What is it?

- The **Bidding Zone Configuration Technical Report** is part of regular reporting (every 3 years) on the bidding zone configuration which ENTSO-E is mandated to deliver by EU legislation.

What is IN it?

- **Transparent** & **factual** information on congestions in the whole European grid.
- **Data** from 2018 to 2020 on congestions & unscheduled flows and on costs of congestion.
- **Evolution** of congestions in the next 10 years.

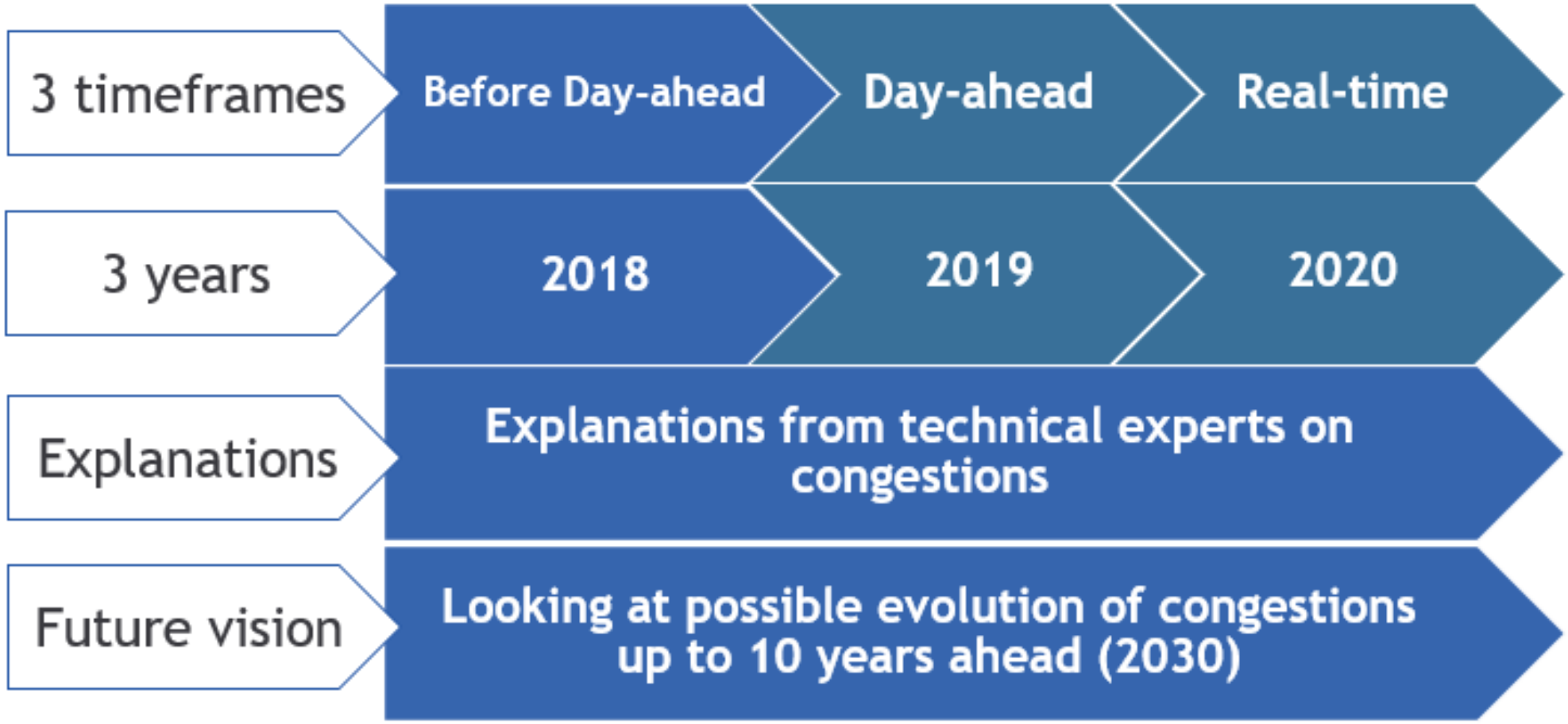
What is NEW?

- It includes the **CEP´s 70% min capacity assessment**.
- To facilitate the visualization, congestions below 0,5% are not shown in the main body of the report.

What is NOT in the Technical Report?

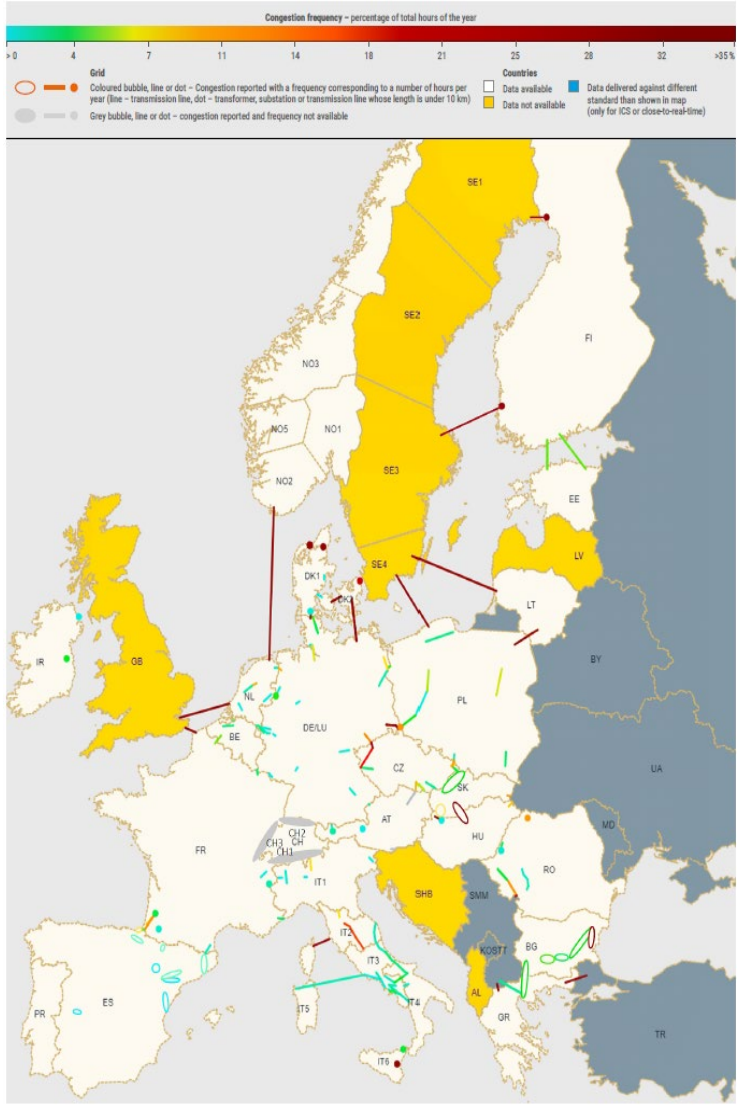
- No **recommendation** nor conclusion on the bidding zone configuration change (**≠ a bidding zone review**).

Transparent information on congestions in the European grid

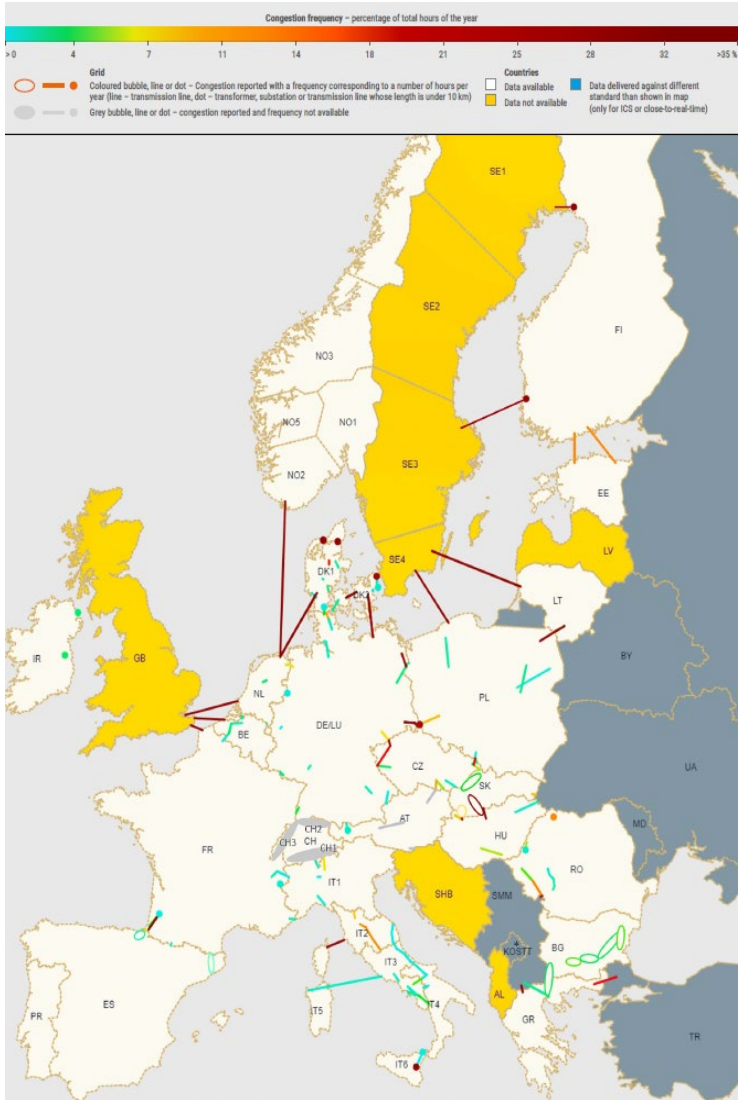


Capacity calculation for the purpose of day-ahead allocation

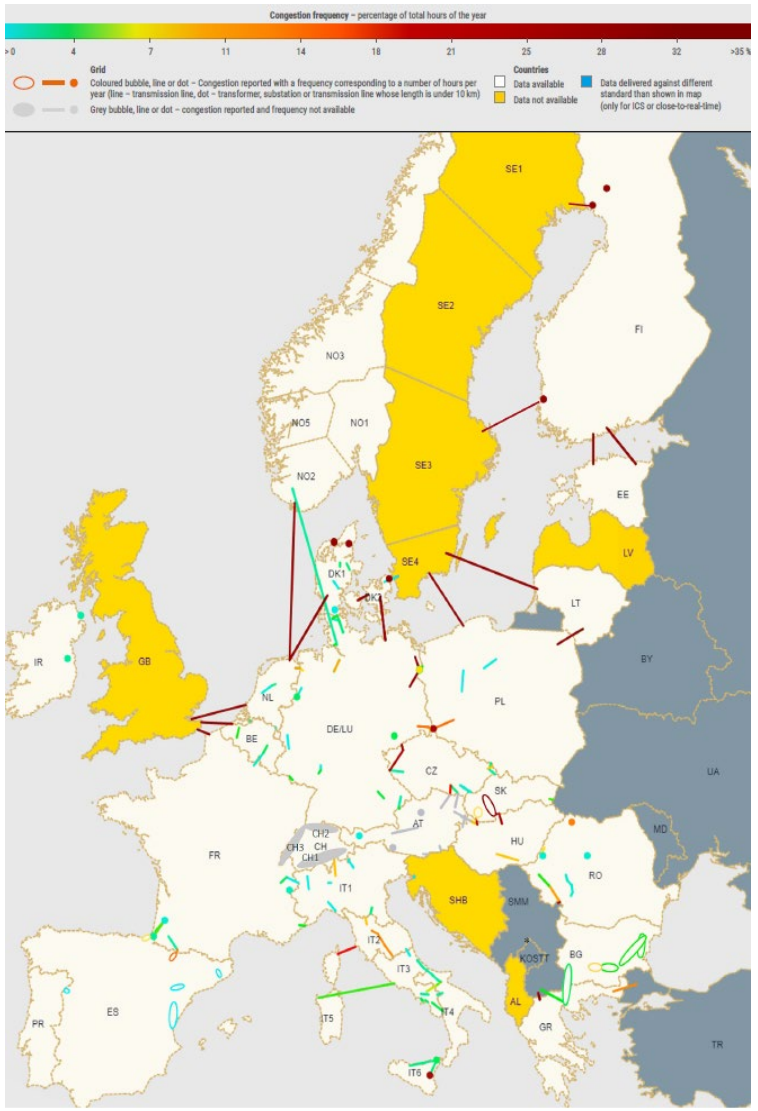
Maps presented with frequency threshold of 0.5%



2018



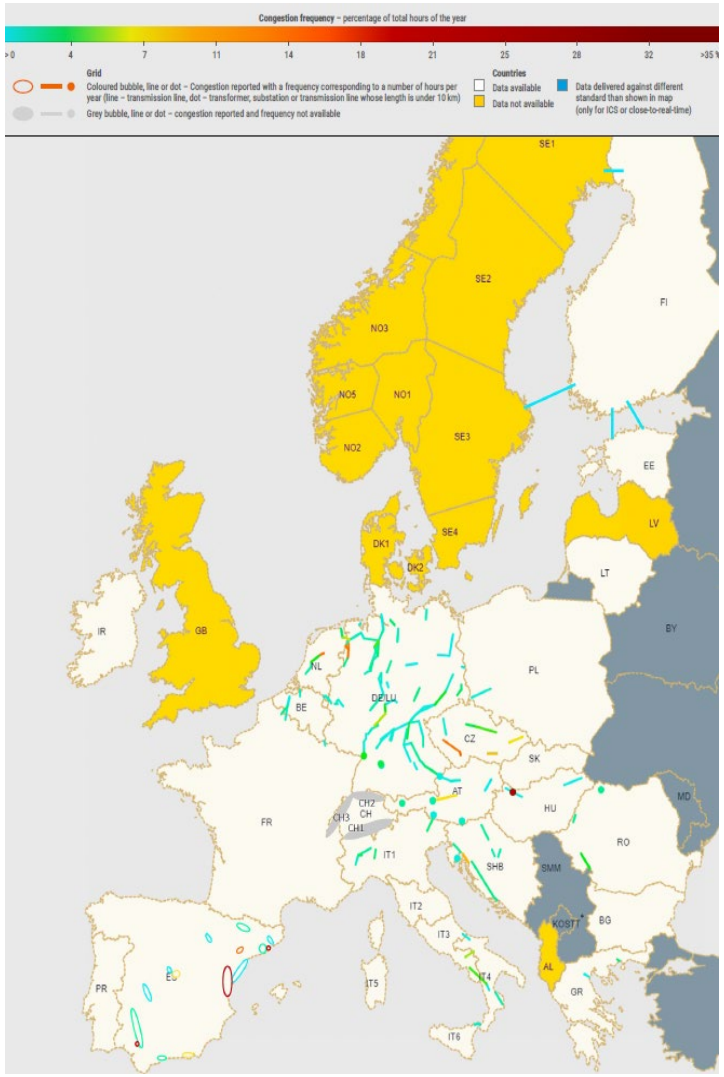
2019



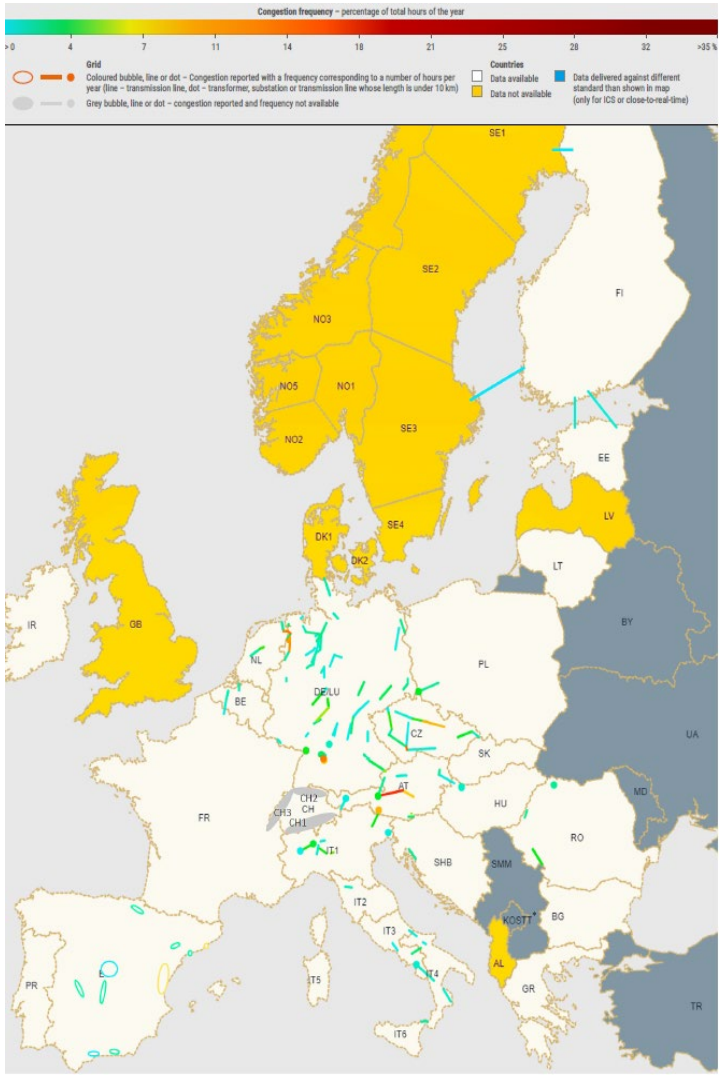
2020

Day-ahead (D-1) timeframe

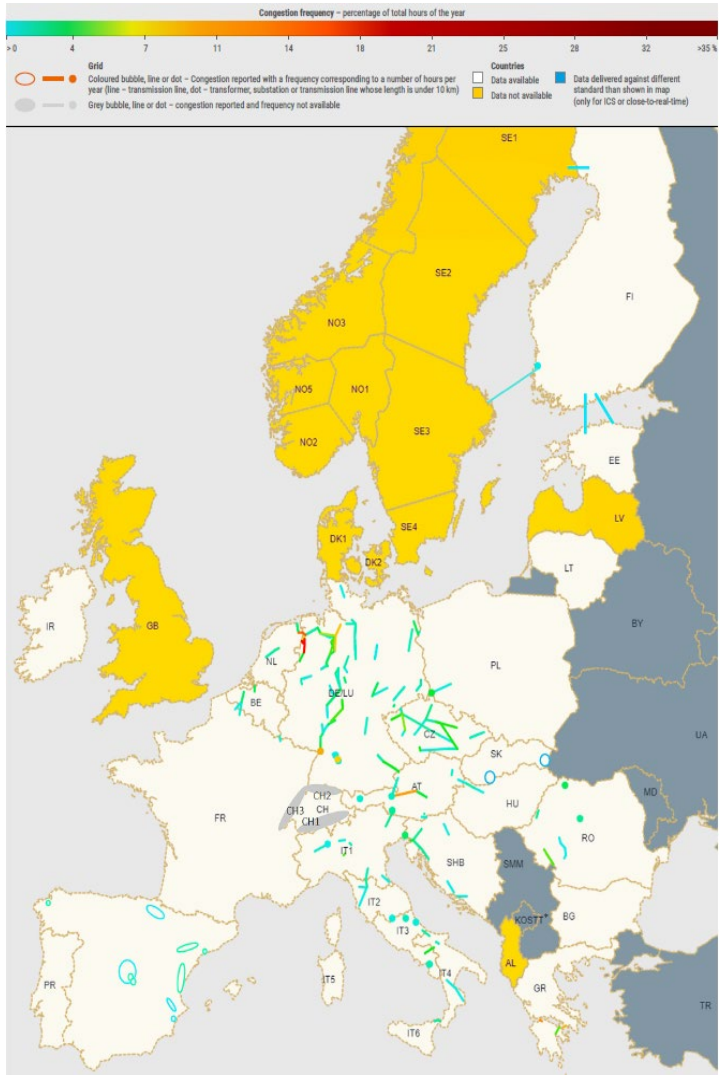
Maps presented with frequency threshold of 0.5%



2018



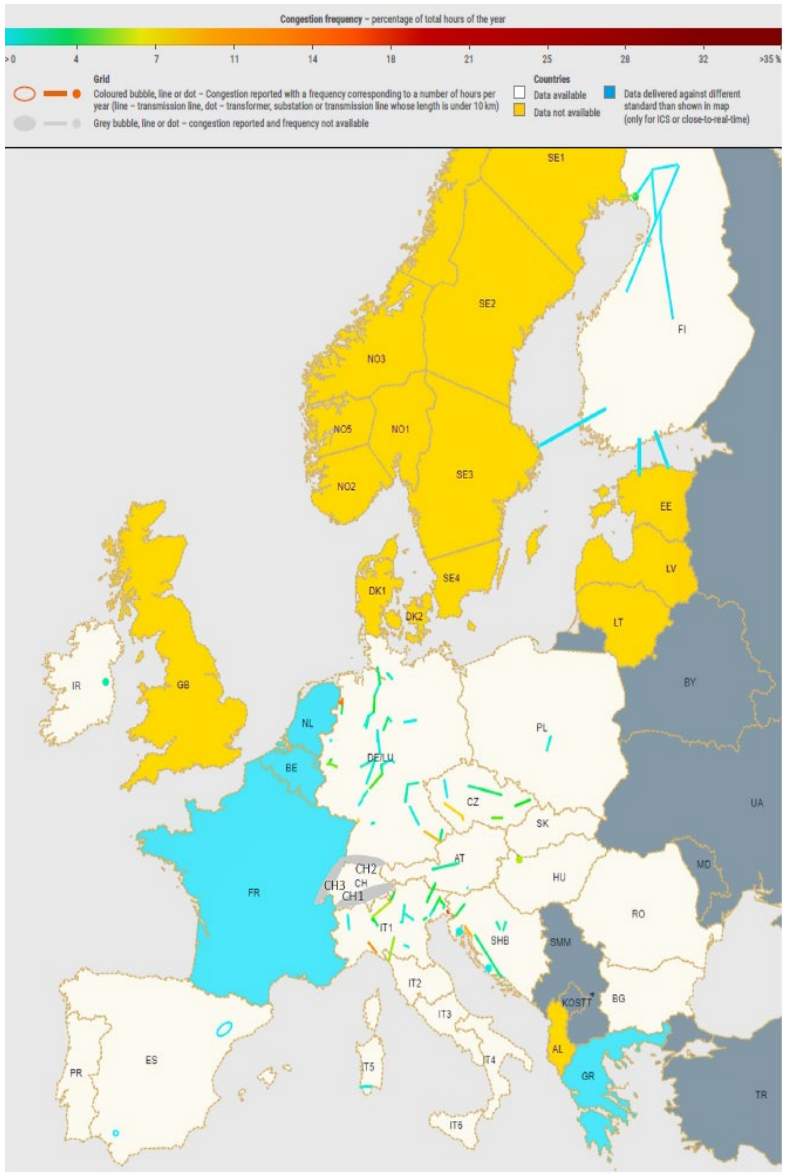
2019



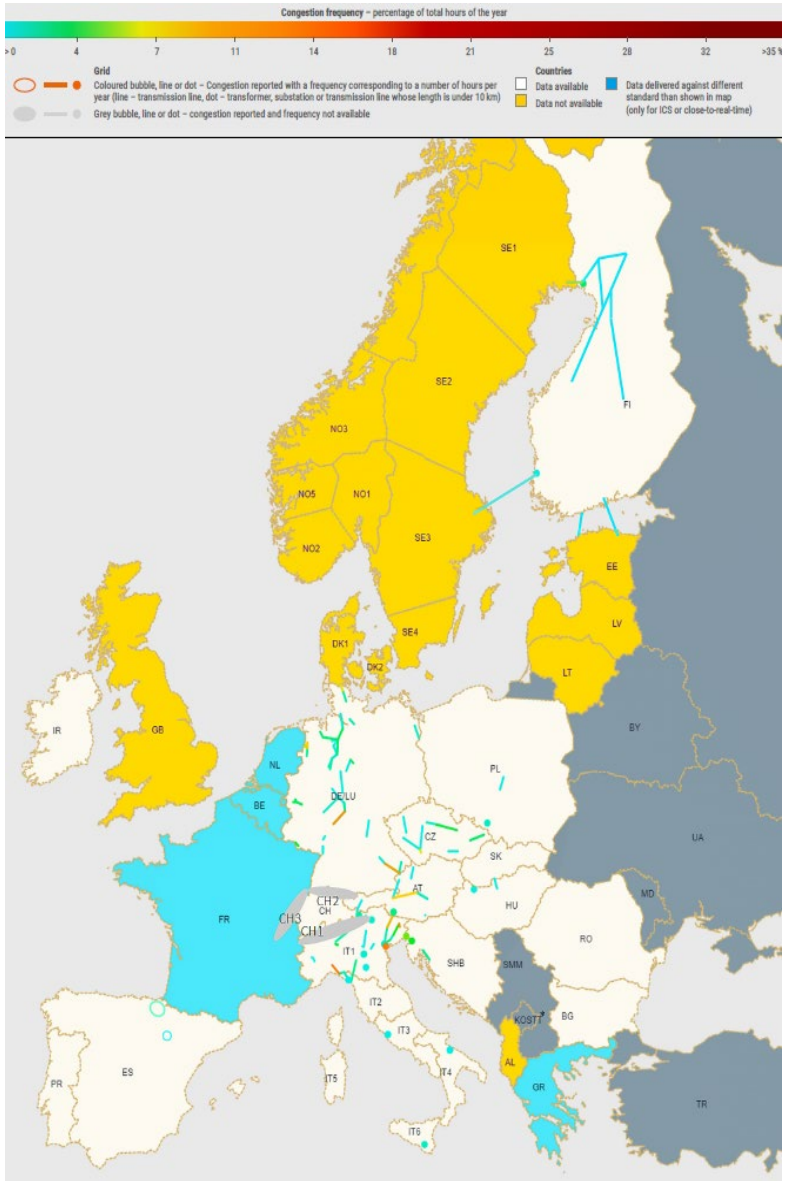
2020

Close-to-real-time (1h before real time)

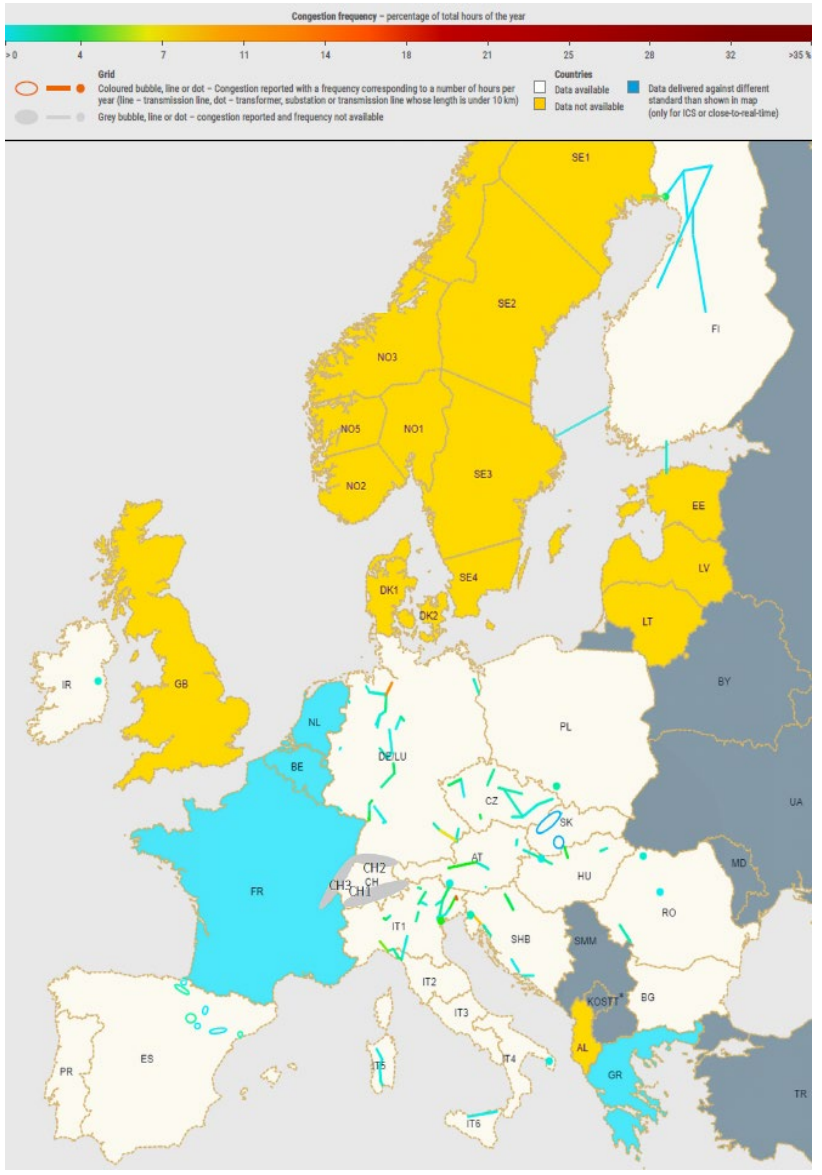
Maps presented with frequency threshold of 0.5%



2018



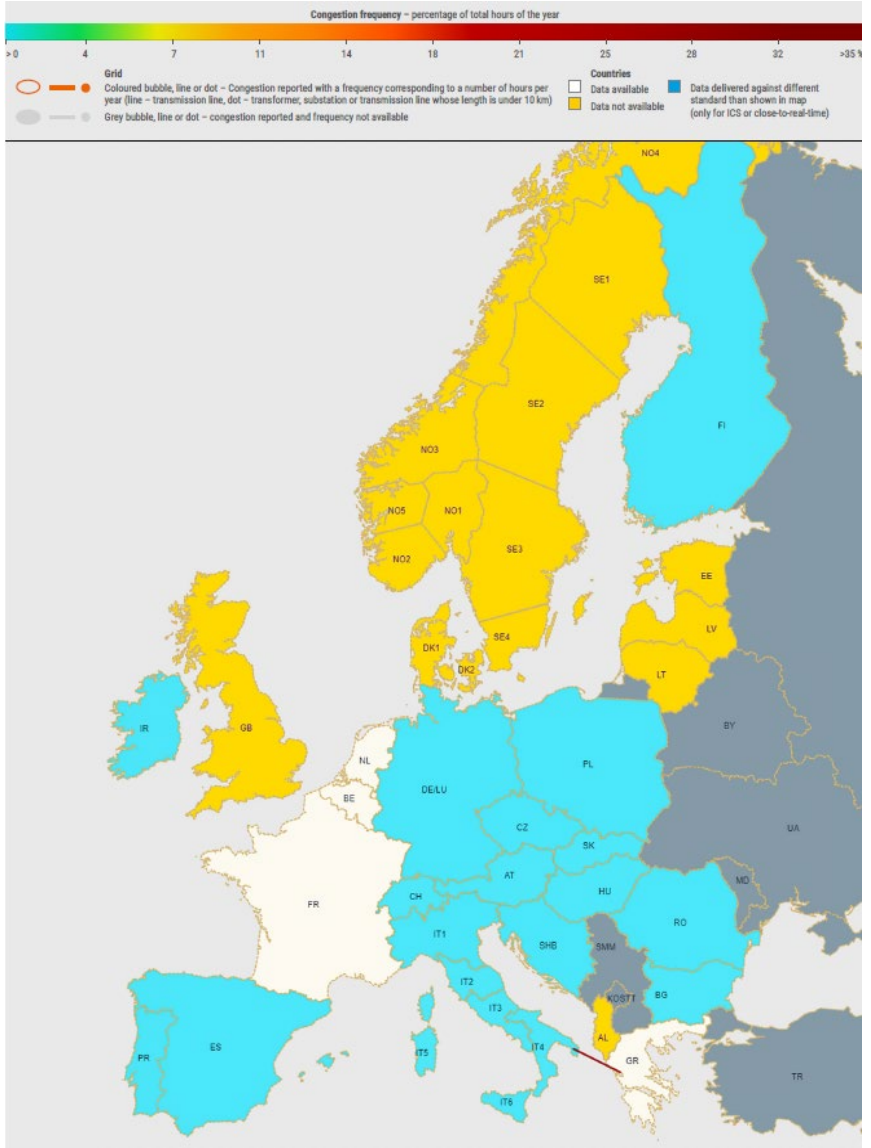
2019



2020

Close-to-real-time (ICS): 2018

Map presented with frequency threshold of 0.5%

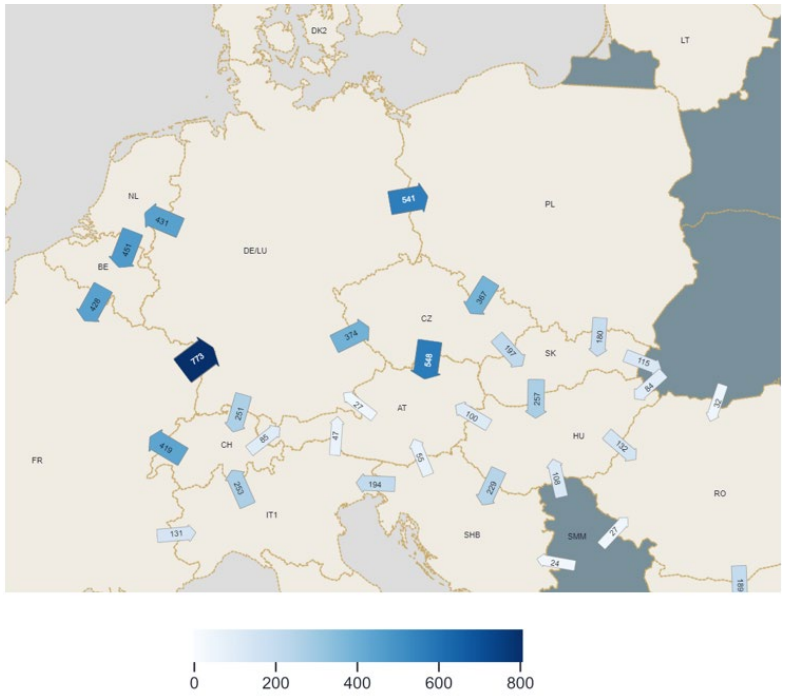


2018

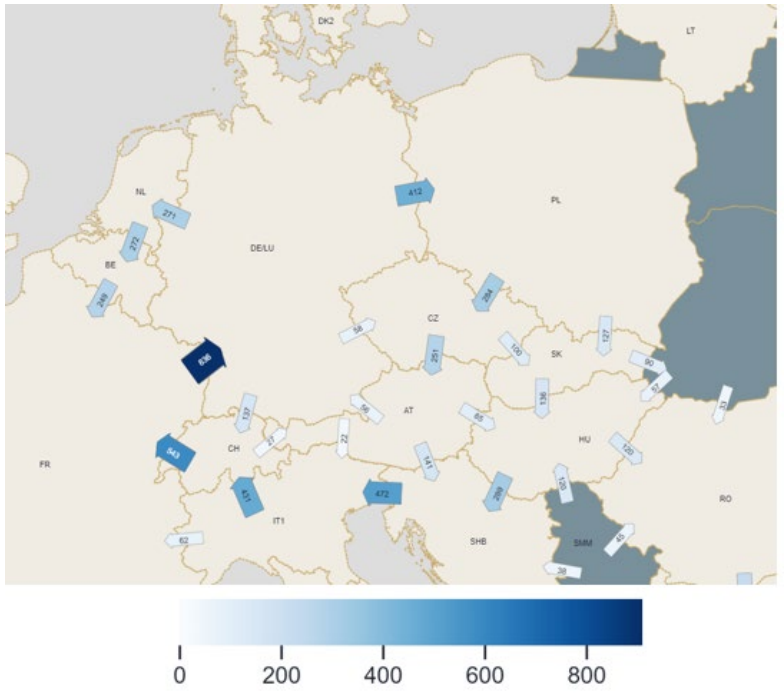
Power flows not resulting from capacity allocation

Loopflows and unscheduled flows: average PTDF flow indicator (MW)

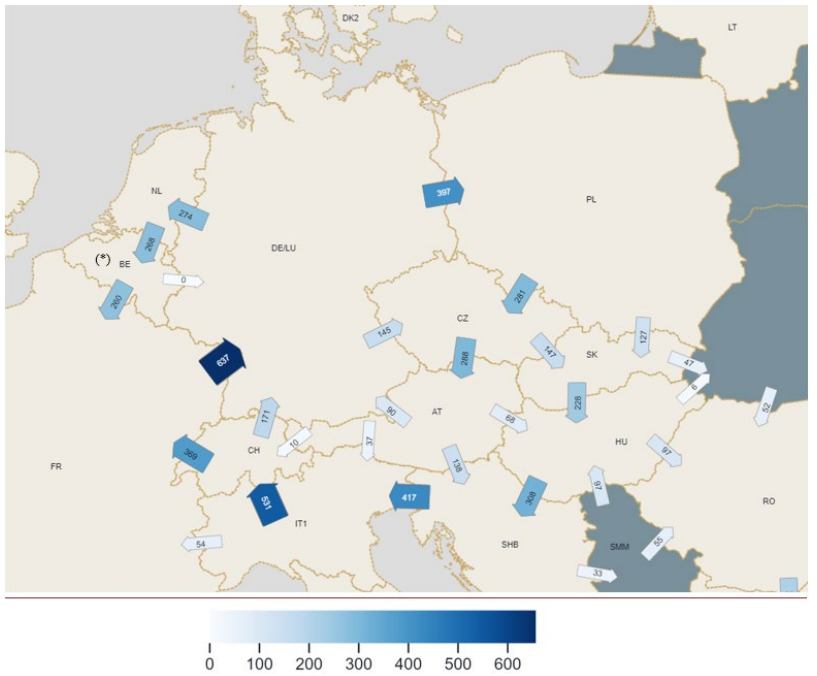
2018



2019



2020

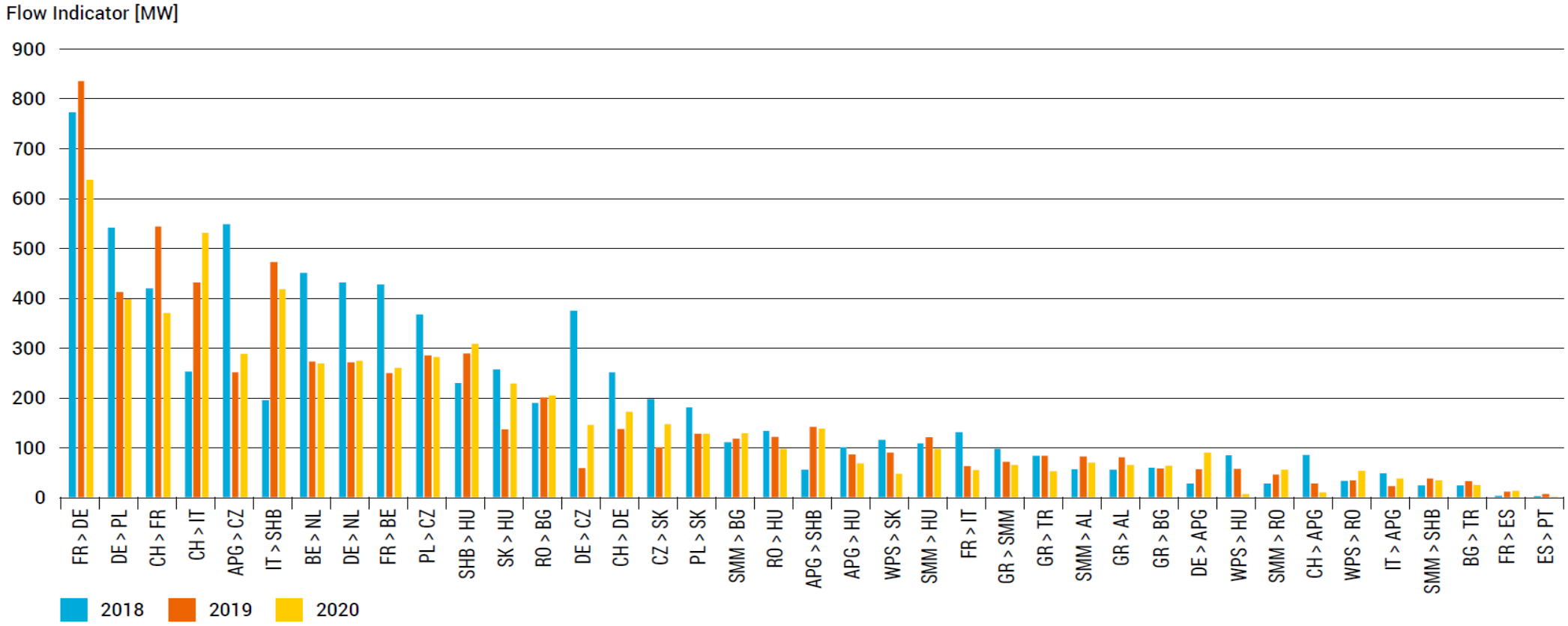


- Commercial transactions are physically realised by power flows distributed in the grid as per the law of physics. Those power flows also include loop-flows and unscheduled flows which cannot be ignored.
- Values are slowly decreasing over the reported years.
- High values can be observed for borders in Central Europe.

- In the context of CEP70, Elia and TenneT NL obtained a derogation for excessive loop-flows. The methodology for its calculation is described in the respective derogations granted to Belgium and the Netherlands, and differs from the methodology applied in this report.
- The key difference being the usage of CWE FB DA CC parameters and thus D2CF data instead of DACF data.

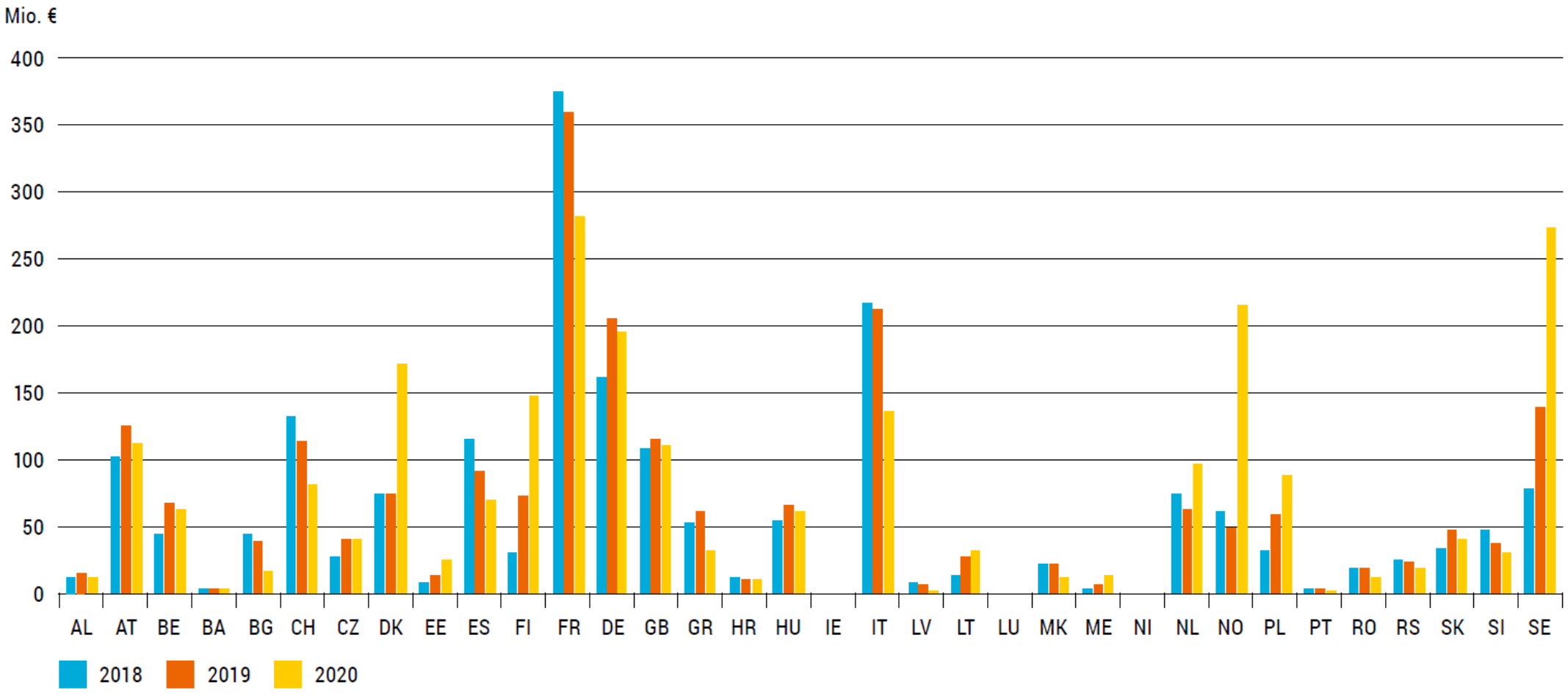
Power flows not resulting from capacity allocation

Loopflows and unscheduled flows



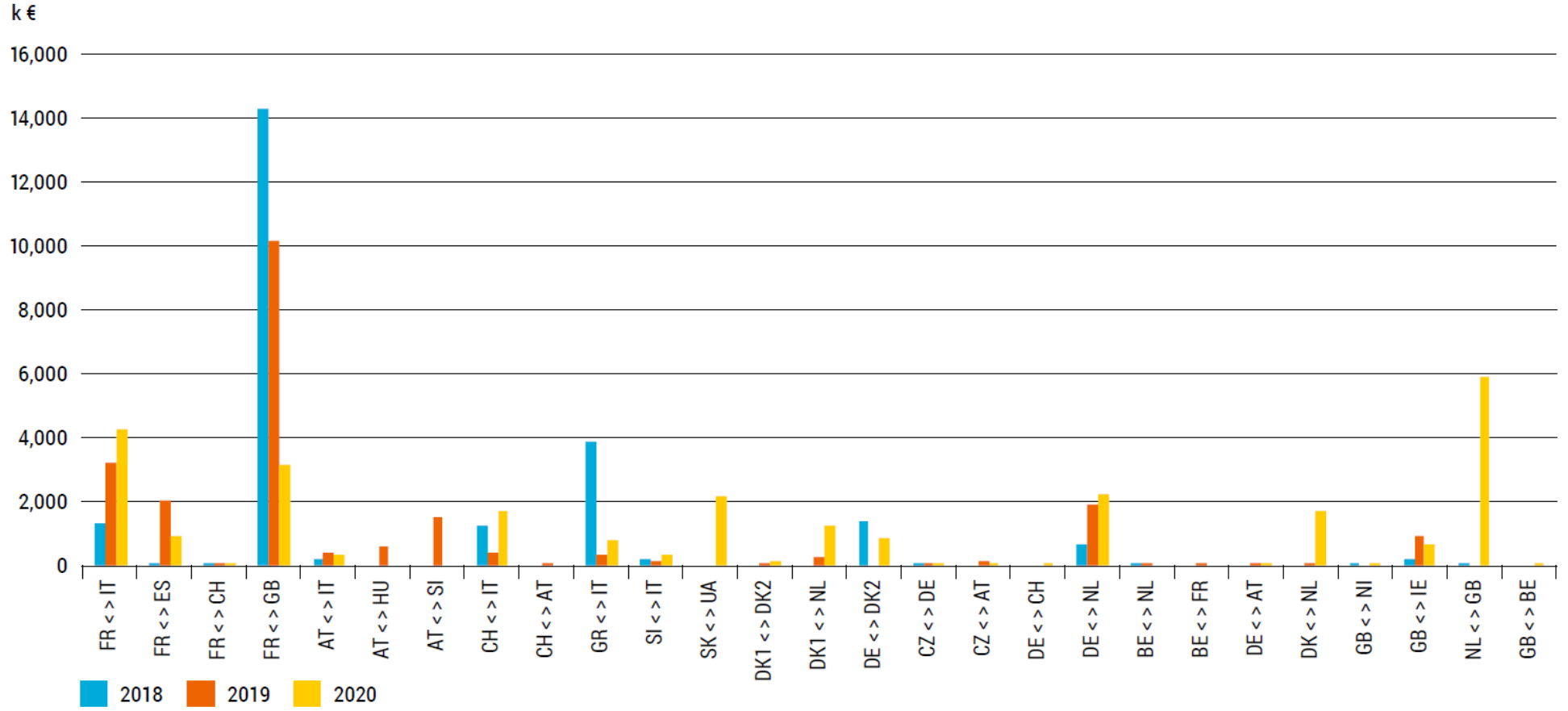
- Three years comparison shows different trend for each border.
- Values are slowly decreasing over the reported years.
- High values can be observed for borders in Central Europe: the highest values of the loop flows can still be found on the French-German border, where the geographical position and strong exporting character of these countries tends to increase the indicator.

Transparency on costs and volumes related to congestions: congestion income



- Very high congestion revenues were received in France, Sweden and Norway, then Germany, Denmark and Finland.
- Congestion income was relatively stable for most countries but increased substantially in the Nordics in 2020.
- Congestion income for Great Britain is not always reported.

Transparency on costs and volumes related to congestions: financial firmness costs

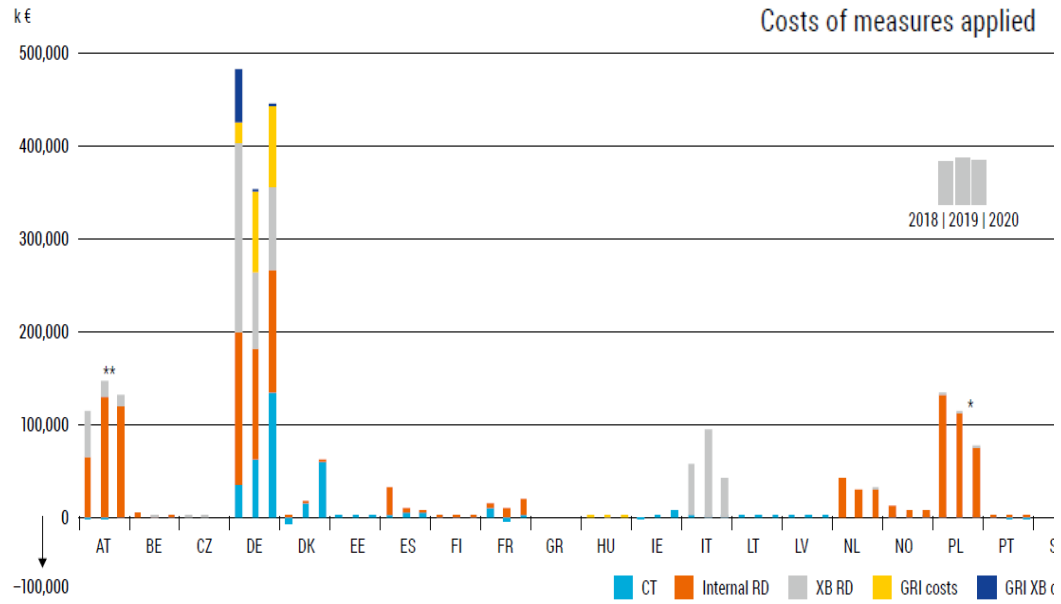


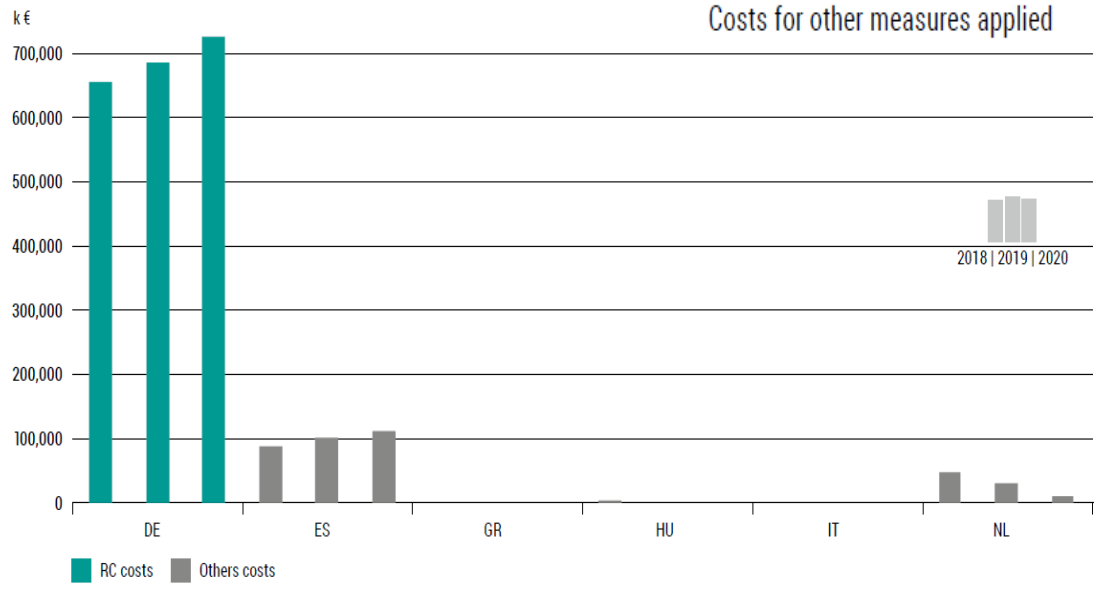
- Detailed representation of total financial firmness costs by border for the respective years only shows borders which have applied the financial firmness.
- Borders with zero values are not included.

- It is observed that the highest costs for financial firmness appeared on the border France-Great Britain followed by France-Italy.
- High costs are observed on the border Netherlands-Great Britain for the year 2020.

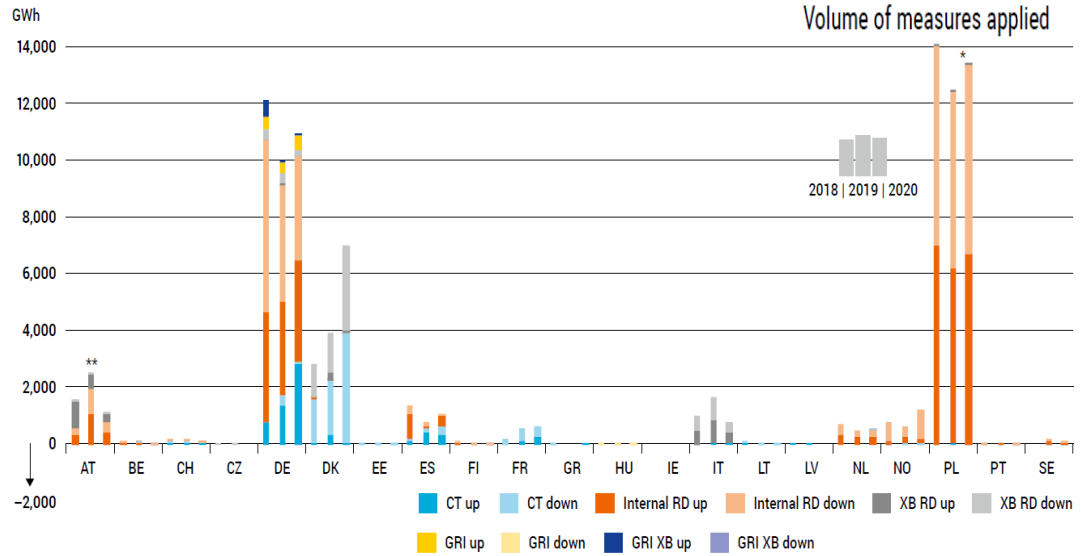
Transparency on costs and volumes related to congestions: physical firmness costs and volumes

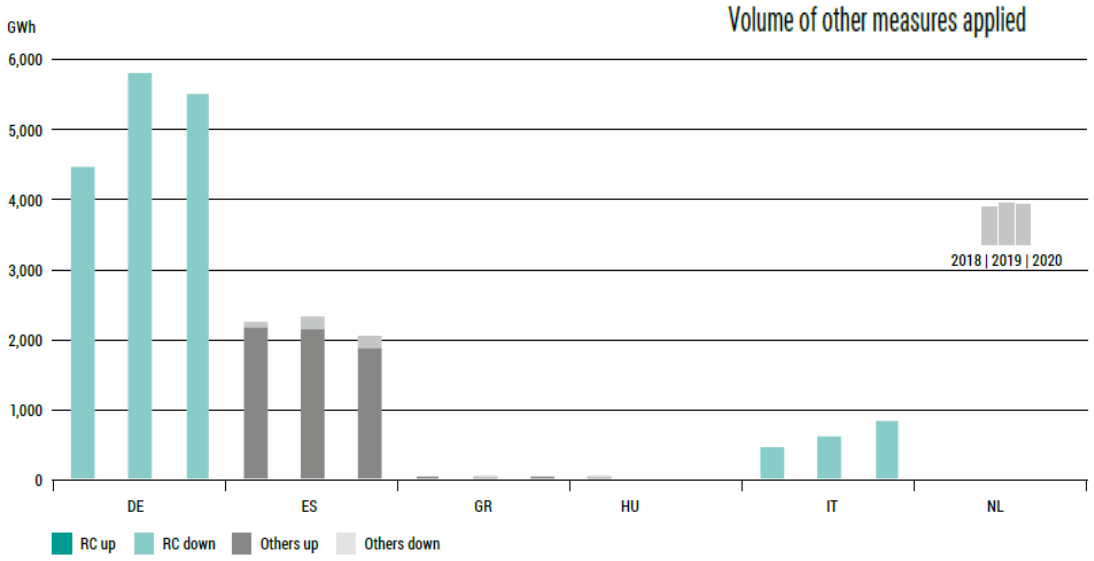
Costs (kEUR)





Volumes (GWh)





*Since PSE applies ISP, cost and volume reported by PSE cover the whole ISP, i.e. not only congestion management, and thus reported cost and volume should be deemed to be strongly overestimated.
** Redispatch and grid reserves are illustrated in a summarised form in this graph to prevent unintended market repercussions. Detailed data were provided to the regulatory authorities

- The values in the category 'other' for the Netherlands are related to preventive restriction agreements.
- The values in the category 'other' for Hungary represent costs related to distribution system bottlenecks related to ensuring special maintenance situations.
- The values in the category 'other' for Spain represent costs related to distribution system bottlenecks related to ensuring the distribution network security and planned or unplanned outages.

Transparency on costs & volumes related to congestions: physical firmness costs & volumes

Costs of measures applied (kEUR):

- The graph shows countertrade (CT), internal redispatch (internal RD), cross-border redispatch (XB RD), internal grid reserves (GRI) and cross-border grid reserves (GR XB) for the years 2018, 2019 and 2020. Costs have been analysed in conjunction with volumes.
- Data on physical firmness costs is not provided for Switzerland.
- Highest costs are observed in Germany, followed by Austria and Poland.

Volumes of measures applied (GWh):

- The graph shows measures of countertrade (CT up, down), internal redispatch (internal RD up, down) cross-border redispatch (XB RD up, down), internal grid reserve (GRI up, down) and cross-border grid reserve (XB GR up, down). Volumes represent the physics of the system; economic and/or political factors such as prices or regulated components are not included in this measure.
- Highest volumes are reported in Poland, Germany and Denmark.

Cost of other measures applied (kEUR):

- The graph shows the countries which have reported costs for other measures such as renewable curtailment (RC), and other costs related to congestion management. The costs related to renewable curtailment are difficult to compare amongst countries, as they result from different compensation rules, which are subject to political decisions.
- The highest value is observed in Germany, followed by Spain and Netherlands.

Volumes of other measures applied (GWh):

- The graph shows the countries which have reported evolution of volumes of other measures such as renewable curtailment (RC) and other measures of congestion management.
- Renewable curtailment is highly related to installed RES production capacities in the respective countries.

Implementation of the CEP's 70 % minimum capacity to be available for cross-zonal trade

TSO's performance in regard to CEP70 provisions from 2020

Country	TSO	Border/Region	% of MTUs in which minimum target was reached (considering action plans and/or derogations)	% of MTUs in which TSOs consider themselves as compliant*	Exemption clause applied
Austria	APG	AT-CZ > HU > SI-AT	100 %	100 %	Derogation
Austria	APG	CWE	100 %	100 %	Derogation
Austria	APG	INB	100 %	100 %	Derogation
Belgium	Elia	CWE	81.3 %	NRA appreciation, link	Derogation
Belgium	Elia	BE > GB	95.5 %	NRA appreciation, link	Derogation
Belgium	Elia	GB > BE	99.7 %	NRA appreciation, link	Derogation
Bulgaria	ESO	BG > GR	100 %	100 %	Derogation
Bulgaria	ESO	GR > BG	100 %	100 %	Derogation
Bulgaria	ESO	BG > RO	100 %	100 %	Derogation
Bulgaria	ESO	RO > BG	100 %	100 %	Derogation
Croatia	HOPS	HR > SI	100 %	100 %	Derogation
Croatia	HOPS	SI > HR	100 %	100 %	Derogation
Croatia	HOPS	HR > HU	100 %	100 %	Derogation
Croatia	HOPS	HU > HR	100 %	100 %	Derogation
Czech Republic	ČEPS	CZ > (AT + DE + PL + SK)	100 %	100 %	Derogation
Czech Republic	ČEPS	(AT + DE + PL + SK) > CZ	100 %	100 %	Derogation
Denmark	Energinet	NO2 > DK1	99.59 %	99.59 %	
Denmark	Energinet	DK1 > NO2	99.37 %	99.37 %	
Denmark	Energinet	DK1 > SE3	95.45 %	99.45 %	
Denmark	Energinet	SE3 > DK1	92.71 %	92.71 %	
Denmark	Energinet	DK2 > DK1	99.51 %	99.51 %	
Denmark	Energinet	DK1 > DK2	97.75 %	97.75 %	
Denmark	Energinet	DK1 > NL	91.73 %	91.73 %	
Denmark	Energinet	NL > DK1	100 %	100 %	
Denmark	Energinet	DK2 > DE	99.32 %	99.32 %	
Denmark	Energinet	DE > DK2	99.32 %	99.32 %	
Estonia	Elering	EE-FI	100 %	100 %	
Estonia	Elering	EE-LV	N/A	N/A	According to approved CACM CCM in Baltic CCR, the CC process does not foresee daily CC with CGM and therefore CNEs cannot be provided.
Finland	Fingrid	FI-SE1	100 %	100 %	
Finland	Fingrid	FI-SE3	100 %	100 %	
Finland	Fingrid	FI-EE	100 %	100 %	
France	RTE	CWE	100 %	100 %	Derogation
France	RTE	SWE	100 %	100 %	Derogation
France	RTE	NIB	100 %	100 %	Derogation
Germany	Amprion	CWE	100 %	100 %	Action Plan
Germany	Amprion	ALEGrO (CWE)	100 %	100 %	Action Plan
Germany	TransnetBW	CWE	100 %	100 %	Action Plan
Germany	50Hertz	DK2 > DE	100 %	100 %	Action Plan
Germany	50Hertz	DE > DK2	100 %	100 %	Action Plan
Germany	TenneT Germany	DE > SE4	70.30 %**	100 %	Action Plan
Germany	TenneT Germany	SE4 > DE	99.99 %	100 %	Action Plan
Germany	TenneT Germany	CWE	100 %	100 %	Action Plan
Germany	50Hertz/ TenneT Germany	DE > PL/CZ	100 %	100 %	Action Plan
Germany	50Hertz/ TenneT Germany	PL/CZ > DE	100 %	100 %	Action Plan
Germany	TenneT Germany	DE > DK1	100 %	100 %	Action Plan
Germany	TenneT Germany	DK1 > DE	100 %	100 %	Action Plan
Germany	TenneT Germany	DE > NO2	100 %	100 %	Action Plan
Germany	TenneT Germany	NO2 > DE	100 %	100 %	Action Plan
Greece	IPTO	SEE	100 %	100 %	Derogation
Greece	IPTO	GRIT	100 %	100 %	Derogation
Hungary	MAVIR	AT > HU	100 %	100 %	Derogation
Hungary	MAVIR	HR > HU	100 %	100 %	Derogation
Hungary	MAVIR	RO > HU	100 %	100 %	Derogation
Hungary	MAVIR	SK > HU	100 %	100 %	Derogation
Hungary	MAVIR	HU > AT	100 %	100 %	Derogation
Hungary	MAVIR	HU > HR	100 %	100 %	Derogation
Hungary	MAVIR	HU > RO	100 %	100 %	Derogation
Hungary	MAVIR	HU > SK	100 %	100 %	Derogation
Ireland	EirGrid		N/A	N/A	
Italy	Terna	Italy North	100 %	100 %	Derogation
Italy	Terna	IT-GR	100 %	100 %	
Latvia	AST		N/A	N/A	According to approved CACM CCM in Baltic CCR, the CC process does not foresee daily CC with CGM and therefore CNEs cannot be provided.
Lithuania	Litgrid AB	LT-SE4	97.6 %	100 %	
Lithuania	Litgrid AB	LT-PL	100 %	100 %	
Lithuania	Litgrid AB	LT-LV	N/A	N/A	According to approved CACM CCM in Baltic CCR, the CC process does not foresee daily CC with CGM and therefore CNEs cannot be provided
Luxembourg	Creos		N/A	N/A	Creos does not have commercialised borders.
Norway	Statnett		N/A	N/A	
Poland S1 2020	PSE	CZ-DE-SK->PL	100 %	100 %	Derogation and Action Plan
Poland S1 2020	PSE	PL>CZ-DE-SK	100 %	100 %	Derogation and Action Plan
Poland S1 2020	PSE	PL > LT	100 %	100 %	Derogation and Action Plan
Poland S1 2020	PSE	LT > PL	100 %	100 %	Derogation and Action Plan
Poland S1 2020	PSE	PL > SE4	100 %	100 %	Derogation and Action Plan
Poland S1 2020	PSE	SE4 > PL	100 %	100 %	Derogation and Action Plan
Poland S2 2020	PSE	CZ-DE-SK->PL	99.98 %	99.98 %	Derogation and Action Plan
Poland S2 2020	PSE	PL>CZ-DE-SK	100 %	100 %	Derogation and Action Plan
Poland S2 2020	PSE	PL > LT	100 %	100 %	Action Plan
Poland S2 2020	PSE	LT > PL	100 %	100 %	Action Plan
Poland S2 2020	PSE	PL > SE4	100 %	100 %	Derogation and Action Plan
Poland S2 2020	PSE	SE4 > PL	100 %	100 %	Action Plan
Portugal	REN	PT-ES	100 %	100 %	Derogation
Romania	Transelectrica	RO_Import	100 %	100 %	Derogation
Romania	Transelectrica	RO_Export	100 %	100 %	Derogation
Slovak Republic	SEPS	SK-CZ	100 %	100 %	Derogation
Slovak Republic	SEPS	SK-PL	100 %	100 %	Derogation
Slovak Republic	SEPS	SK-HU	100 %	100 %	Derogation
Slovenia	ELES	SI-AT	100 %	N/A	
Slovenia	ELES	SI-HR	100 %	N/A	
Slovenia	ELES	CSE	100 %	N/A	
Spain	REE	FR > ES	100 %	100 %	Derogation
Spain	REE	ES > FR	100 %	100 %	Derogation
Spain	REE	PT > ES	100 %	100 %	Derogation
Spain	REE	ES > PT	100 %	100 %	Derogation
Sweden	Svenska Kraftnät		N/A	N/A	Derogation
The Netherlands	TenneT NL	CWE	84 %	99 %	Derogation and Action Plan
The Netherlands	TenneT NL	DK1 > NL	81 %	100 %	Derogation
The Netherlands	TenneT NL	NL > DK1	100 %	100 %	Derogation
The Netherlands	TenneT NL	NO2 > NL	86 %	100 %	Derogation
The Netherlands	TenneT NL	NL > NO2	100 %	100 %	Derogation
The Netherlands	BritNed	NL > GB	100 %	100 %	Derogation
The Netherlands	BritNed	GB > NL	100 %	100 %	Derogation

- **The vast majority of TSOs acted in accordance with the CEP70rules 100 % of the time, considering action plans and/or derogations.**
- Even when the minimum target was not reached, very often the TSO still considered itself compliant, as Art. 16 of EU Electricity Regulation allows – as a measure of last resort – the reduction of the offered cross-zonal capacity below the minimum targets, if the TSOs or RCCs, respectively, can justify that their application would endanger system security.

1. Art. 16 of EU Electricity Regulation allows – as a measure of last resort – the reduction of the offered cross-zonal capacity below the minimum targets, if TSOs respectively RCCs can justify that their application would endanger system security. Among many reasons, this can particularly apply due to insufficient availability of remedial actions to solve grid overloads resulting from the application of the CEP's minimum targets. Therefore, a given MTU can still be considered as compliant with the CEP's provisions, although the minimum target was not reached. Consequently, two different performance indicators are presented in the table above.

2. The number differs from the one in the ENTSO-E Market Report 2021 published earlier, which contains a wrong number (99.31 %).

The vast majority of TSOs acted in accordance with the CEP70rules 100 % of the time, considering action plans and/or derogations.

Main findings of the ENTSO-E Bidding Zone Technical Report

Present congestions and their future evolutions

- In D-2 timeframe, reported congestions are generally on BZ borders or in their direct vicinity. Relatively few grid elements show congestions, for relative high frequency.
- In D-1 and CTRT timeframe reported congestions are either on tie lines or internal lines. Relatively high amount of grid elements show congestions, (most of them) for relative low frequency compared to D-2.

Power flows not resulting from capacity allocation

- Values are slowly decreasing over the reported years.
- High values can be observed for borders in Central Europe.

Congestion income

- Highest congestion income for France, Sweden and Norway, then Germany, Denmark and Finland.
- Congestion income was relatively stable for most countries but increased substantially in the Nordics in 2020.
- Congestion income for Great Britain is not always reported.

Financial firmness costs

- Highest costs for financial firmness appeared on the border France-Great Britain followed by France-Italy.
- High costs are observed on the border Netherlands-Great Britain for the year 2020.
- Lower magnitude compared to physical firmness.

Main findings of the Technical Report

Physical firmness costs

- Data on physical firmness costs is not provided for Switzerland.
- Highest costs of measures applied for countertrade, internal redispatch, and cross-border redispatch are reported in Germany, followed by Austria and Poland.
- Highest costs of other measures applied (renewable curtailment, congestion management measures in distribution networks, grid reserves internal or cross-border and other costs for congestion management): Germany, Spain and Netherlands.

Physical firmness volumes

- Highest volumes measures applied for countertrade, internal redispatch, and cross-border redispatch are reported in Poland, Germany and Denmark.
- Highest volumes of other measures applied (renewable curtailment, congestion management measures in distribution networks, grid reserves internal or cross-border and other costs for congestion management) are reported in Germany, Spain and Italy.

CEP70% minimum capacity to be available for cross-zonal trade

- Majority of TSOs are acting in accordance to the CEP70 rule considering action plans and/or derogation.