

## Corrigenda

to

### ACER/CEER ANNUAL REPORT ON THE RESULTS OF MONITORING THE INTERNAL ELECTRICITY AND NATURAL GAS MARKETS IN 2019

#### Electricity Wholesale Markets Volume

#### Document history

Version	Comment	Date
1	Original version.	21 October 2020
1.1	<p>Corrigendum.</p> <p>The corrigendum rectifies:</p> <ul style="list-style-type: none"> <li>• the label and source of Figure ii on page 13,</li> <li>• the y-axis in Figure 5 on page 21,</li> <li>• the values corresponding to “Moderate price convergence (1-10 euros/MWh diff.)” and “Low price convergence (&gt;10 euros/MWh diff.)” in Figure 8 on page 24,</li> <li>• the y-axis in Figure 17 on page 37,</li> <li>• the values corresponding to Belgium in Table 4 on page 60,</li> <li>• the caption and label of Figure 42 on page 63,</li> <li>• the caption of Figure 48 on page 71.</li> </ul> <p>All changes are set out below.</p>	26 November 2020
1.2	<p>Corrigendum. Revised version 1.2 of the Report is available at: <a href="https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202019%20-%20Electricity%20Wholesale%20Markets%20Volume.pdf">https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202019%20-%20Electricity%20Wholesale%20Markets%20Volume.pdf</a></p> <p>This corrigendum rectifies:</p> <ul style="list-style-type: none"> <li>• footnote 14 on page 12,</li> <li>• the colour corresponding to Croatia in Figure 1 on page 19,</li> <li>• the y-axis name and the caption of Figures 31 and 32 on page 52,</li> <li>• the text corresponding to GB and SEM in Figure 36 on page 57,</li> </ul>	12 February 2021

	<ul style="list-style-type: none"> <li>• the note applying to Figure 37 and Figure 38 on page 58,</li> <li>• the values corresponding to Denmark in Table 4 on page 60,</li> <li>• the part of the note corresponding to Denmark under Table 4 on page 60,</li> <li>• the last two values in the fifth and six columns and the last value in the seventh column in Table 7 on page 67,</li> </ul> <p>and</p> <ul style="list-style-type: none"> <li>• adds a note under Figure 13 on page 31.</li> </ul> <p>In addition, several minor changes in wording and document structure are included.</p> <p>All changes are set out below.</p>	
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### Changes from Original to Corrigendum version (February 2021)

The change (indicated in *italics*) introduced vis-à-vis version 1 is presented below by heading number and title of version 1. Some changes are shown by presenting directly the figures and tables.

#### Foreword

The third subheading on page 6 has been changed as follows:

Version 1	Corrigendum 1.2
“Electricity prices for household and industrial consumers throughout Europe electricity increased in 2019”	“Electricity prices for household and industrial consumers throughout Europe increased in 2019”

#### Executive Summary

Paragraph 16 on page 9 has been changed as follows:

Version 1	Corrigendum 1.2
“More room for improvement remains in balancing timeframe, with a level of efficiency of 23% in 2019. ACER recently approved a large number of decisions that set out the rules for integrating EU balancing markets and enable transmission system operators (TSOs) to move to the implementation phase of various balancing market integration projects.”	“More room for improvement remains in <i>the</i> balancing timeframe, with a level of efficiency of 23% in 2019. ACER recently approved a large number of decisions that set out the rules for integrating EU balancing markets and enable transmission system operators (TSOs) to move to the implementation phase of various <i>pan-EU balancing platform projects.</i> ”

The third sentence in paragraph 36 on page 12 has been changed as follows:

Version 1	Corrigendum 1.2
“ACER plays a crucial role in this respect, as it will approve the methodologies underlying this assessment and will monitor correct implementation.”	“ACER plays a crucial role in this respect, as it <i>approves</i> the methodologies underlying this assessment and <i>monitors</i> correct implementation.”

Paragraph 37 on page 12 has been changed as follows:

Version 1	Corrigendum 1.2
“While ensuring security of supply is a national competence and capacity mechanisms (CMs) may contribute to ensuring such security, the CEP stipulates that CMs should only be implemented following a robust and realistic adequacy assessment and as a measure of last-resort.”	“While ensuring security of supply is a national competence and capacity mechanisms (CMs) may contribute to ensuring such security, the CEP stipulates that CMs should only be implemented following a robust and realistic <i>resource</i> adequacy assessment and as a measure of last-resort.”

Footnote 14 on page 12 has been changed as follows:

Version 1	Corrigendum 1.2
“ACER shall approve the methodologies submitted by ENTSO-E for the European resource adequacy assessment and for calculating the value of lost load, the cost of new entry and the reliability standard before the end of 2020.”	“ <i>Pursuant to Article 23(7) of Regulation (EU) 2019/943.</i> ”

The label and source of Figure ii on page 13 have been changed as follows:

Version 1	Corrigendum 1.1
“CM operational – no national adequacy issues in MAF”	“CM <i>adopted</i> – no national adequacy issues in MAF”
“Source: ACER.”	“Source: ACER <i>based on ENTSO-E’s 2019 MAF.</i> ”

## Recommendations

Item 7 in paragraph 45 on page 15 has been changed as follows:

Version 1	Corrigendum 1.2

“Implement pan-European intraday auctions for pricing cross-zonal capacity in line with the ACER’s decision 01/2019, in order to ensure a more efficient use and the pricing of cross-zonal capacity closer to real time.”

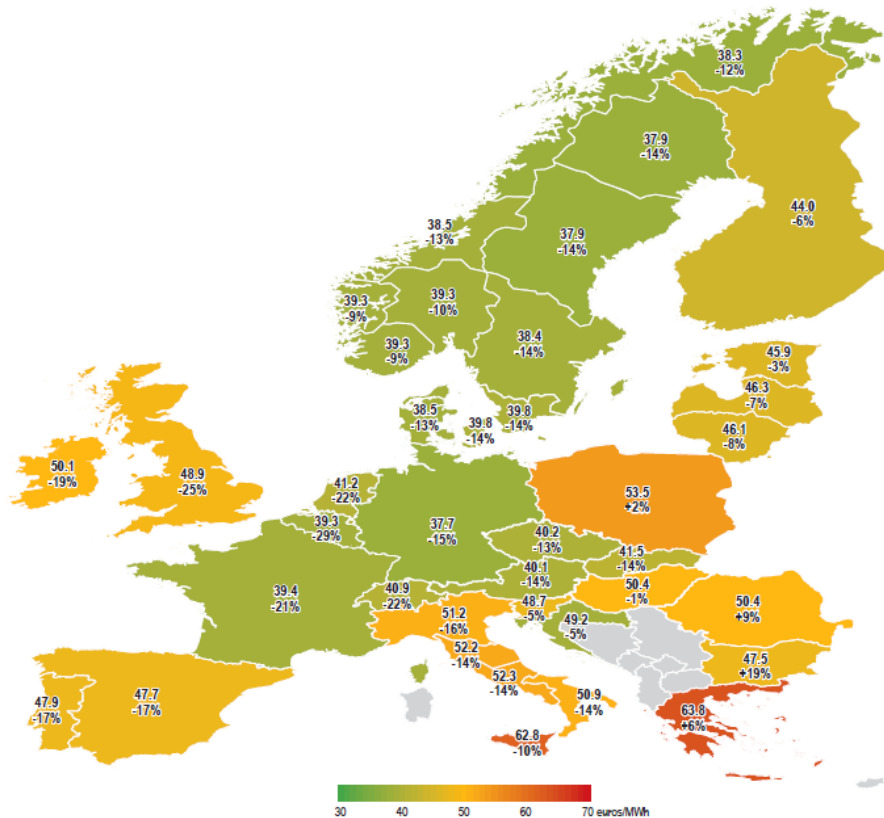
“Implement pan-European intraday auctions for pricing cross-zonal capacity in line with ACER’s decision 01/2019, in order to ensure a more efficient use and pricing of cross-zonal capacity closer to real time.”

## 2.1 Evolution of prices

The colour corresponding to Croatia in Figure 1 on page 19 has been changed as follows:

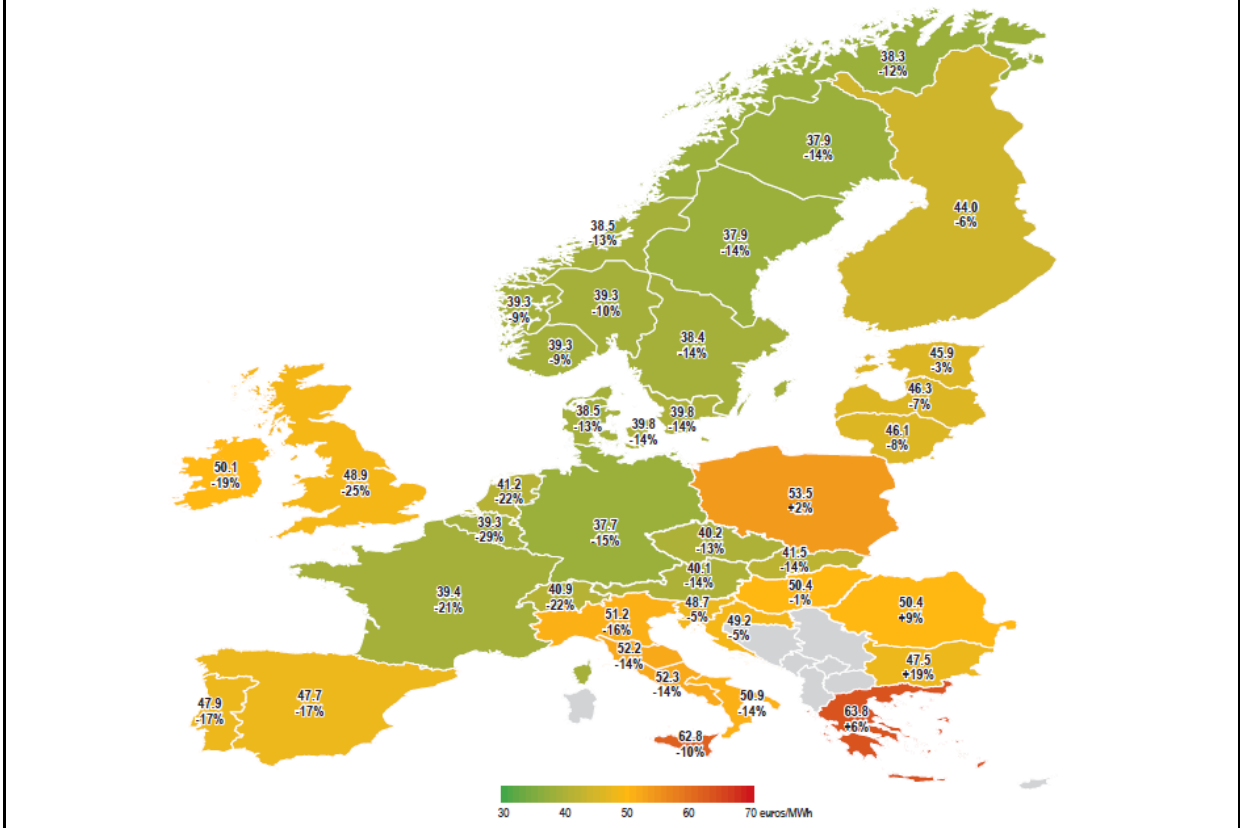
Version 1

Figure 1: Average annual DA electricity prices and relative changes compared to the previous year in European bidding zones – 2019 (euros/MWh and % change compared to 2018)



Corrigendum 1.2

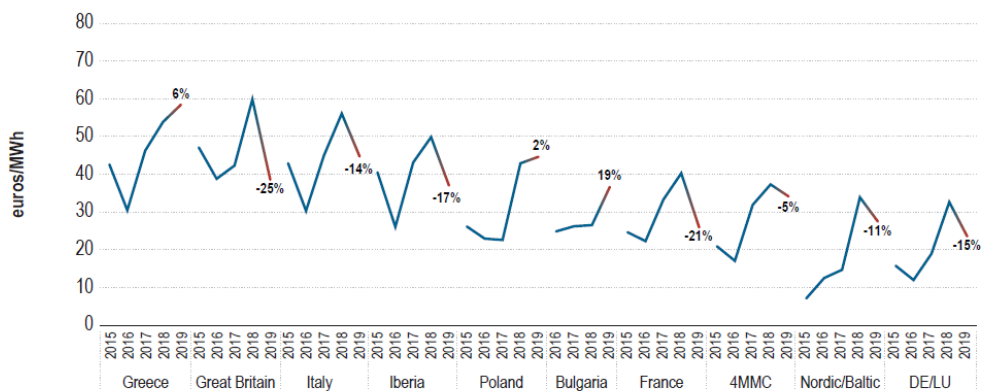
Figure 1: Average annual DA electricity prices and relative changes compared to the previous year in European bidding zones – 2019 (euros/MWh and % change compared to 2018)



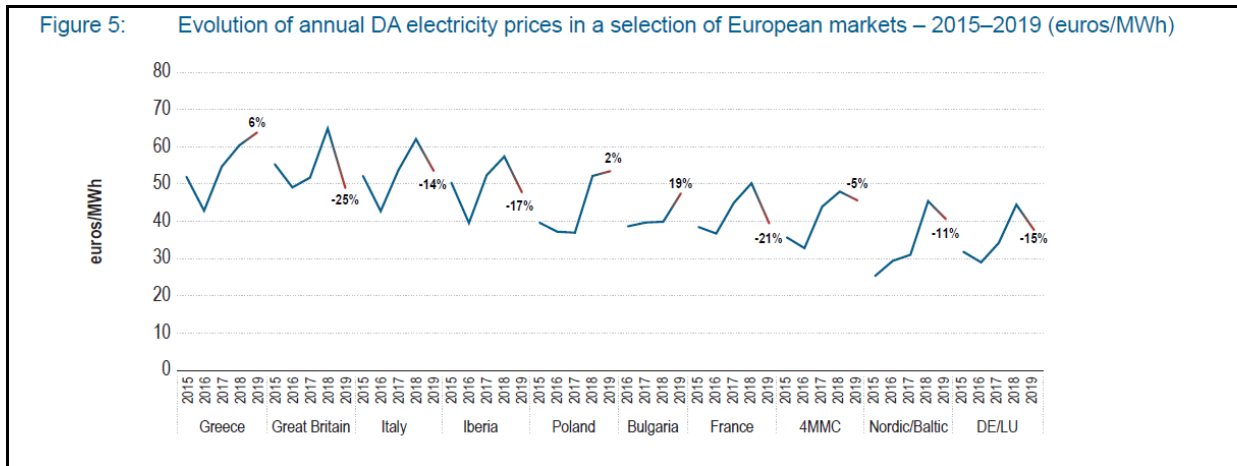
The y-axis of Figure 5 on page 21 has been changed as follows:

Version 1

Figure 5: Evolution of annual DA electricity prices in a selection of European markets – 2015–2019 (euros/MWh)



Corrigendum 1.1

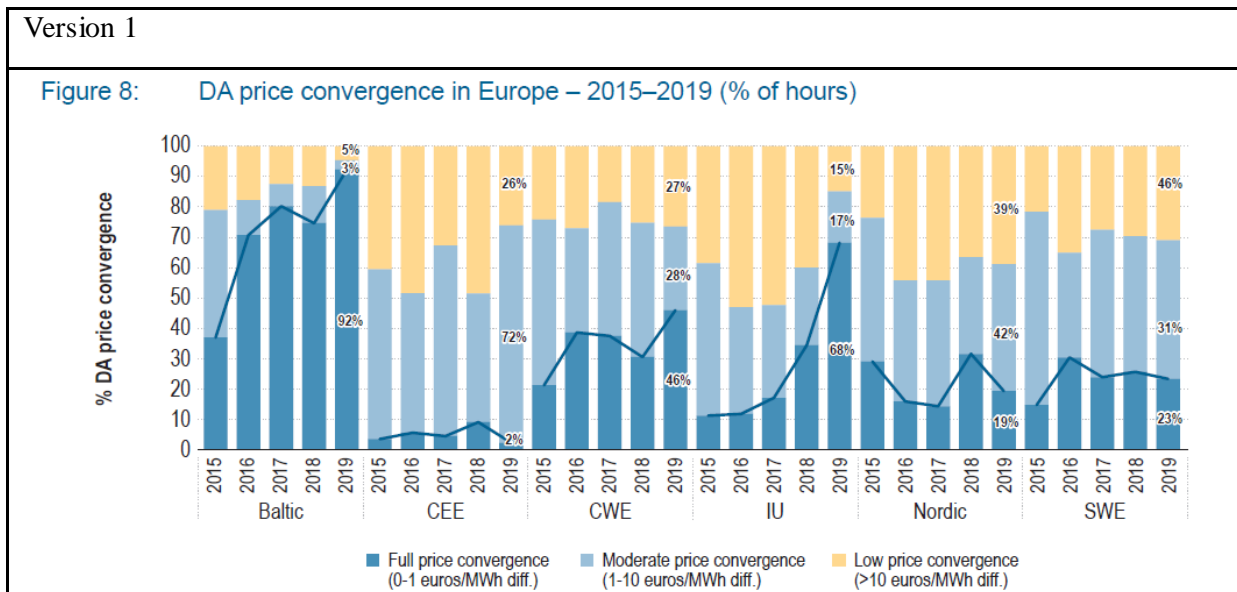


### 2.3 Price convergence

Footnote 45 on page 23 has been changed as follows:

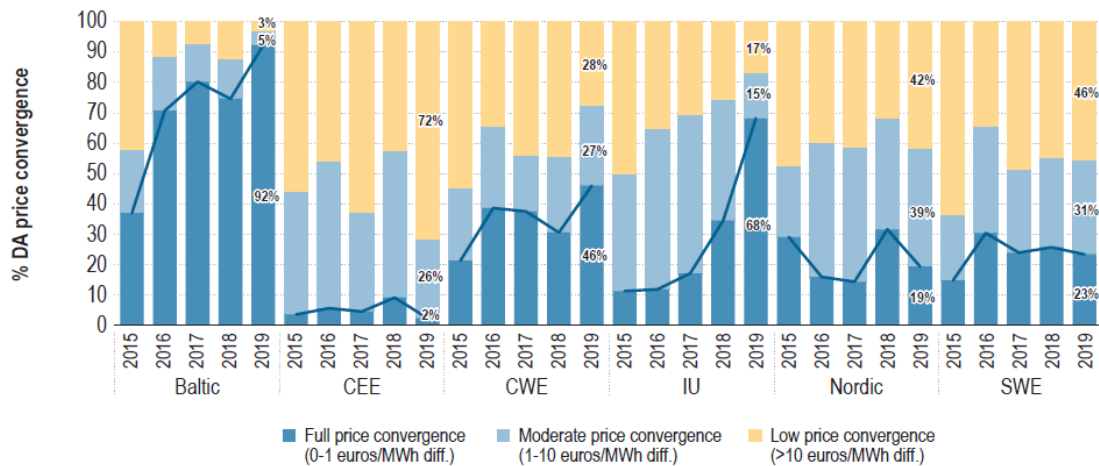
Version 1	Corrigendum 1.2
“Depending on the specific national rules to integrate RES in wholesale markets, some subsidised RES generators could also be interested in paying a certain amount of money for producing, as long as this amount is lower than the subsidy.”	“Depending on the specific national rules to integrate RES in wholesale markets, some subsidised RES generators could also be interested in paying a certain amount of money for producing, as long as this amount is lower than the subsidy <i>that they receive</i> .”

The values corresponding to “Moderate price convergence (1-10 euros/MWh diff.)” and “Low price convergence (>10 euros/MWh diff.)” in Figure 8 on page 24 have been changed as follows:



## Corrigendum 1.1

Figure 8: DA price convergence in Europe – 2015–2019 (% of hours)



The second sentence in paragraph 83 on page 24 has been changed as follows:

Version 1	Corrigendum 1.2
“However, there is still a room for improvement, especially in the CEE region, where the implementation of market coupling is still pending.”	“However, there is still room for improvement, especially in the CEE region, where the implementation of market coupling is still pending.”

### 3.2 Evolution of capacity on borders where flow-based capacity calculation applies (CWE region)

A note has been added under Figure 13 on page 31:

Version 1	Corrigendum 1.2
	“Note: The dashed lines mark 20% (minimum RAM requirement as of April 2018) and 70% (minimum MACZT requirement as of January 2020).”

### 3.3 Remedial actions

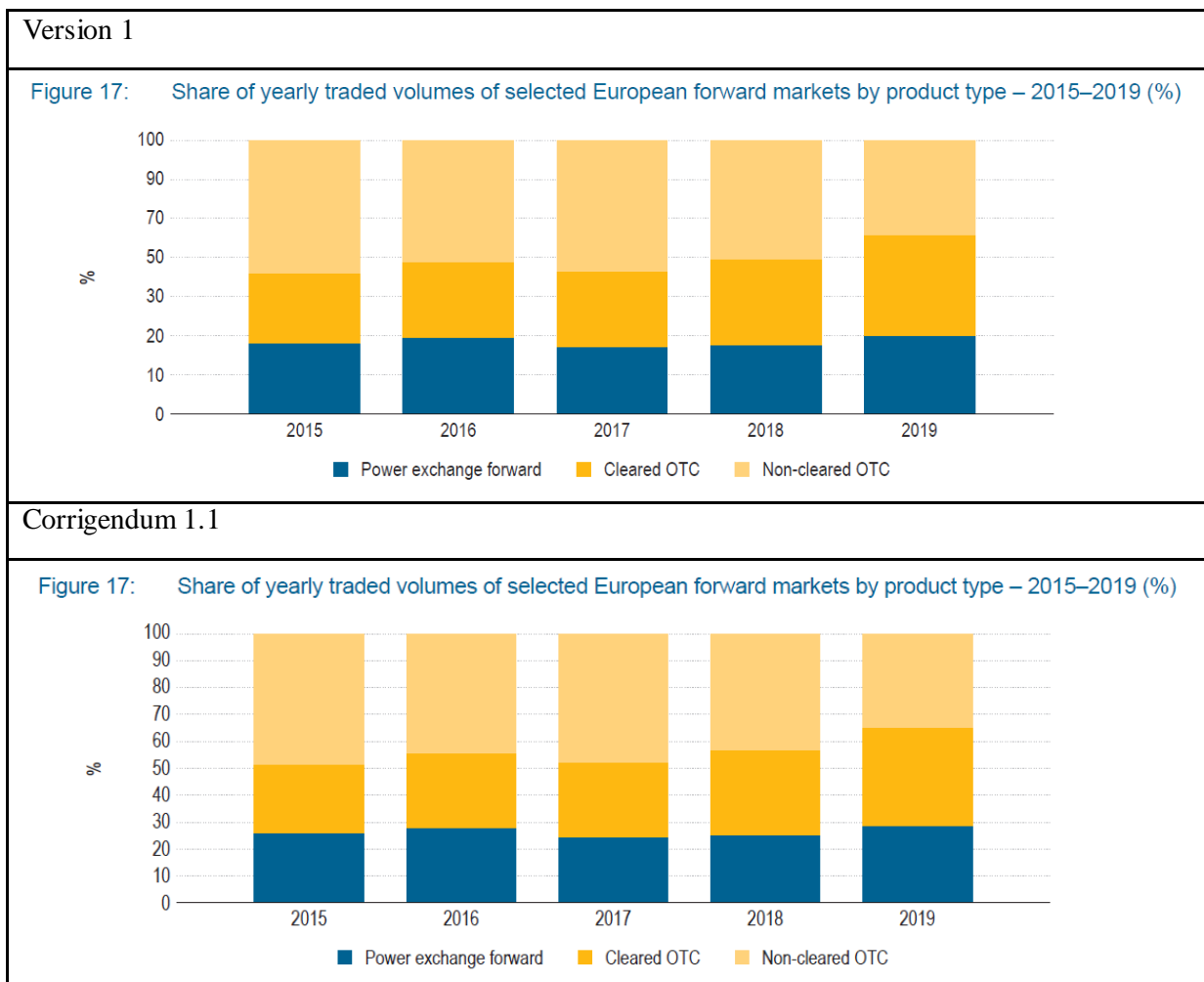
Paragraph 112 on page 32 has been changed as follows:

Version 1	Corrigendum 1.2
“On a per unit basis, the highest costs were observed in Lithuania (5.67 euros/MWh),	“In relative terms, the highest costs per unit of demand were observed in Lithuania (5.67 euros/MWh), Austria (2.36 euros/MWh),

Austria (2.36 euros/MWh), Germany (2.32 euros/MWh) and in GB (1.89 euros/MWh).”

Germany (2.32 euros/MWh) and in GB (1.89 euros/MWh).”

The y-axis of Figure 17 on page 37 has been changed as follows:



### 4.3 Intraday markets

The second and third sentence in paragraph 129 on page 39 have been changed as follows:

Version 1	Corrigendum 1.2
<p>SIDC allows for continuous cross-border intraday electricity trading between all integrating bidding zones based on the continuous allocation of cross-border capacities. Because Switzerland – and the Swiss TSO, Swissgrid – does not participate in SIDC and the system that had previously enabled implicit ID</p>	<p>SIDC allows for continuous cross-border intraday electricity trading between all <i>integrated</i> bidding zones based on the continuous allocation of cross-border capacities. Because Switzerland – and the Swiss TSO, Swissgrid – does not participate in SIDC and the system that had previously enabled implicit ID trading at the</p>



trading at the Swiss borders with Germany and France, the Flexible Intraday Trading Scheme (FITS), was withdrawn, ID trades with Switzerland now require cross-border capacity to be procured separately, with the exception of the Switzerland – Italy North border since mid-April 2019.	Swiss borders with Germany and France, the Flexible Intraday Trading Scheme, was withdrawn, ID trades with Switzerland now require cross-border capacity to be procured separately, with the exception of the Switzerland – Italy North border since mid-April 2019.
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**5.2 Intraday markets**

The note under Figure 27 on page 47 has been changed as follows:

Version 1	Corrigendum 1.2
Note: This figure contains data for all involved European bidding zones.	Note: This figure contains data for all European bidding zones <i>with ID markets</i> .

**5.3.1 Balancing (capacity and energy)**

The third sentence in paragraph 161 on page 50 has been changed as follows:

Version 1	Corrigendum 1.2
There were only a few increases in balancing capacity procurement costs observed: for FCRs in the Nordic area, and for frequency restoration reserves (FFRs) in Germany (due to higher prices) and the Netherlands (due to an increased volume procured).	There were only a few increases in balancing capacity procurement costs observed: for FCRs in the Nordic area, and for frequency restoration reserves ( <i>FRRs</i> ) in Germany (due to higher prices) and the Netherlands (due to an increased volume procured).

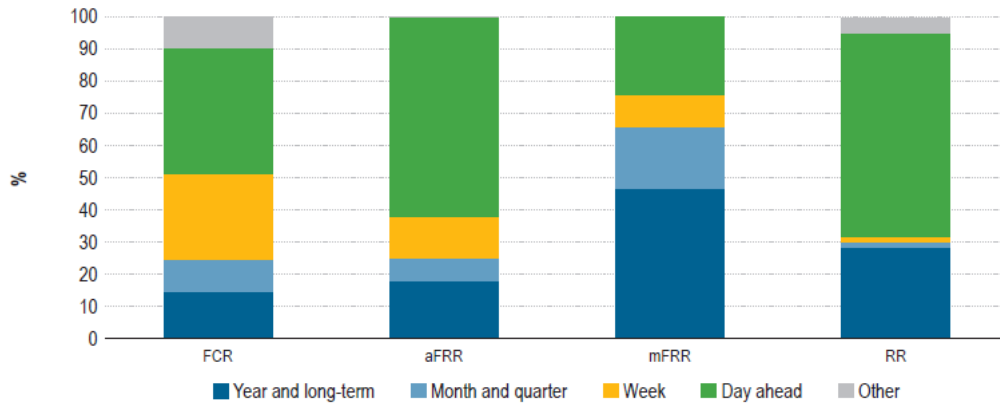
**5.3.2 Lead time for the procurement of balancing capacity**

The y-axis name and the caption of Figure 31 on page 52 have been changed.

Version 1
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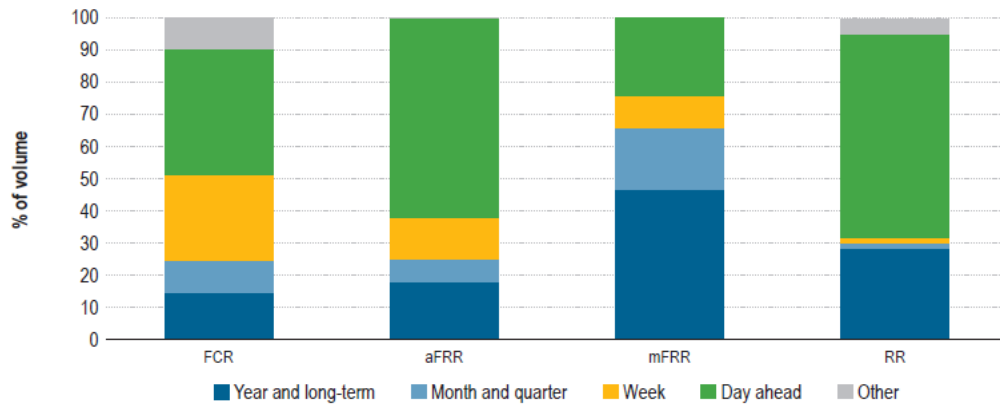


Figure 31: Repartition of the procurement lead time of each type of reserve – 2019 (%)



Corrigendum 1.2

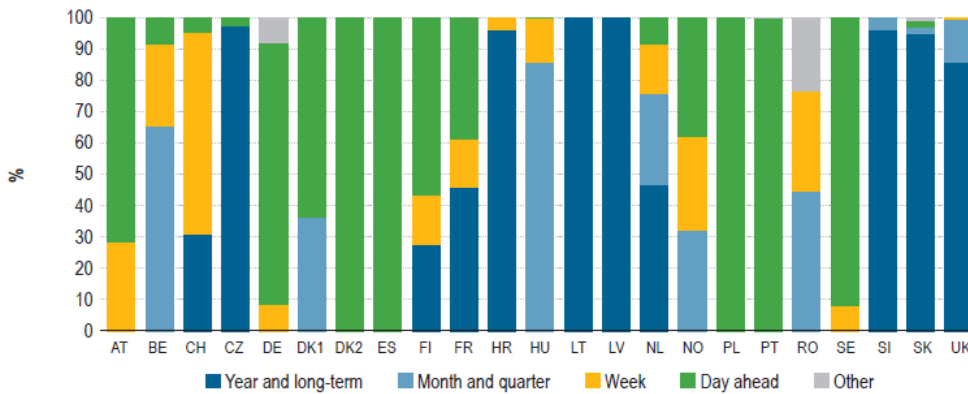
Figure 31: Repartition of the procurement lead time of each type of reserve – 2019 (% of volume)



The y-axis name and the caption of Figure 32 on page 52 have been changed.

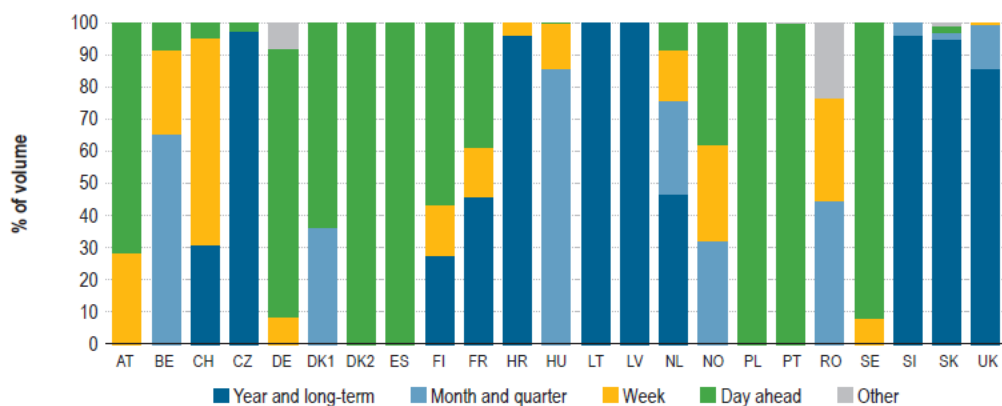
Version 1

Figure 32: Repartition of procurement lead time of each country, for all types of reserve (FCR, aFRR, mFRR, RR) – 2019 (%)



## Corrigendum 1.2

Figure 32: Repartition of procurement lead time of each country, for all types of reserve (FCR, aFRR, mFRR, RR) – 2019 (% of volume)



### 5.3.3 Cross-zonal exchange of balancing services

The fourth sentence in paragraph 168 on page 53 has been changed as follows:

Version 1	Corrigendum 1.2
The level exchange of balancing capacity (Figure 34) has significantly increased for the Netherlands, Belgium, and Western Denmark, all members of the FCR cooperation project.	The level <i>of</i> exchange of balancing capacity (Figure 34) has significantly increased for the Netherlands and Belgium, <i>both</i> members of the FCR cooperation project.

The fifth sentence in paragraph 173 on page 54 has been changed as follows:

Version 1	Corrigendum 1.2
Between 2020 and 2023, the TSOs will gradually implement the changes in operational processes (in particular the single price model and the 15-minute imbalance settlement period), with a view to being merged first with MARI and later with PICASSO.	Between 2020 and 2023, the TSOs will gradually implement the changes in operational processes (in particular the single <i>imbalance</i> price model and the 15-minute imbalance settlement period), with a view to being merged first with the <i>Manually Activated Reserves Initiative</i> (MARI) and later with PICASSO.

The second sentence in paragraph 174 on page 55 has been changed as follows:

Version 1	Corrigendum 1.2
The platform is part of the Manually Activated Reserves Initiative (MARI initiative), which was launched in April 2017 with the signing of a	The platform is part of <i>MARI</i> , which was launched in April 2017 with the signing of a

memorandum of understanding by 19 European TSOs.	memorandum of understanding by 19 European TSOs.
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## 6 Capacity mechanisms and generation adequacy

The first sentence in paragraph 178 on page 56 has been changed as follows:

Version 1	Corrigendum 1.2
The recast Electricity Regulation sets the framework for the assessing mid-term resource adequacy and provides general principles and design rules for CMs.	The recast Electricity Regulation sets the framework for assessing mid-term resource adequacy and provides general principles and design rules for CMs.

### 6.1 Status of capacity mechanisms

The text in the second and third rectangle corresponding to Figure 36 on page 57 have been changed as follows:

Version 1	Corrigendum 1.2
Capacity auction Re-approved as of October 2019.	<i>GB</i> : Capacity auction Re-approved as of October 2019.
Capacity Auctions for reliability options initiated in 2018.	<i>SEM</i> : Capacity auctions for reliability options initiated in 2018.

A sentence has been added to the note applying to Figure 37 and Figure 38 on page 58:

Version 1	Corrigendum 1.2
	<i>Values marked with the label 'IE' refer to 'SEM'.</i>

### 6.3 Capacity mechanisms and resource adequacy concerns

Quotation marks in the third sentence in paragraph 187 on page 60 have been changed as follows:

Version 1	Corrigendum 1.2
Moreover, according to Article 25 of the recast Electricity Regulation “When applying capacity mechanisms Member States shall have a reliability standard in place.” and this reliability standard “...shall be calculated using at least the value of lost load and the cost of new entry over a given timeframe and shall be expressed as	Moreover, according to Article 25 of the recast Electricity Regulation “When applying capacity mechanisms Member States shall have a reliability standard in place.” and this reliability standard “...shall be calculated using at least the value of lost load and the cost of new entry over a given timeframe and shall be expressed as

“expected energy not served” (EENS) and “loss of load expectation” (LOLE).

‘expected energy not served’ (EENS) and ‘loss of load expectation’ (LOLE).”

The values corresponding to Belgium in Table 4 on page 60 have been changed as follows:

Version 1

Table 4: Reliability standards used in the EU – 2019

Member State	Type of reliability standard	Value	Binding (B)/Non-binding (NB)
BE	LOLE	3 hours/year	B
BG	SAI = 1 - LOLP	0.99815	B
CY	Reserve margin	189 MW	B
DE	LOLE	5 hours/year	NB
DK	Outage minutes	20 minutes	B
FR	LOLE	3 hours/year	NB
GR	LOLE	3 hours/year	NB
IE	LOLE	8 hours/year	B
IT	LOLE	3 hours/year	B
LT	LOLE	8 hours/year	NB
NL	LOLE	4 hours/year	NB
PL	LOLE	3 hours/year	NB
ES	Reserve margin/LOLE	(see note)	NB
UK (GB)	LOLE	3 hours/year	B

Corrigendum 1.1

Table 4: Reliability standards used in the EU – 2019

Member State	Type of reliability standard	Value	Binding (B)/Non-binding (NB)
BE	LOLE	3 hours/year	B
	LOLE (P95)	20 hours/year	B
BG	SAI = 1 - LOLP	0.99815	B
CY	Reserve margin	189 MW	B
DE	LOLE	5 hours/year	NB
DK	Outage minutes	20 minutes	B
FR	LOLE	3 hours/year	NB
GR	LOLE	3 hours/year	NB
IE	LOLE	8 hours/year	B
IT	LOLE	3 hours/year	B
LT	LOLE	8 hours/year	NB
NL	LOLE	4 hours/year	NB
PL	LOLE	3 hours/year	NB
ES	Reserve margin/LOLE	(see note)	NB
UK (GB)	LOLE	3 hours/year	B

The values corresponding to Denmark in Table 4 on page 60 have been changed as follows:

Version 1

Table 4: Reliability standards used in the EU – 2019

Member State	Type of reliability standard	Value	Binding (B)/Non-binding (NB)
BE	LOLE	3 hours/year	B
BG	SAI = 1 - LOLP	0.99815	B
CY	Reserve margin	189 MW	B
DE	LOLE	5 hours/year	NB
DK	Outage minutes	20 minutes	B
FR	LOLE	3 hours/year	NB
GR	LOLE	3 hours/year	NB
IE	LOLE	8 hours/year	B
IT	LOLE	3 hours/year	B
LT	LOLE	8 hours/year	NB
NL	LOLE	4 hours/year	NB
PL	LOLE	3 hours/year	NB
ES	Reserve margin/LOLE	(see note)	NB
UK (GB)	LOLE	3 hours/year	B

## Corrigendum 1.2

Table 4: Reliability standards used in the EU – 2019

Member State	Type of reliability standard	Value	Binding (B)/Non-binding (NB)
BE	LOLE	3 hours/year	B
	LOLE (P95)	20 hours/year	B
BG	SAI = 1 - LOLP	0.99815	B
CY	Reserve margin	189 MW	B
DE	LOLE	5 hours/year	NB
DK	Outage minutes	7 minutes	B
FR	LOLE	3 hours/year	NB
GR	LOLE	3 hours/year	NB
IE	LOLE	8 hours/year	B
IT	LOLE	3 hours/year	B
LT	LOLE	8 hours/year	NB
NL	LOLE	4 hours/year	NB
PL	LOLE	3 hours/year	NB
ES	Reserve margin/LOLE	(see note)	NB
UK (GB)	LOLE	3 hours/year	B

The part of the note corresponding to Denmark under Table 4 on page 60 has been changed as follows:

Version 1	Corrigendum 1.2
<p>“In Denmark the reliability standard is set in ‘outage minutes (OM)’ defined as <math>OM = 8760 * 60 * EUE / Demand</math>, where Demand is the annual load and EUE is the expected unserved energy i.e. the EENS adjusted to account for the fact that real load shedding occurs at predefined blocks of energy.”</p>	<p>In Denmark the reliability standard is set in ‘outage minutes (OM)’ defined as <math>OM = 8760 * 60 * EUE / Demand</math>, where Demand is the annual load and EUE is the expected unserved energy i.e. the EENS adjusted to account for the fact that real load shedding occurs at predefined blocks of energy. <i>The uniform 7 minutes target refers to outages related to either resource adequacy (5 minutes), transmission adequacy (1 minute) or system operation incidents (1 minute).</i></p>

The caption and label of Figure 42 on page 63 have been changed as follows:

Version 1	Corrigendum 1.1
“Figure 42: Perceived need for adequacy issues based on 2019 MAF results”	“Figure 42: Perceived need for <i>CMs based on the 2019 MAF results – 2019</i> ”
“CM operational – no national adequacy issues in MAF”	“CM <i>adopted</i> – no national adequacy issues in MAF”

The last two values in the fifth and sixth columns and the last value in the seventh column of Table 7 on page 67 have been changed as follows:

Version 1						
Table 7: Number of active capacity constraints and shadow prices by element type in the Core (CWE) region – 2019						
TSO	Element type	Number (2018)	Number (2019)	Difference	Total of shadow prices 2019 (euros/MW)	Average shadow price 2019 (euros/MW)
AT	Internal line	117	233	99%	22,252	96
BE	Internal line	1,109	1,126	2%	29,966	27
DE	Allocation constraint	457	0	-100%	-	-
DE-Amprion	Internal line	927	374	-60%	39,568	106
DE-TenneT	Internal line	301	251	-17%	29,517	118
DE-TransnetBW	Internal line	80	16	-80%	2,149	134
FR	Allocation constraint	0	0	-	-	-
FR	Internal line	1	9	800%	429	48
NL	Allocation constraint	190	0	-100%	-	-
NL	Internal line	1,452	455	-69%	30,279	67
Cross-border line		2,897	2,431	19%	-16%	97
<b>Total</b>		<b>7531</b>	<b>4895</b>	<b>54%</b>	<b>-35%</b>	<b>155</b>

Corrigendum 1.2						
Table 7: Number of active capacity constraints and shadow prices by element type in the Core (CWE) region – 2019						
TSO	Element type	Number (2018)	Number (2019)	Difference	Total of shadow prices 2019 (euros/MW)	Average shadow price 2019 (euros/MW)
AT	Internal line	117	233	99%	22,252	96
BE	Internal line	1,109	1,126	2%	29,966	27
DE	Allocation constraint	457	0	-100%	-	-
DE-Amprion	Internal line	927	374	-60%	39,568	106
DE-TenneT	Internal line	301	251	-17%	29,517	118
DE-TransnetBW	Internal line	80	16	-80%	2,149	134
FR	Allocation constraint	0	0	-	-	-
FR	Internal line	1	9	800%	429	48
NL	Allocation constraint	190	0	-100%	-	-
NL	Internal line	1,452	455	-69%	30,279	67
Cross-border line		2,897	2,431	-16%	235,755	97
<b>Total</b>		<b>7,531</b>	<b>4,895</b>	<b>-35%</b>	<b>389,916</b>	<b>80</b>

## Annex 2: Impact of the COVID-19 pandemic on electricity markets (first half of 2020)

The caption of Figure 48 on page 71 has been changed as follows:

Version 1	Corrigendum 1.1
“Figure 48: Share of continuous ID-traded volumes according to intra-zonal vs. cross-zonal nature of trades in Europe and yearly continuous ID-traded volumes – H1-2017–H1-2019 (% and TWh)”	“Figure 48: Share of continuous ID-traded volumes according to intra-zonal vs. cross-zonal nature of trades in Europe and yearly continuous ID-traded volumes – H1-2017–H1-2020 (% and TWh)”

## **Annex 5: List of acronyms**

The line “FITS Flexible Intraday Trading Scheme” on page 77 has been removed.