead timeframe

Share of the available capacity (NTC) used in the 'right direction' in the presence of a significant price differential (>1 €/MWh) on 37 European electricity borders (%)



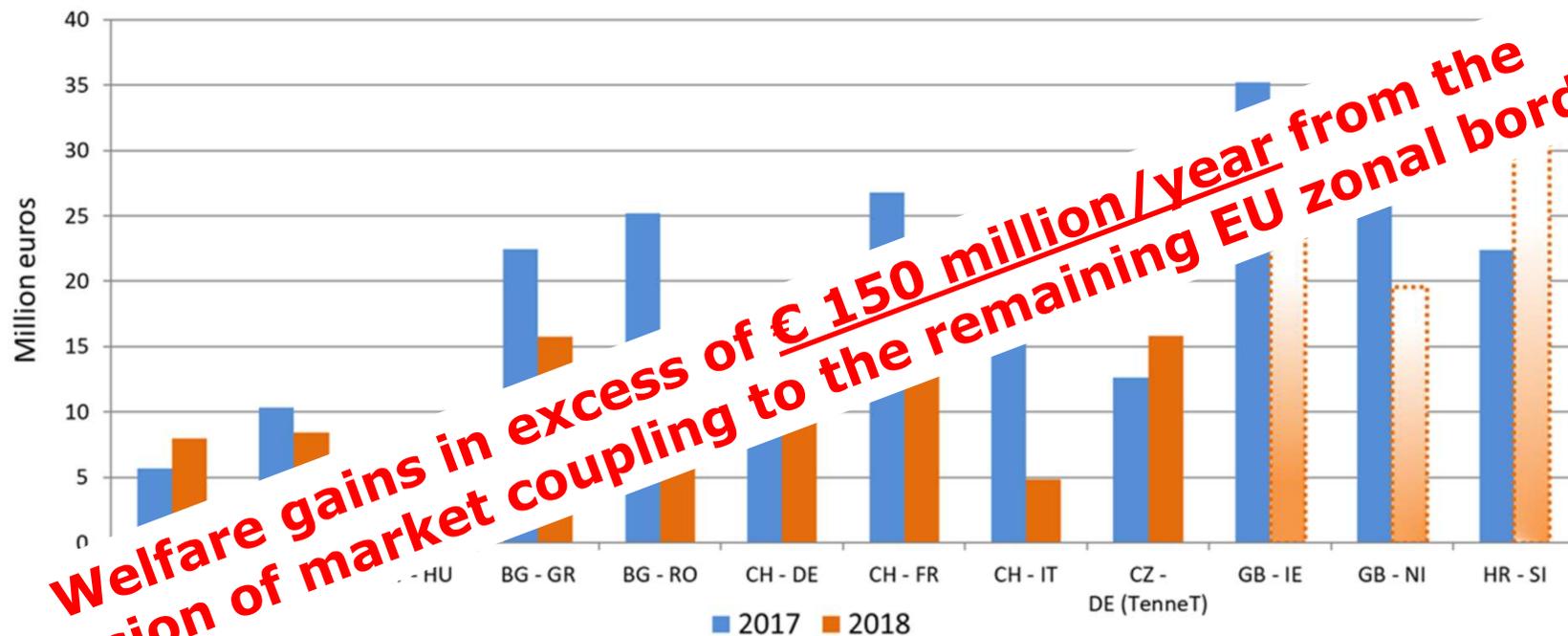
**More efficient use of cross-border capacity through "market coupling"**



**Estimated Annual Benefits  
€ 1 billion**

## ... but there is scope for further improvement

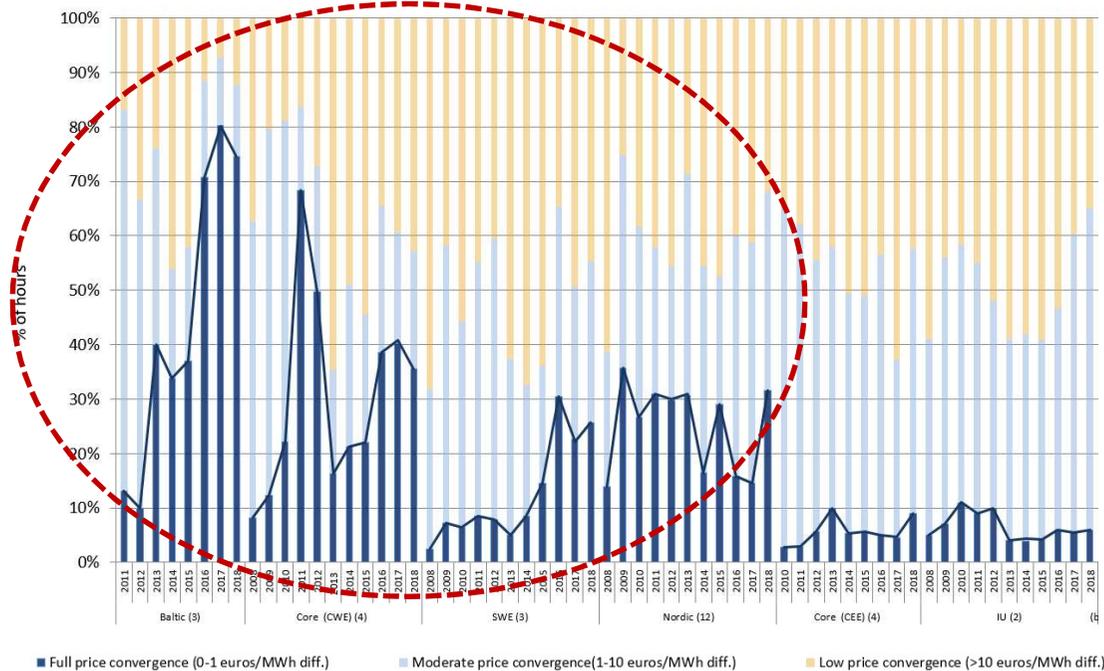
Estimated social welfare gains still to be obtained from further extending DA market coupling per border – 2017-2018 (million euros)



# Although full price convergence is not an objective in itself, market coupling contributes to increase price convergence ...

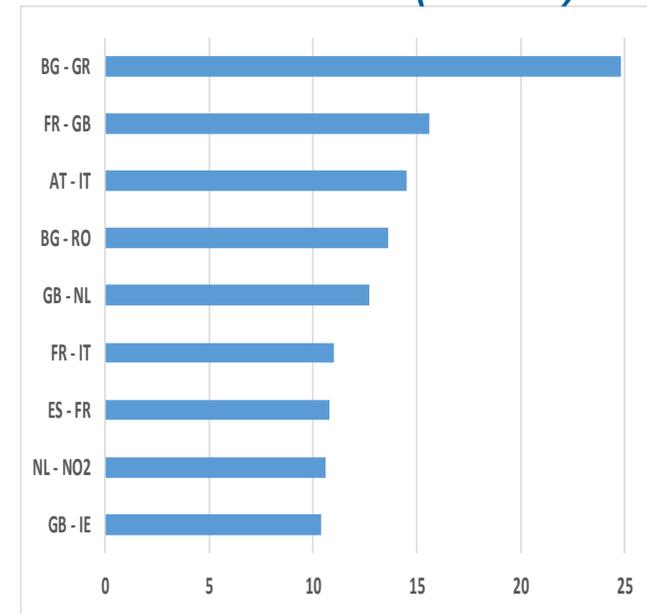
## ... and there are still significant price differences across some borders

Day Ahead Price convergence over the last 8 years



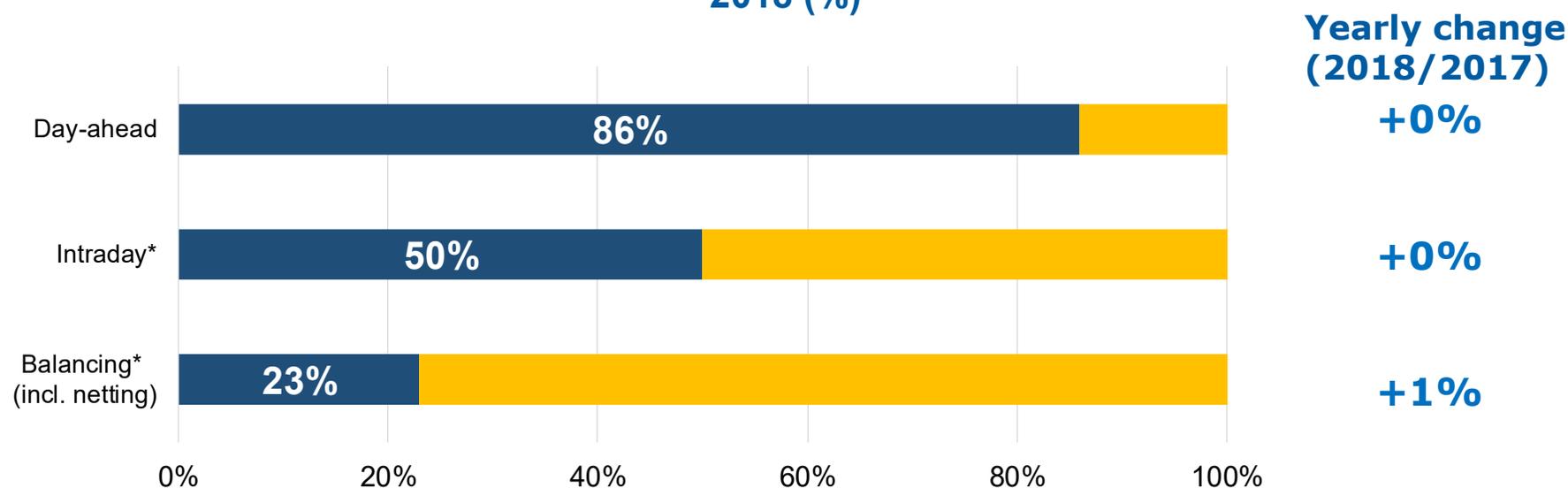
Regions where market coupling is already implemented  
\*In the Ireland-UK Region it was implemented in Oct 2018

Average absolute price differences across selected borders in 2018 (€/MWh)



## Scope for improvement also exists in the efficiency in the use of cross-border capacity in the intraday and balancing timeframes

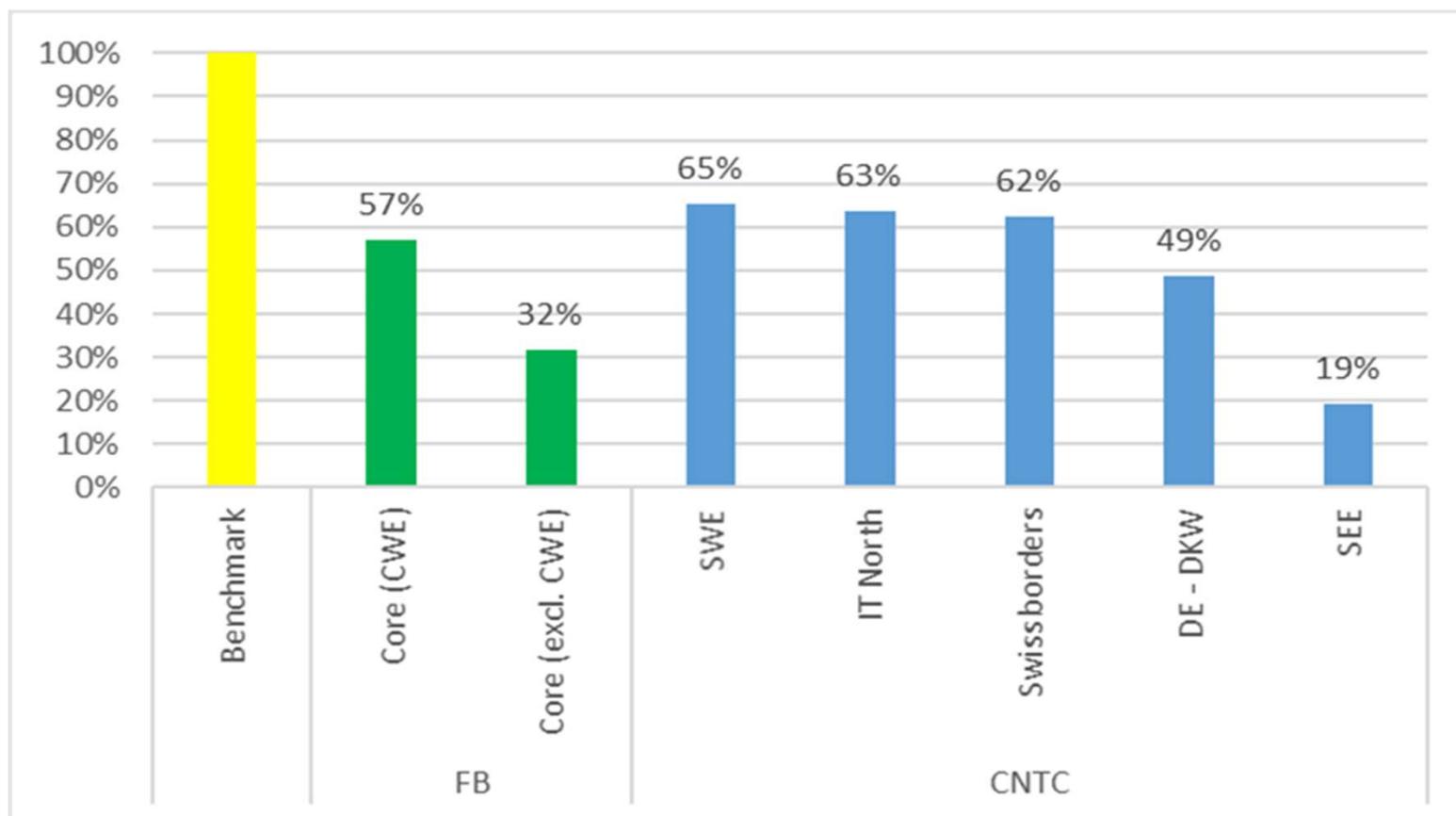
Share of the available capacity (NTC) used in the 'right direction' in the presence of a significant price differential (>1 €/MWh) on 37 European electricity borders in different timeframes  
 2018 (%)



Note: \* ID and balancing values are based on a selection of EU borders.

## ... and in the amount of cross-border capacity made available to the market

Ratio of available tradable capacity to benchmark capacity on HVAC borders per CCR  
 2017 (%)



# Why is so little capacity made available to the market?

## Illustrative facts

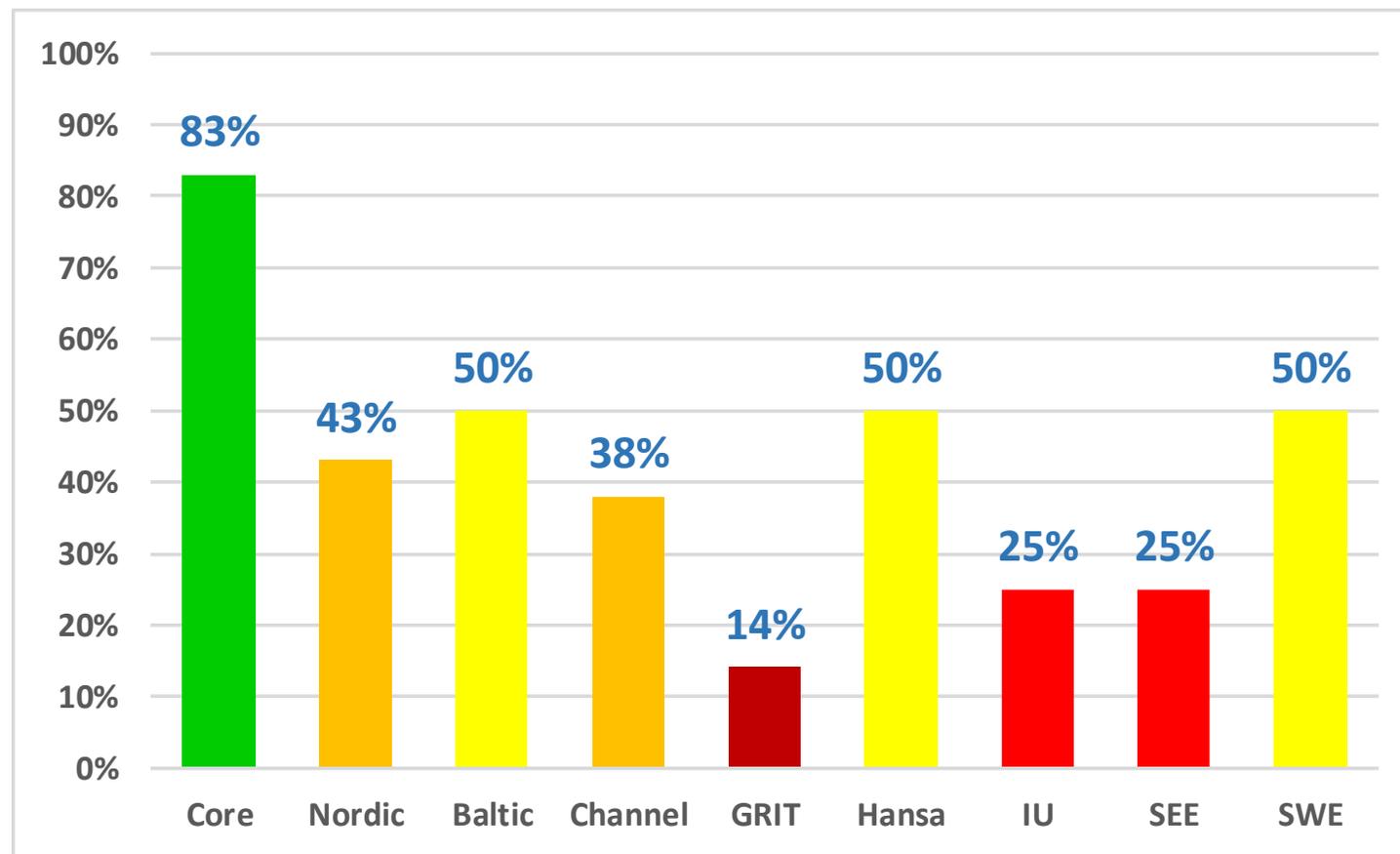
How much?	What?	Why?
✗ 86%	Share of relevant congestions located inside bidding zones (CWE, 2017)	Internal congestions addressed by limiting cross-border exchanges
✗ 87%	Share of network capacities in relevant network elements consumed by internal exchanges (CWE, 2017)	Lack of rules to avoid discrimination, leading to free-riding on neighbours (loop flows)
✗ >2 bn €	Spent per year to handle internal constraints (50% of these costs in Germany)	The problem is so serious that TSOs still need to apply remedial actions to preserve internal exchanges

## Main Agency's recommendations:

- Bidding Zone configuration:** Improvements should be investigated with priority where the problem is most severe, i.e. the German bidding zone (involving the Core and Hansa regions) and to a lesser extent in the South-West Europe region. However launching a bidding zone review process is not advisable at the moment
- Capacity calculation methodologies** need to be significantly improved to address the **discrimination** issue
- The level of coordination** in capacity calculation should be increased (including the implementation of flow-based capacity calculation where relevant)

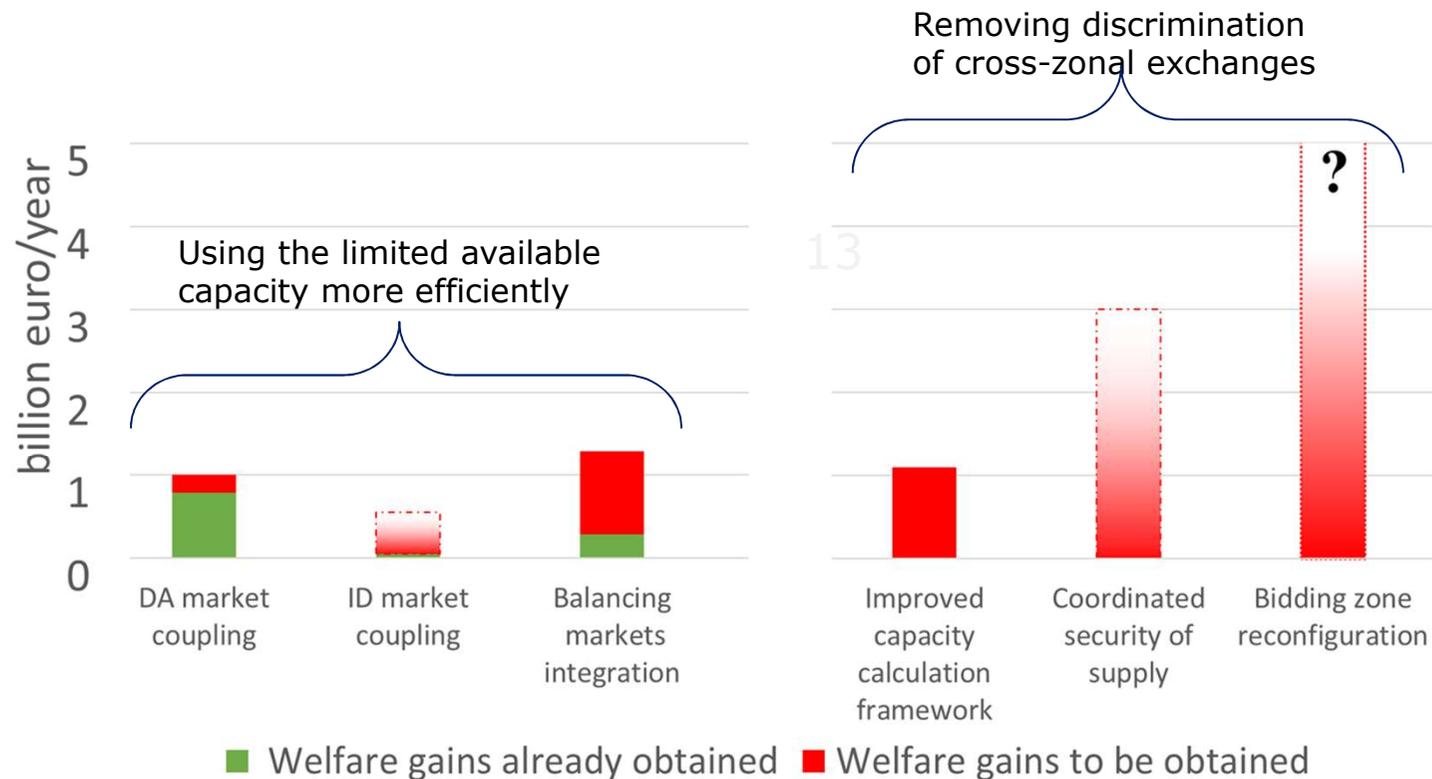
# Current Capacity Calculation Methodologies do not prevent discrimination of cross-border exchanges

Extent of the prevention of undue discrimination of cross- border exchanges in the approved CCMs (%)



# EU energy consumers have gained a lot from the integration of the internal electricity market, but could gain even more!

Social welfare\* benefits already obtained and to be obtained from various actions intended to increase EU markets integration



Note: \*Gross benefits. The fading colour for some categories indicates that the welfare gains are based on third-party estimations and/or subject to considerable uncertainty.

## The Clean Energy Package (CEP)

### Electricity Regulation (RECAST)

- Contains the majority of new wholesale market rules

### Electricity Directive (RECAST)

- Contains the majority of new retail market provisions

### ACER Regulation (RECAST)

- ACER tasks and procedure

### Regulation on Risk preparedness (NEW)

- Member States put in place appropriate tools to prevent, prepare for and manage electricity crisis situations

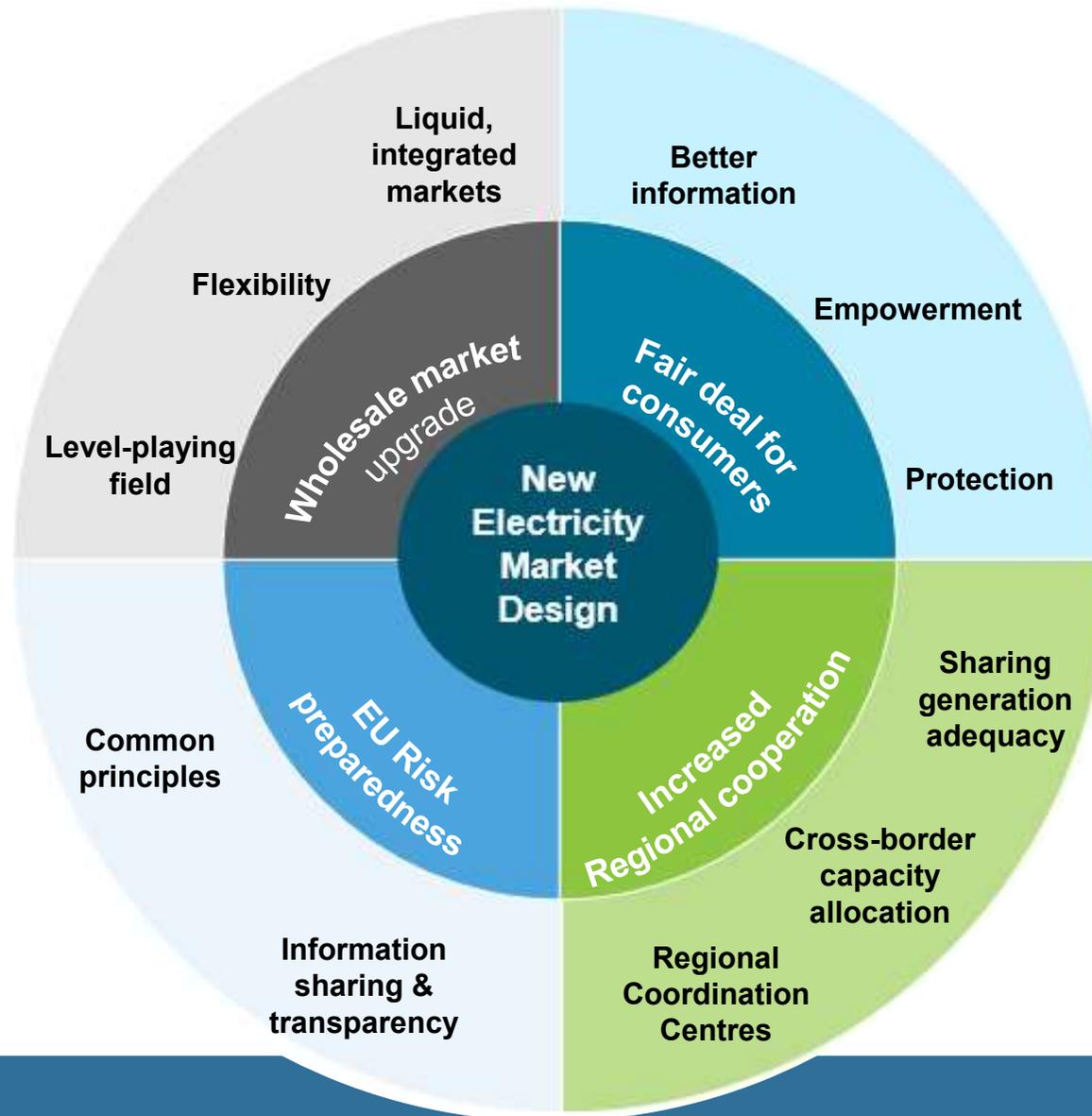
### Energy performance in buildings Directive (AMENDED)

### Energy efficiency Directive (AMENDED)

### Energy Union Governance Regulation (NEW)

### Renewable energy Directive (NEW)

# CEP: Electricity Market Design



## CEP: Electricity Market Design at a glance

- Speedier and more agile consumer **switching** of suppliers
- Enabling consumers to access **dynamic pricing**
- Allowing **scarcity pricing**
- Rewarding **flexibility** for generation, **Demand Response and storage**
- Avoiding overcapacity by coordinating **resource adequacy assessments**
- Explicit **cross-border participation** in Capacity Remuneration Mechanisms
- Common rules on **crisis prevention**
- Enhanced **Bidding Zone review** process
- **Maximisation of cross-border capacity and non discrimination between internal and cross-border exchanges**
- Focus on and reinforcement of **regional TSO cooperation** through **Regional Coordination Centres (RCCs)**
- Stronger **TSO-DSO cooperation**
- Creation of the **EU DSO Entity**

## How is the Clean Energy Package helping? I. Bidding Zone configuration (1)

- The configuration of bidding zones in the Union shall be designed in such a way as to maximise economic efficiency and cross-border trading opportunities, while maintaining security of supply
- Every three years, ENTSO-E shall report on structural congestion and other major physical congestion between and within bidding zones
- In order to ensure an optimal bidding zone configuration, a ***bidding zone review*** shall be carried out
- The methodology, assumptions and alternative bidding zone configurations to be used in the review shall be proposed by TSOs and decided by NRAs, or the Agency if NRAs fail to agree
- The methodology shall be based on structural congestions which are not expected to be overcome within the next three years

## How is the Clean Energy Package helping? I. Bidding Zone configuration (2)

- Based on the approved methodology and assumptions, and within 12 months from their approval, the TSOs shall submit a joint proposal to the relevant Member States or designated competent authorities of the relevant Member States on whether to amend or maintain the bidding zone configuration
- Where structural congestion has been identified in periodic ENTSO-E's report or by one or more TSOs in a report approved by the respective authorities, ***the relevant Member States, in cooperation with their TSOs, shall decide, within 6 months, either to define national or multinational "action plans" or to review their bidding zone configuration***
- If the relevant Member States fail unanimously to decide, they shall immediately notify the Commission. ***As a measure of last resort, the Commission, after consultation with the Agency, shall adopt a decision within six months***

## How is the Clean Energy Package helping? II. Capacity calculation (1)

- The maximum level of capacity of the interconnections and/or the transmission networks affected by cross-border capacity shall be made available to market participants, complying with safety standards of secure network operation
- ***TSOs shall not limit the volume of interconnection capacity to be made available to market participants in order to solve congestion inside their own bidding zone or as a means of managing flows resulting from transaction internal to bidding zones (loop flows)***
- ***The above requirement is deemed to have been complied with if 70% of the capacity respecting operational security limits, taking into account contingencies, is made available for cross-zonal trade from 1 January 2020***

## How is the Clean Energy Package helping? II. Capacity calculation (2)

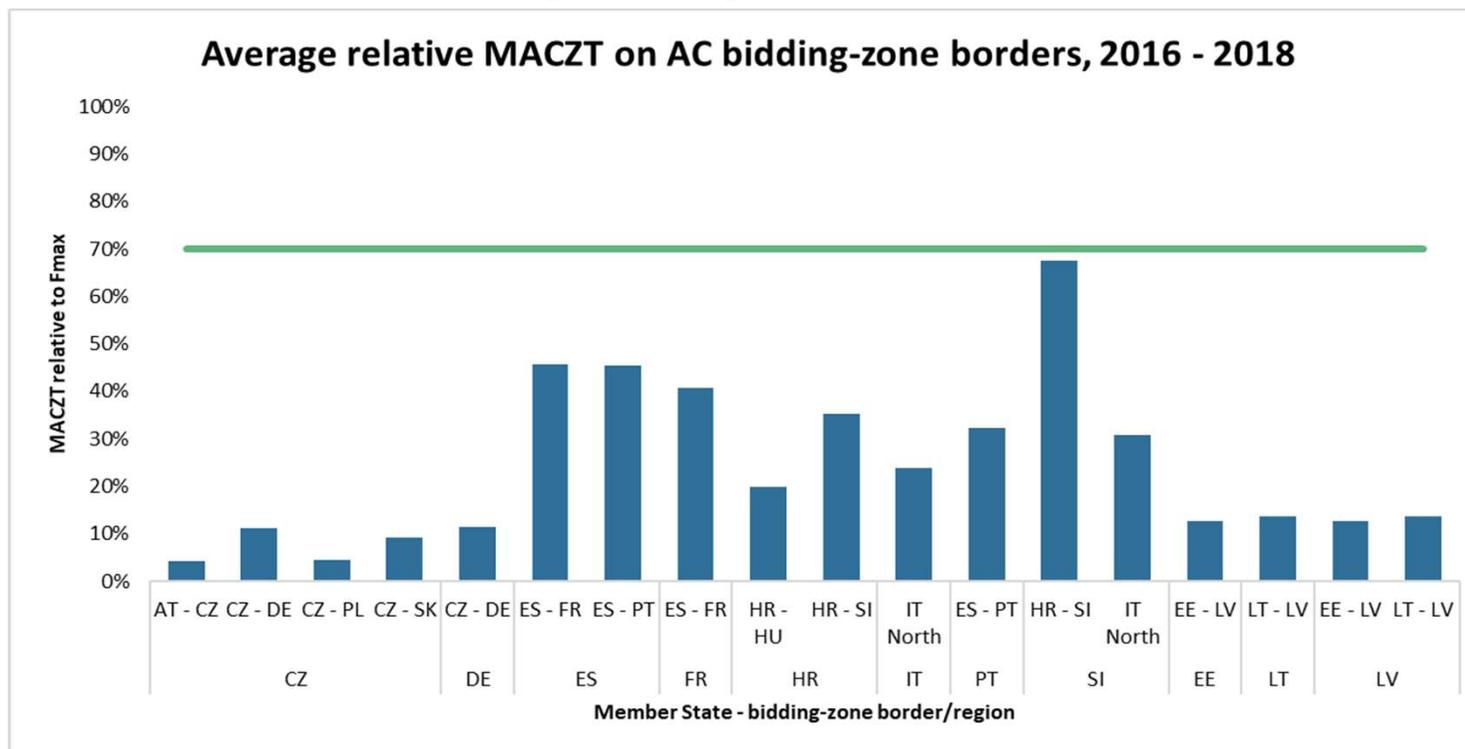
- The 70% requirement does not apply if:
  - » The RCC concludes that all available remedial actions in the CCR or between CCRs are not sufficient to reach the 70% threshold while respecting operational security limits
  - » The NRAs of a CCR, upon request by the TSOs, grant an annual derogation, which may be extended to two years with a significantly decreasing level of the derogation each year
  - » Member State(s), in cooperation with their NRA(s), develop an **Action Plan** in which the cross-border trade capacities are increased every year up to the 70% threshold level, which is to be achieved by the end of 2025

## ACER Recommendation No 1/2019

- The Recommendation provides a harmonised and consistent framework **to monitor the margin offered for cross-border trading (MACZT) and to support the assessment of compliance with the “70% requirement”**
- The Recommendation is based on current capacity calculation practices
- The monitoring of MACZT:
  - Focuses on the capacity offered in **day-ahead**, until coordinated intraday capacity calculation is implemented
  - Estimates the flows induced by **cross-zonal trade within the EU** (and with third countries, subject to conditions)
- MACZT is split between:
  - The margin offered within coordinated capacity calculation (‘MCCC’, e.g. within capacity calculation regions)
  - The flow induced by cross-zonal exchanges on other bidding-zone borders (‘MNCC’)

## Historical MACZT calculation results: NTC AC borders

- **The average MACZT is much below the 70% target on most analysed borders**
- Low MACZT in a country may originate from inside or outside this country (e.g. may stem from loop flows of neighbouring countries)

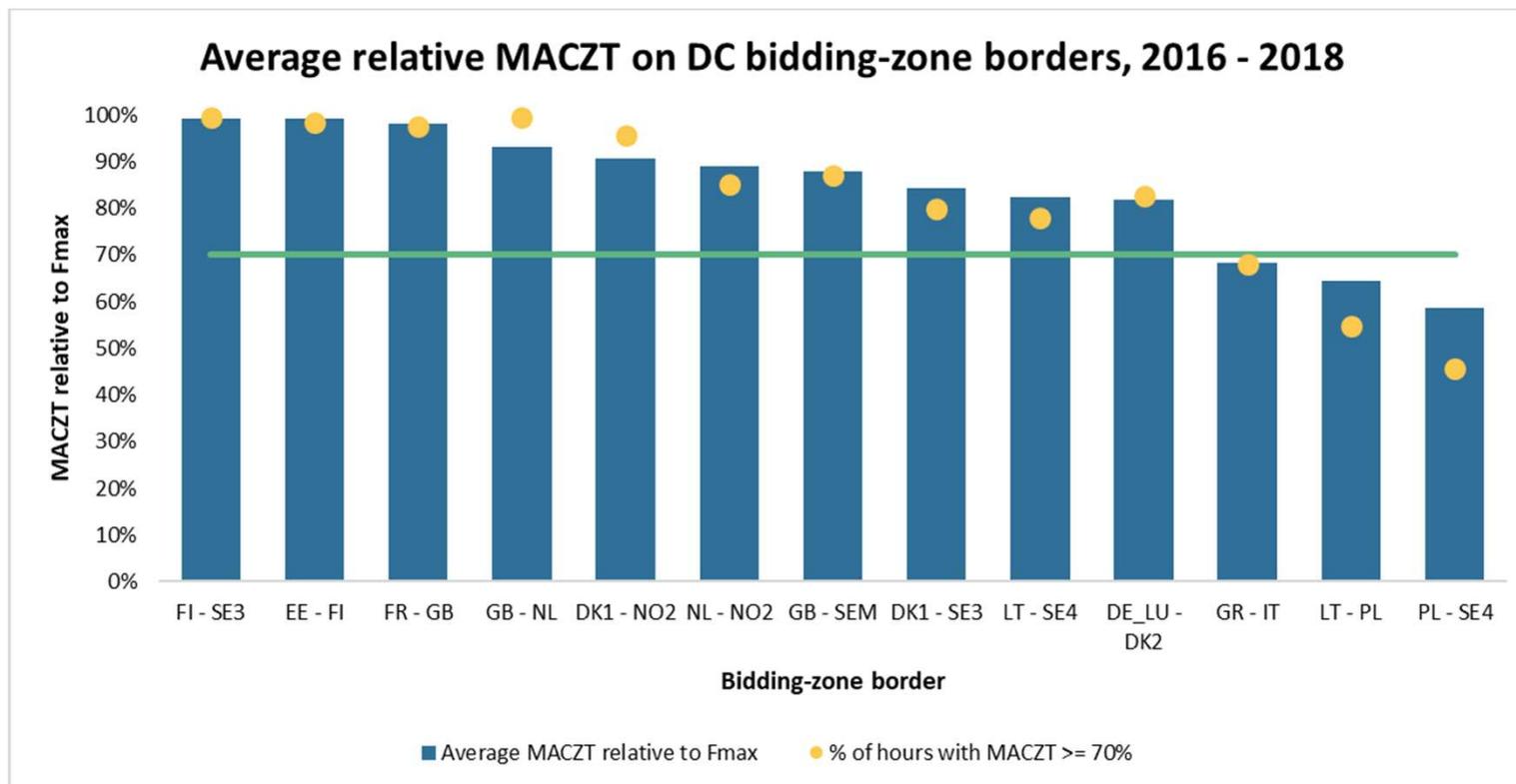


**Notes:**

The average relative MACZT is computed over all critical network elements, taking EU bidding-zone borders into account. The margin available for trade on a given border (or in a given region) is monitored from the perspective of all the MSs of the border/region  
 The impact of internal Italian bidding-zone borders is not considered  
 The analysis is based on the set of MSs and bidding-zone borders for which reliable data could be derived

## Historical MACZT calculation results: NTC DC borders

- **Several borders already reach the 70% target most of the time**
- **Several borders are below 70% during 10-20% of hours**
- Significant room for improvement for PL - SE4, LT - PL and GR - IT

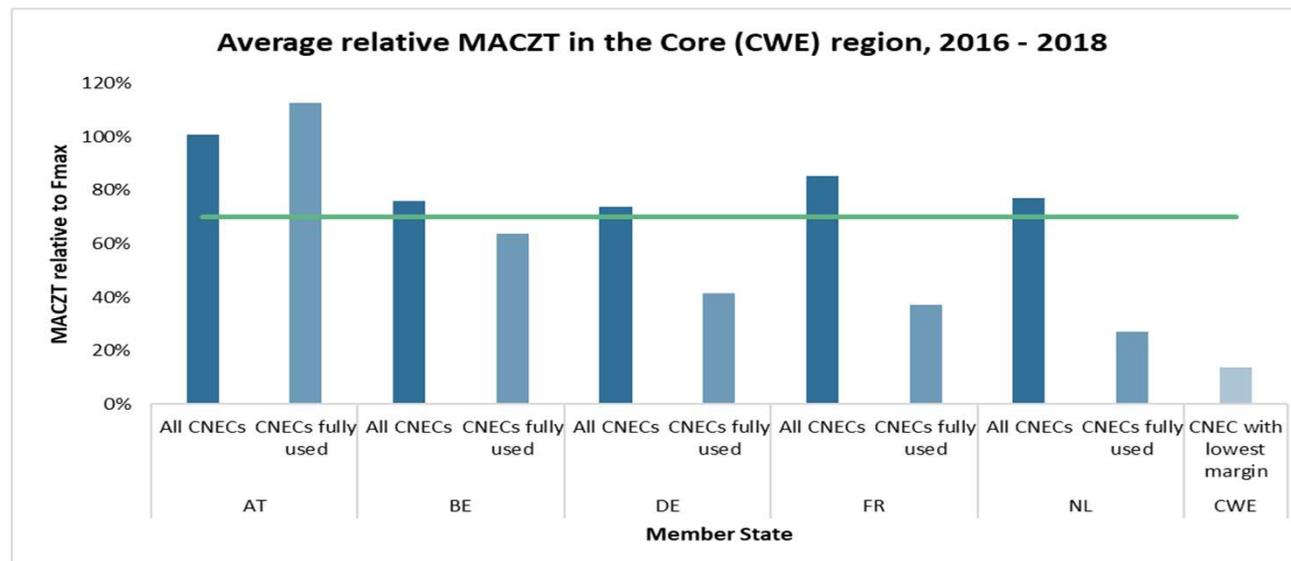


**Notes:**

For DC borders, MACZT is assumed to be equal to the NTC on the considered border  
Outages are taken into account based on unavailabilities declared by TSOs

## Historical MACZT calculation results: FB Core (CWE) CCR

- More detailed data enabled a refined analysis
- **Average MACZT values suggest a better situation than on other AC borders.**
- However, **MACZT remains significantly below 70% on most fully used CNECs**, i.e. on those actively limiting cross-zonal trade. On average, the MACZT of CNEC with the least margin (different CNEC each hour) is below 15%.
- Therefore, monitoring all individual CNECs separately for each hour is crucial



*Notes:*

*For each Member State, the first value depicts the average over all network elements, whereas the second value depicts the unweighted average over all CNECs with a positive shadow price (i.e. those for which additional capacity would have improved the market outcome)*



**Thank you  
for your attention**

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