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ACER

Agency for the Cooperation of Energy Regulators

# Report to the European Commission on the implementation of the ITC mechanism in 2018

**December 2019**

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# 1 Introduction

Pursuant to point 1.4 of Annex Part A of Commission Regulation (EU) No 838/2010 on laying down guidelines relating to the inter-transmission system operator compensation mechanism and a common regulatory approach to transmission charging[1] (the "Regulation"), the European Union Agency for the Cooperation of Energy Regulators ("ACER") is responsible, since 2012, for preparing a yearly monitoring report on the implementation of the Inter-Transmission System Operator Compensation ("ITC") mechanism and the management of the ITC Fund. The data and information used for compiling this Report[2] were provided by the European Network of Transmission System Operators for Electricity ("ENTSO-E") and by the National Regulatory Authorities ("NRA").

The ITC scheme, defined by the Regulation, was implemented on 3 March 2011. Under the Regulation, the ITC Fund was established by ENTSO-E for the purpose of compensating transmission system operators ("TSOs") for the costs incurred on national transmission systems due to the hosting of cross-border flows of electricity ("transits"). The ITC Fund consists of two parts, which aim at covering, respectively, the costs of the incurred transmission losses and the costs of making infrastructure available. TSOs participating in the ITC mechanism ("ITC Parties") receive compensation from the ITC Fund based on the transits they carry and contribute to the ITC Fund based on their net import and export flows. Non-participating countries connected to the ITC Parties ("Perimeter countries"[3]) pay a transmission system use fee for their scheduled imports from and scheduled exports to the ITC Parties' networks.

The implementation of the provisions of the Regulation regarding the ITC mechanism and the management of the ITC Fund is carried out by ENTSO-E through the legal framework of the ITC Clearing and Settlement Multi-Year Agreement ("ITC Agreement") concluded on 9 February 2011 and currently comprises 35 ITC Parties[4]. The ITC Agreement contractually sets out ENTSO-E's and ITC Parties' duties and entitlements. It also sets out detailed ITC procedures, including the submission, audit and validation of data, calculation of compensation and contribution amounts, and the clearing and settlement of the ITC Fund.

ACER has reviewed the implementation of the ITC mechanism and the management of the ITC Fund in 2018 based on:

- The ITC Agreement and its amendments;
- Relevant data and information from ENTSO-E in relation to the implementation of the ITC mechanism in 2018;
- NRAs' criteria for the valuation of transmission losses for the purpose of calculating the losses' compensation amount in the ITC mechanism.

[1] OJ L 250, 24.9.2010, p.5
[2] The previous ACER ITC Monitoring Reports (regarding ITC implementation in years 2011-2017) are available at ACER's website: http://www.acer.europa.eu/Official_documents/Publications/Pages/Publication.aspx
[3] Belarus, Moldova, Morocco, Russian Federation, Turkey and Ukraine
[4] All EU Member States including Northern Ireland (as a separate ITC party) except Cyprus and Malta and the following third countries: Albania, Bosnia and Herzegovina, Kosovo, North Macedonia, Montenegro, Norway, Serbia and Switzerland

# 2 Review of the 2018 ITC implementation

## 2.1 Alignment between the 2018 ITC implementation and the Regulation

Since no major amendments to the ITC Agreement were introduced in 2018[5], ACER concludes that the general arrangements are still in line with the guidelines set out in the Regulation.

## 2.2 Accuracy of data

Through the ITC Agreement, two TSOs (Amprion GmbH and Swissgrid AG) are appointed as 'ITC Data Administrators' to manage relevant data and to carry out the clearing and settlement. The ITC Agreement includes yearly and monthly data audits and/or validation procedures involving all ITC Parties[6]. Based on the information provided by ENTSO-E, the ITC parties' own revision of the submitted data resulted in 7 changes (in FI, HR, HU, IT, ME, NL, RO) in costs of losses values with accompanying explanatory notes: updated values following NRAs' approval or losses tendering process and one addition (FR) to the capacity allocated in a manner not compatible with the Congestion Management Guidelines. ITC Parties sent 7 requests to other ITC Parties to provide explanation on the information (all regarding the cost of losses in 2018). ITC Parties' answers to other ITC Parties' requests were satisfactory and resulted in no additional changes. In a letter dated 30 July 2019, ENTSO-E submitted to ACER data relating to the implementation of the ITC mechanism in 2018, as well as some relevant descriptive information[7]. In the same letter, ENTSO-E informed ACER that all final settlements for 2018 (including the netted final settlement) have been signed by all ITC Parties and confirmed that the data provided are the final data.

ACER regards that the self-governance arrangement in the operation of the ITC mechanism is in principle an appropriate approach and ought to be sufficient for assuring the accuracy of the operation of the ITC mechanism. Therefore, ACER does not consider it necessary for its own review to conduct a detailed audit or validation of all the input and intermediate data used in the operation of the 2018 ITC mechanism.

## 2.3 ITC Fund in 2018

In 2018, the ITC Fund amounted to €256.5 million, consisting of €100 million related to the costs of the transmission infrastructure, which is made available for transits and €156.5 million related to the costs of the incurred transmission losses due to transits. Of the total

[5] Amendments in the ITC Agreement were made for: Updated schedules due to results of the last ITC audit and yearly updates; Schedule O (Ex-Ante Financial Spreadsheet), Schedule P (ENTSO-E convention on Business Day), Schedule T (List of yearly Vertical Loads), Schedule U (List of lines and measurement points) and Schedule X (Table of losses costs);

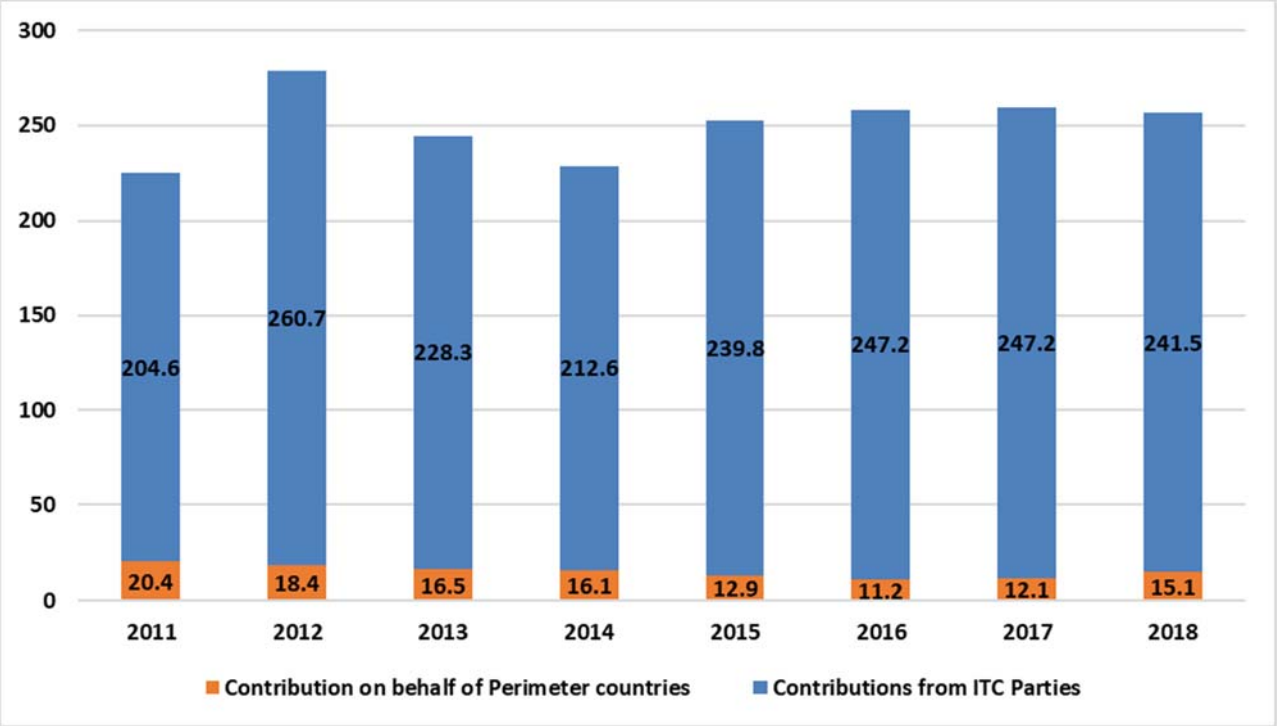
[6] Before the year's settlement begins, a yearly audit of the vertical load, the costs of losses and the capacity not allocated in a manner compatible with the Congestion Management Guidelines is carried out. During the year, before the monthly settlements are issued, several data validation procedures are performed involving all ITC Parties.

[7] ENTSO-E provided explanations or a description of the results for: the calculation of the perimeter country fee; transit reduction and explanations regarding each border where transits are reduced due to the allocation of capacity on interconnections which is not compatible with point 2 of the guidelines of Annex 1 of Regulation 714/2009 (ref. clause 1.6); results of the yearly audit process in terms of identified errors and measures taken for their correction; the amendments of the ITC Agreement; and the decisions on value of losses in non-EU countries.

ITC Fund, €241.5 million were recovered through contributions from the ITC Parties and the remaining €15 million through the Perimeter countries' fees.

As shown in Figure 1, the ITC Fund has been substantially stable between 2015 and 2018, with minor variations; the losses component of the ITC Fund decreased by 2% in 2018 compared to 2017 resulting in a 1% decrease of the total ITC Fund.

**Figure 1. Amount of the ITC Fund (2011-2018) in € million**




An overview of the compensations drawn from, and contributions made to the 2018 ITC Fund by the ITC Parties, is provided in Table 5 in the Annex. It also shows the contributions from Perimeter countries collected through their directly-connected ITC Parties.

Table 8 in the Annex shows the final net position of each ITC Parties since 2011. ACER notes that for 21 out of 35 ITC parties (i.e. 60%), the direction of the net balance has been the same in each year[8]. For the remaining 14 ITC Parties, the direction of their net balance changed at least once.

## 2.4 Volume of transit and reduction

Under the Regulation, the transits of electricity carried by an ITC Party are a key input for the determination of the compensation amount the ITC Party is entitled to receive from the ITC Fund (see more details in Section 2.5 of this Report). Point 1.6 of Annex Part A of the Regulation requires that, for the purpose of calculating transits, the amount of imports and exports at each interconnection between the ITC Parties is reduced in proportion to the

[8] i.e. 13 ITC Parties (AT, BA, DK, EE, KS, LV, ME, PL, RS, SK, SI, SE and CH) have been net receivers from the ITC Fund and 8 ITC Parties (i.e. AL, GB, IE, IT, LU, NI, NO and RO) have been net contributors to the ITC Fund in each year.

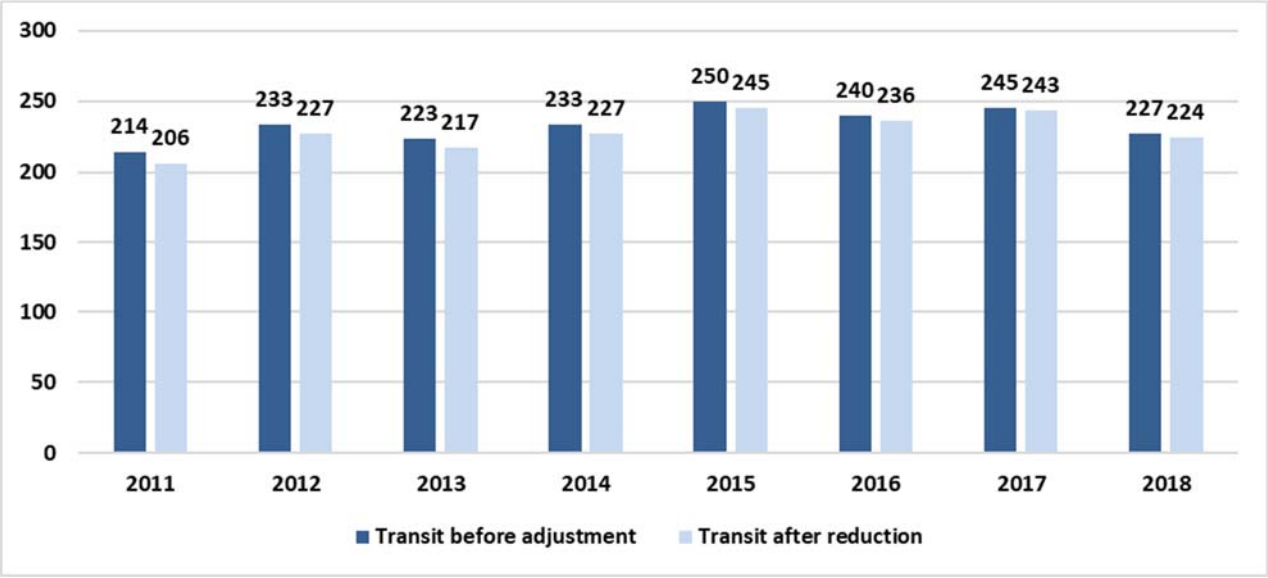
share of capacity allocated in a manner which is not compatible with the congestion management methods set out in Point 2 of Annex I of Regulation (EC) No 714/2009[9].

ACER notes that ENTSO-E took the following steps in line with the definition in the Regulation related to transits reductions:

- The affected ITC Parties indicated, for each concerned border, the overall exports and imports, as well as the schedules allocated in a manner which is not compatible with point 2 of the Congestion Management Guidelines, set out in Annex I of Regulation (EC) No 714/2009;
- The ITC Data Administrators translated this information into the amount by which the relevant transit needs to be reduced; and
- The reduced transit represented the basis for calculating the compensation amounts relating to both the infrastructure and the losses parts of the ITC Fund.

Table 1 in the Annex provides a summary of the transits through each ITC Party's network before and after such reductions. In 2018, the France - Switzerland border (both directions) and Switzerland - Italy border were affected by the reduced transits[10], due to the existence of long-term priority contracts. On the France – Switzerland border, the capacity which is not allocated in a manner compatible with the congestion management methods, continued further to decrease compared to the previous year due to the expiration of more long-term contracts (LTCs)[11]. In 2018, the amount of transits after reduction was 224.1 TWh. A comparison of transits before and after reduction in the period 2011-2018 is provided in Figure 2.

**Figure 2. Amount of transits before and after reduction (2011-2018) in TWh / year**




Note: The values in the Figure are rounded up.

[9] OJ L 211, 14.8.2009, p.15, Regulation (EC) No 714/2009 of the European Parliament and of the Council on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003. Point 2.1 of Annex I of Regulation (EC) No 714/2009 stipulates that "capacity shall be allocated only by means of explicit (capacity) or implicit (capacity and energy) auctions".

[10] In the direction France to Switzerland, around 68% of the total scheduled exchanges is allocated in a manner which is not compatible with Point 2 of the Congestion Management Guidelines set out in Annex I of Regulation (EC) No 714/2009. This percentage amounts to 3% in the direction Switzerland to Italy.

[11] ENTSO-E was informed that the competent NRAs agreed in 2018 that the capacity reserved for LTCs would decrease by 149 MW, starting in October 2018.

## 2.5 Compensation for transmission losses

Point 4 of Annex Part A of the Regulation defines the key steps for calculating the amount of compensation to be received by an ITC Party for transmission losses incurred by carrying cross-border flows of electricity. These are summarised below:

a) The physical amount of the relevant losses must be calculated by ENTSO-E based on the difference between actual losses with transits and estimated losses without transits on the ITC Party's network; and
b) The value of losses incurred by a national system as a result of transits shall be calculated on the same basis as those approved by the respective NRA in respect of all losses on the national transmission system. Where the relevant NRA has not approved the basis for the calculation of losses, ENTSO-E is required to estimate the value of losses for the purpose of the ITC mechanism.

ENTSO-E sets out the detailed method for the calculation of the volume of losses in the ITC Agreement. Based on the review of the ITC Agreement and the dataset submitted by ENTSO-E, ACER is able to confirm that this aspect of the implementation of the ITC mechanism is in line with the definition in the Regulation.

Table 2 in the Annex provides a summary of the volume of annual losses in the ITC Parties' networks due to transits, the values of losses adopted by them, and the compensation received from the ITC Fund in 2018.

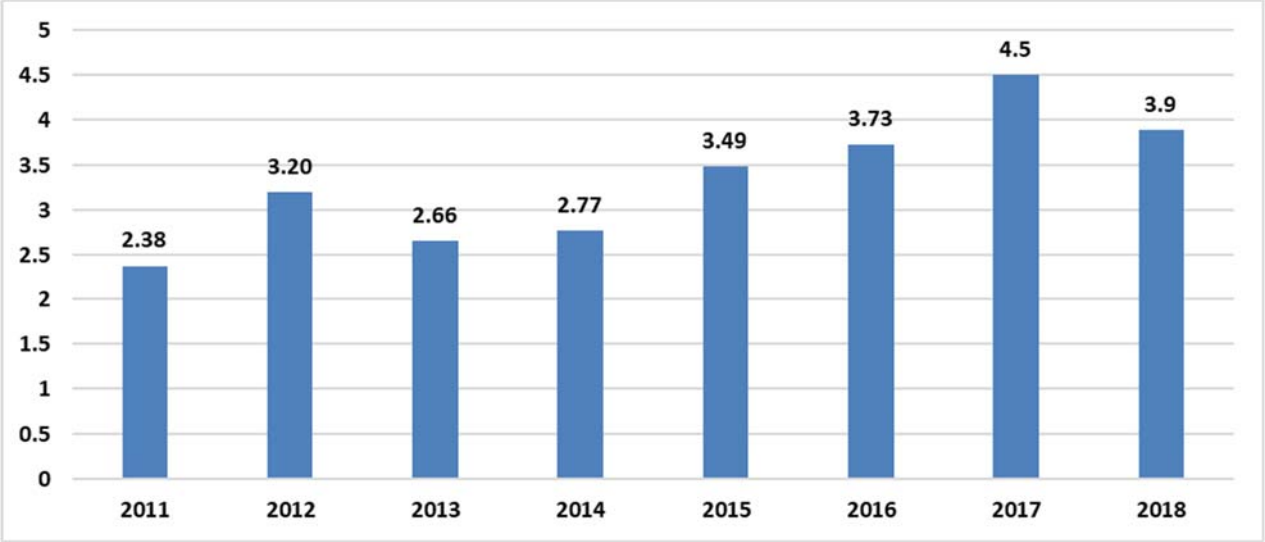
The Regulation requires ENTSO-E to publish the calculation of the volume of losses and its method. ACER notes that, on 30 September 2019, ENTSO-E published the calculation method and the results for 2018[12].

The losses component of the ITC Fund slightly decreased by 2%, from € 159.3 million in 2017 to €156.5 million in 2018. This decrease is the result of the combined impact of:

a) a decrease by 13.7% of the volume of transmission losses due to transits (from ca. 4.5 TWh in 2017 to ca. 3.9 TWh, as shown in Figure 3); and
b) an increase of the average value of losses, weighted by the volumes of losses, as described in Section 2.7 below.

[12] ITC Transit Losses Data Report 2018
https://docstore.entsoe.eu/Documents/MC%20documents/ITC_Transit_Losses_Data/190923_ENTSO-E_ITC_Transit_Losses_Data_report_2018_final.pdf

**Figure 3. Volume of transmission losses due to transits (2011-2018) in TWh**




The impact of transits on the volume of losses (MWh) for each of the 35 ITC Parties, including 27 ITC Parties from 26 EU Member States ("EU ITC Parties"), is shown in Table 2 in the Annex.

## 2.6 Criteria for valuing losses and its approval

Pursuant to point 4 of Annex Part A of the Regulation, the value of losses incurred by a national transmission system as a result of the cross-border flows of electricity shall be calculated on the same basis as the one approved by the regulatory authority in respect of all losses on the national transmission system. ACER shall verify the criteria for the valuation of losses at national level taking particular account that losses are valued in a fair and non-discriminatory way.

ACER received information about the criteria for valuing losses from all 27 NRAs of EU ITC Parties, as well as from the NRAs of Norway and Switzerland. ACER notes that the criteria used has generally been stable over the past two years and no substantial change was reported by the NRAs[13]. Therefore, ACER considers its previous findings regarding the fair and non-discriminatory valuation of the losses still valid.

As shown in Table 6 in the Annex, ACER notes that when calculating the value of losses for the 2018 ITC mechanism, the assessed ITC Parties in general applied the same basis as the one used for valuing the losses at national level. Differences which were reported lie mainly in the use of historical or estimated prices for the purpose of the ITC mechanism in lack of actual values at the time of calculation or in different time-horizons taken into account for the calculation of each value.

The NRA is responsible for approving the basis for the calculation of the value of losses in 2018 for 24 EU ITC Parties. For 5 ITC Parties, however, there is no explicit NRA approval.

[13] Few specifications and corrections were reported on previous data.

- In Finland, according to the Finnish electricity market legislation, the Energy Authority has no power to approve *ex-ante* any methodology for network operators to calculate/evaluate network losses. The TSO sets the basis for the calculation, whereas the Energy Authority is only able to supervise calculation methods and costs of losses *ex-post*.
- In Denmark, the Danish Energy Regulatory Authority (DERA) does not approve the basis for the valuation of losses, but assesses whether the method defined by the TSO meets certain high-level principles, such as being objective, reasonable, non-discriminatory and transparent.
- In Luxemburg, the criteria for valuing losses are already set in national law.
- In Spain, the treatment of losses, including its valuation, is defined in operational codes approved by the Government.
- In Italy, the NRA does not approve the basis used for calculating the value of losses, but only defines a standard level of losses, which needs to be procured directly by the suppliers. The difference between the actual and standard losses is purchased or sold by the TSO in the balancing market. Therefore, the value of losses is set by the wholesale market.

ACER notes that the PX prices/pool prices and auctions (or their combinations) are the most frequently used criteria for assigning a value to losses. In total, 14 jurisdictions apply criteria based only on PX prices and pool prices[14] and 4 NRAs perform auctions/tenders. 7 NRAs use a combination of PX prices, auctions and/or bilateral contracts, including two NRAs (Croatia and Sweden) who also added insurance or risk premium. One NRA (France) uses an approach based on a combination of market tools (PX prices or auctions) and regulated prices, whilst three NRAs (Bulgaria, Ireland and Northern Ireland) use a regulated price only.

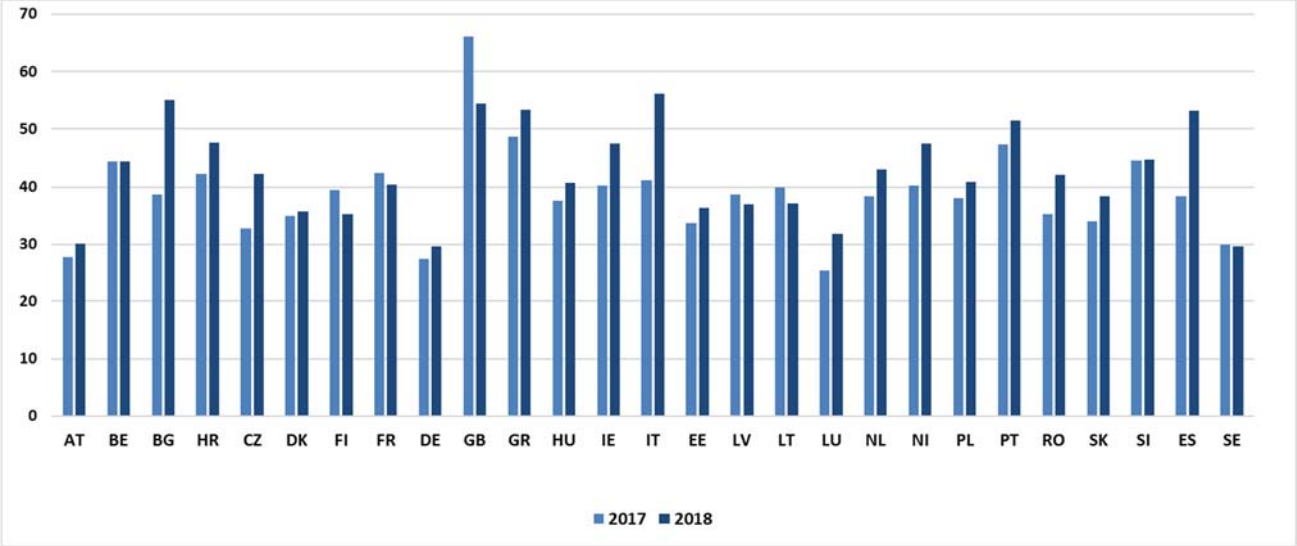
## 2.7 Values of Losses

ACER notes that the differences of energy prices for different products in different markets and from auctions and bilateral contracts result in a broad range of values of losses for the EU ITC Parties. However, the difference between the lowest and highest value in 2018 was 26.5 €/MWh (i.e. 29.62 €/MWh in Sweden and 56.13 €/MWh in Italy), which is a significant decrease compared to 2017, when this difference was 40.6 €/MWh (i.e. with the lowest value of 25.4 €/MWh in Luxemburg and the highest value of 66 €/MWh in Great Britain). At the same time, in 20 out of the 27 EU ITC Parties, the value of losses increased (on average by 16%), for one EU ITC Party it remained the same, and for 6 it decreased (on average by 8%) compared to 2017[15]. As a result, the average value of losses for the EU ITC Parties, weighted by the volumes of losses, was 39.28 €/MWh in 2018, which is 13% higher than in 2017 (i.e. 34.67 €/MWh). The change in the value of losses for each ITC Party is shown in Figure 4.

[14] For the purpose of this Report, this criterion (i.e. PX prices and pool prices) also includes balancing markets where applicable.

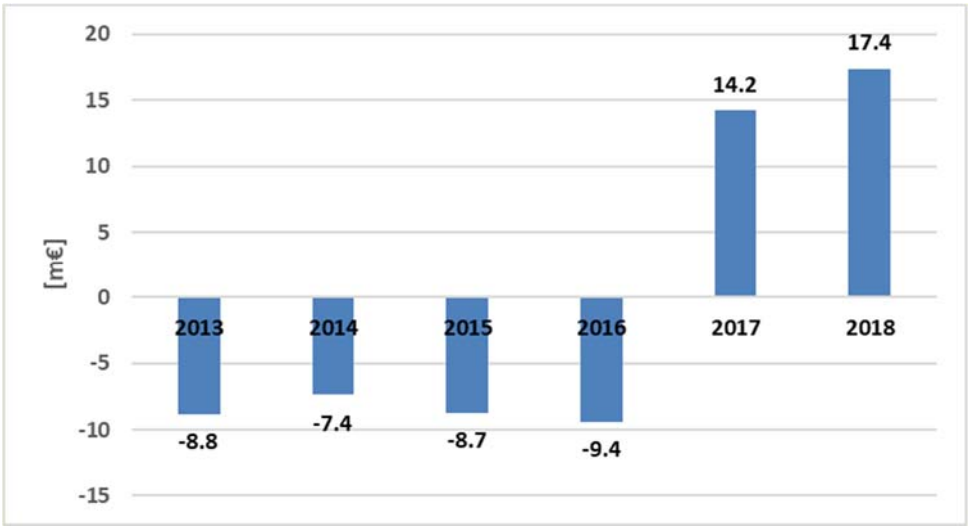
[15] For comparison, in 2017, for 22 out of the 27 EU ITC Parties the value of losses decreased, for one EU ITC Party it remained the same, and for 4 it increased compared to 2016. A comparison of the 2016 and 2015 values of losses for the ITC Parties shows the same statistical results.

**Figure 4 - Values of losses for EU ITC Parties in 2017 and 2018 in €/MWh**




ACER performed a comparison between the losses' values used for the purpose of the 2018 ITC mechanism, which was typically calculated or estimated *ex ante* (i.e. at the end of 2017 based on forecasted market prices) and the "actual" value of losses, which is typically registered *ex post* (i.e. using the actual costs/market prices). As shown in Table 7 in the Annex, for the majority of the EU ITC Parties (i.e. in 15 out of the 27 jurisdictions), the actual value of losses was higher than the values used for the implementation of the 2018 ITC mechanism, in 10 cases the same value was used and only in two instances the value was lower. ACER notes that had the actual value of losses been used for the ITC mechanism, rather than the calculated/estimated ones, this would have led to a €17.4 million increase in the overall ITC compensation for losses in 2018, as shown in Figure 5.

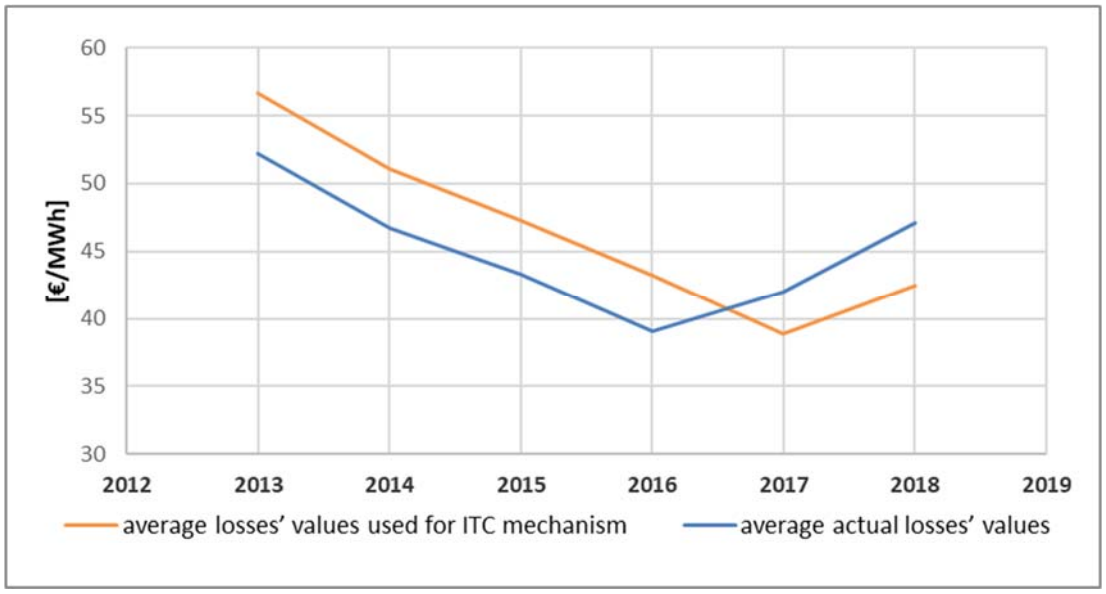
**Figure 5. Change of ITC compensation by using actual losses values (2013-2018) in € million[16]**




[16] For the purpose of this chart, for those ITC Parties, where the actual losses' value was not available for a specific year, the losses' values used for the respective year's ITC mechanism were applied. The value for 2016 is calculated based on a corrected actual value of losses for France.

The evolution of the actual value of losses in 2017 and 2018 shows a remarkable difference compared to the previous years. As shown in Figure 6, until 2017, the (simple average) actual value of losses was always lower than the (simple average) values of losses used for the ITC mechanism of the same year. From 2017, this pattern changed and the actual values became higher than the values used for the ITC mechanism. ACER notes that the values used for the ITC mechanism appear to correlate with the evolution of the actual values with a one-year lag, i.e. the values used for the ITC mechanism tend to increase in the following year if the actual values for losses of the previous year increased, and vice-versa.

**Figure 6. Evolution of (simple average) losses values and actual losses values for EU ITC parties (2013-2018)**




ACER also reviewed the relevant values set for the ITC Parties from third countries ("non-EU ITC Parties"). ACER notes that, for 7 non-EU ITC Parties (out of 8), the value of losses increased, while for Norway the value decreased. The increase for Albania's value of losses is outstanding, as it went from 10.35 €/MWh in 2017 up to 50 €/MWh in 2018. As pointed out by ACER in its previous reports[17], the value of losses in Albania was a regulated price set by the NRA and it was significantly lower than the values for other ITC Parties. The increase is explained by higher forecasted costs due to a regulatory decision requiring the TSO to procure network losses on a market basis starting from 1 January 2018[18]. Figure 7 shows the value of losses in 2017 and 2018 for each individual ITC Party.

[17] See for example ACER Report to the European Commission on the implementation of the ITC mechanism in 2017, p.10.

[18] Until 31.12.2017, the Albanian TSO (OST) procured network losses from KESH, the Albanian Public Producer with a regulated price approved by the NRA of 10.35 €/MWh. Based on the NRA's decision 103/2016, OST is obliged to procure network losses on a market basis stating from 1st January 2018. After conducting market survey for the price of import/export used by market participants in Albania, it was concluded that the average price for providing transmission network losses is 50 €/MWh.

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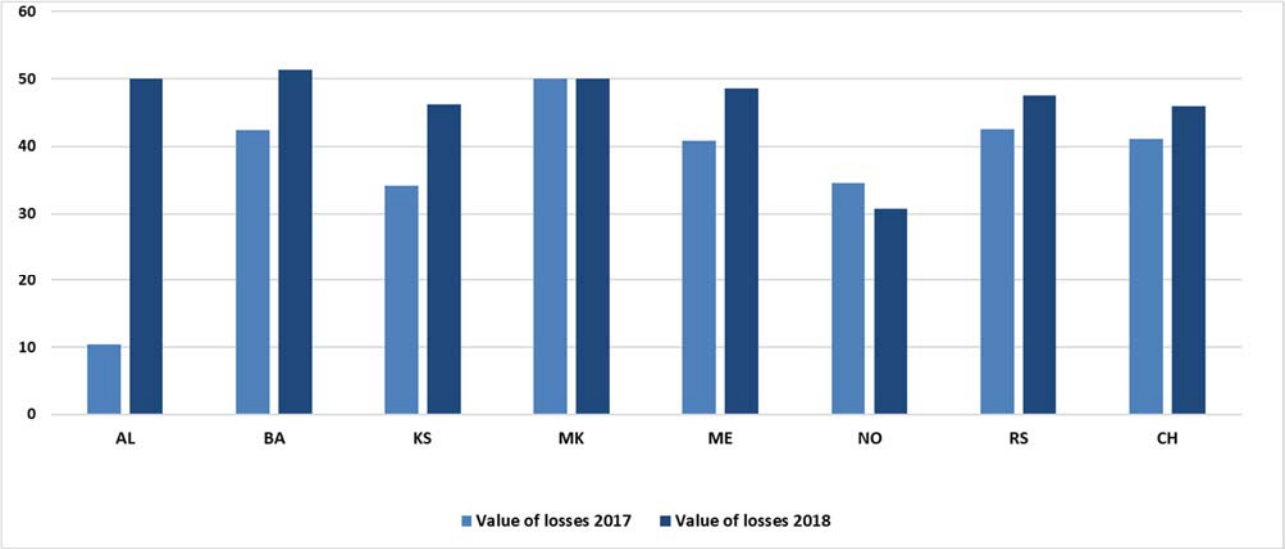
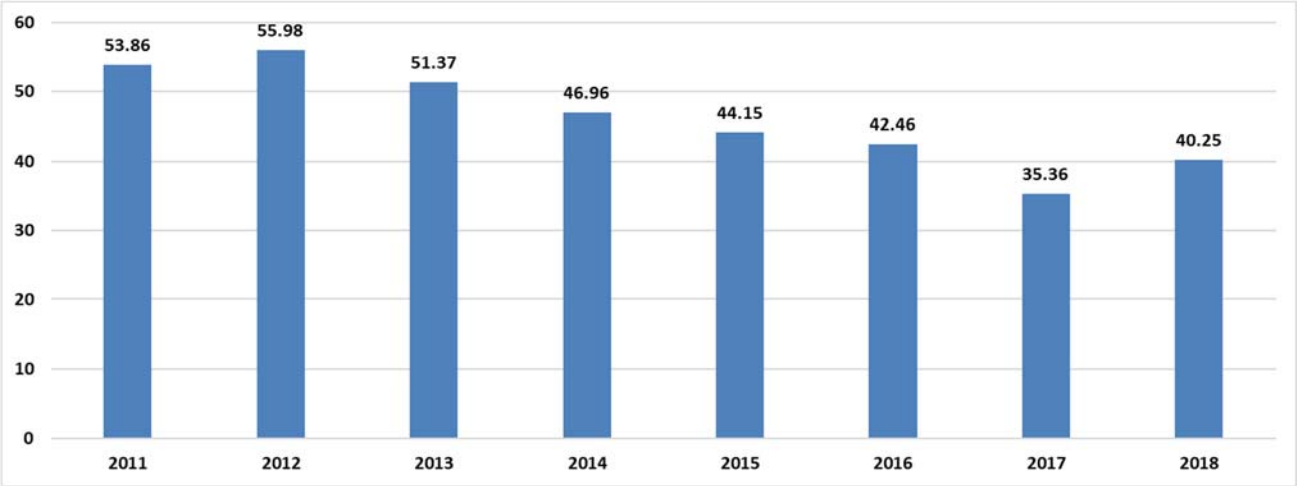
**Figure 7 - Values of losses for non EU ITC Parties in 2017 and 2018 in €/MWh**




Similar to the findings for the EU ITC Parties, the weighted average value of losses for non-EU ITC Parties has also increased by 12% up to 45.9 €/MWh. The average value of losses for the non-EU ITC Parties is 17% higher compared to that for the EU ITC Parties.

As shown in Figure 8, ACER notes that, in 2018, for the first time over the past 6 years, the weighted average value of losses for all ITC Parties did not decrease, but increased by 14%, up to 40.25 €/MWh.

**Figure 8. Volume-weighted average value of losses for all ITC Parties (2011-2018) in €/MWh**




## 2.8 Compensation for making transmission infrastructure available

Point 5 of Annex Part A of the Regulation defines the key parameters for calculating the amount of compensation that an ITC Party should receive for the provision of infrastructures to carry cross-border flows of electricity. These are summarised below:

a) The annual cross-border infrastructure sum is set at €100 million until determined otherwise by the European Commission; and
b) The Transit Factor and Load Factor are used to apportion the above sum to each ITC Party. The Transit Factor refers to the amount of transits carried by an ITC Party as a proportion of the total transits carried by all ITC Parties. The Load Factor refers to the relative amount of transits measured by the square of transits divided by the level of the load plus transits in proportion to the relative amount of transits for all ITC Parties. In apportioning the infrastructure compensation amount for an ITC Party, the Transit Factor has a weighting of 75% and the Load Factor a weighting of 25%.

Based on the review of the ITC Agreement and the final dataset submitted by ENTSO-E, ACER is able to confirm that the compensation amounts relating to the provision of cross-border infrastructures were derived according to the above requirements.

Table 3 in the Annex provides a summary of the annual amount each ITC Party received in 2018 based on their Transit Factors and Load Factors.

## 2.9 Contributions to the ITC Fund

Point 6 of Annex Part A of the Regulation sets out that each ITC Party shall contribute to the ITC Fund based on its share of the total absolute amount of Net Imports and Net Exports of all ITC Parties.

Point 7 of Annex Part A of the Regulation sets out that an ITC Party shall levy a transmission system use fee on all scheduled imports and exports between its national transmission system and that of a Perimeter country. Because the collection of the Perimeter countries' contributions is governed by a series of bilateral contracts, which are renewed annually in most cases, ENTSO-E is required to calculate this Perimeter countries' fee each year in advance based on projected flows for the relevant year. The Perimeter countries' fee for 2018 was calculated and approved by ENTSO-E at the value of 0.6 €/MWh.

Based on the review of the ITC Agreement and the final dataset submitted by ENTSO-E, ACER is able to confirm that the ITC Parties' contribution amounts were derived according to the requirements of points 6 and 7 of Annex Part A of the Regulation. The relevant ITC Parties also collected contributions from Perimeter countries with which they have direct connections.

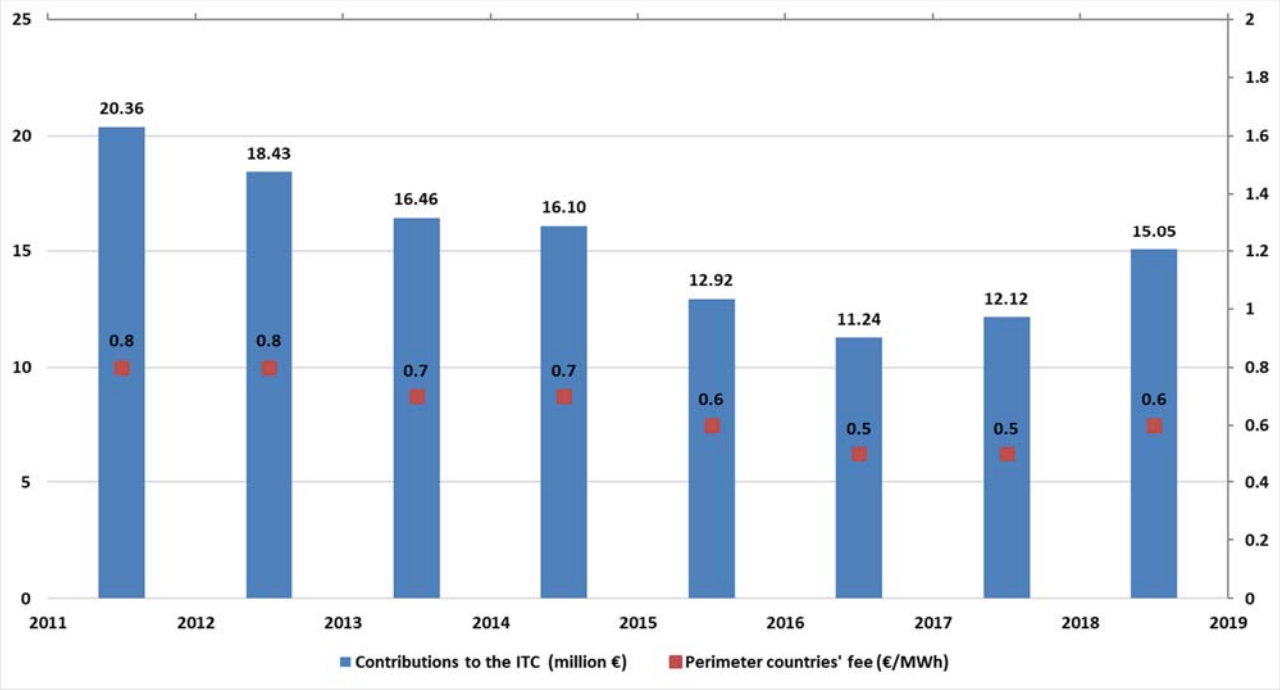
ENTSO-E's calculation of the Perimeter countries' fee was based on the equivalent losses and infrastructure compensation for historical flows of the previous year[19]. According to ENTSO-E, this is the best possible projection for flows in the subsequent year. ACER notes that the Perimeter countries' fee, after having decreased or remained stable for several

[19]The perimeter fee has two elements; a loss-related component and a Framework Fund component, which are summed and round to a single decimal place to create the perimeter fee:
- the losses-related fee is calculated by dividing the WWT(With and Without Transit) Fund size by the sum of scheduled import and export flows plus the sum of net import and net export flows; and
- the Framework Fund related fee is calculated by dividing the total contribution (100 million at present) by the sum of scheduled import and export flows plus the sum of net import and net export flows.
This value is produced in January each year based on losses costs and vertical load data collected from ITC parties. The Perimeter fee is calculated on the basis of unaudited data (for timing reasons) and it is rounded to a single decimal.

years[20], increased for the first time in 2018 from 0.5 €/MWh to 0.6 €/MWh. ENTSO-E explained this increase mainly by an increase in the cost of losses and a reduction in the overall flows (389 TWh in 2018 compared to 421 TWh in 2017).

Table 4 in the Annex provides a summary of the annual Net Import, Net Export and the contribution amount each ITC Party paid into the ITC Fund in 2018, including the contribution it made on behalf of Perimeter countries with which it has a direct connection. ACER notes that the contribution by Perimeter countries further increased between 2017 and 2018 from €12.12 million to €15.05 million (as shown in Figure 9), and constitutes 5.8% of the ITC Fund in 2018 compared to 4.5% in 2017.

**Figure 9. Contributions to the ITC Fund by Perimeter countries (2011-2018) in million €**




## 2.10 Treatment of third countries

ACER notes that the ITC Agreement has not changed regarding the treatment of the ITC Parties (including TSOs from those third countries which have adopted and apply EU law in the field of electricity, as well as TSOs from third countries which have not concluded such agreements with the EU, but participate in the ITC mechanism through a voluntary multi-party agreement), thus the former findings of ACER are still valid. In 2012, ACER noted that the ITC Agreement makes no distinction between categories of ITC Parties, whether the latter participate on a compulsory or voluntary basis under point 2 of Annex Part A of the Regulation or through voluntary multi-party agreements under point 3. Therefore, ACER concluded that the requirements of points 3.2 and 3.4 of Annex Part A of the Regulation are met.

[20] The perimeter country fee was 0.5 €/MWh in 2017 and 2016, 0.6 €/MWh in 2015, 0.7 €/MWh in 2014 and 2013, 0.8 €/MWh in 2012 and 2011.

# 3 Summary of the findings

ACER concludes that the implementation of the ITC mechanism and the management of the ITC Fund in 2018 continues to be in line with the requirements set out in the Regulation.

With regard to specific aspects of the implementation of the ITC mechanism in 2018, the major findings include the following:

- The ITC Fund remained relatively stable with a slight decrease compared to 2017, from €259.3 million to €256.5 million.
- The volume of losses due to transit, after a significant 20% increase from 2016 to 2017, decreased by 13.7% from 2017 to 2018, for the first time over the past 6 years.
- The weighted average value of losses increased by 14% from 35.36 €/MWh to 40.25 €/MWh, which reversed a trend of a gradual decrease of this value since 2012.
- The difference between the lowest and highest value of losses among the ITC Parties significantly narrowed compared to last year. In 2018, the difference was 26.5 €/MWh between the lowest value in Sweden (29.62 €/MWh) and the highest value in Italy (56.13 €/MWh), while in 2017 the difference was 40.6 €/MWh (i.e. 25.4 €/MWh in Luxemburg and 66 €/MWh in Great Britain).
- While, between 2013 and 2016, the actual values of losses tended to be lower than the value of losses used for the ITC mechanism, from 2017 this trend changed and the actual value of losses has tended to be higher than the ITC values in both 2017 and 2018 (by comparing simple average values). The ITC values appear to correlate with the evolution of the actual values with a one-year lag, i.e. the values used for the ITC mechanism tend to increase in the following year if the actual values of the previous year increased, and vice-versa..
- In 2018, for the first time since 2012, the Perimeter countries' fee increased (i.e. from 0.5 €/MWh to 0.6 €/MWh). The increase is explained by ENTSO-E by the increase in the cost of losses and the reduced overall flows. Both the absolute and relative contribution of the Perimeter countries to the ITC Fund increased compared to 2017 (i.e. from €12.1 million to €15.1 million and from 4.6% to 5.8%, respectively).

## Annex – Tables and Figures

Please note that while the actual ITC settlement is in Euro cents, the tables below present all monetary values in millions of Euros rounded to three decimal places.

### Table 1 Reduction in Transits

| ITC Party | Transits before adjustment (MWh) | Reduction due to non-auctioned interconnection capacity (MWh) | Transits after reduction (MWh) |
|---|---|---|---|
| Albania / AL | 508,290 | 0 | 508,290 |
| Austria / AT | 17,590,292 | 0 | 17,590,292 |
| Belgium / BE | 4,128,027 | 0 | 4,128,027 |
| Bosnia / BA | 3,019,063 | 0 | 3,019,063 |
| Bulgaria / BG | 2,208,283 | 0 | 2,208,283 |
| Croatia / HR | 6,468,799 | 0 | 6,468,799 |
| Czech Rep. / CZ | 11,314,858 | 0 | 11,314,858 |
| Denmark / DK | 8,214,583 | 0 | 8,214,583 |
| Estonia / EE | 3,216,027 | 0 | 3,216,027 |
| Finland / FI | 3,463,143 | 0 | 3,463,143 |
| France / FR | 11,764,683 | 743,261 | 11,021,421 |
| Germany / DE | 28,946,363 | 0 | 28,946,363 |
| Great Britain / GB | 2,374,601 | 0 | 2,374,601 |
| Greece / GR | 2,221,283 | 0 | 2,221,283 |
| Hungary / HU | 4,265,039 | 0 | 4,265,039 |
| Ireland / IE | 303,996 | 0 | 303,996 |
| Italy / IT | 1,980,638 | 4,149 | 1,976,490 |
| Kosovo / KS | 1,804,619 | 0 | 1,804,619 |
| Latvia / LV | 3,478,766 | 0 | 3,478,766 |
| Lithuania / LT | 3,215,125 | 0 | 3,215,125 |
| Luxembourg/LU | 147,010 | 0 | 147,010 |
| North Macedonia / MK | 2,218,580 | 0 | 2,218,580 |
| Montenegro / ME | 2,275,818 | 0 | 2,275,818 |
| Netherlands / NL | 17,451,788 | 0 | 17,451,788 |
| Northern Ireland / NI | 769,305 | 0 | 769,305 |
| Norway / NO | 2,708,211 | 0 | 2,708,211 |
| Poland / PL | 6,636,757 | 0 | 6,636,757 |
| Portugal / PT | 2,750,808 | 0 | 2,750,808 |
| Romania / RO | 1,793,665 | 0 | 1,793,665 |
| Serbia / RS | 5,053,330 | 0 | 5,053,330 |
| Slovakia / SK | 8,535,953 | 0 | 8,535,953 |
| Slovenia / SI | 8,175,585 | 0 | 8,175,585 |
| Spain / ES | 10,619,918 | 0 | 10,619,918 |
| Sweden / SE | 13,716,824 | 0 | 13,716,824 |
| Switzerland / CH | 23,357,932 | 1,886,332 | 21,471,600 |
| **TOTAL** | **226,697,961** | **2,633,742** | **224,064,219** |

## Table 2 Derivation of compensation for transmission losses

| ITC Party | 2017 | | | 2018 | | |
|---|---|---|---|---|---|---|
| | Impact of Transits on losses volume (MWh) | Value of losses (€/MWh) | Compensation (€ million) | Impact of Transits on losses volume (MWh) | Value of losses (€/MWh) | Compensation (€ million) |
| Albania / AL | -550 | 10.35 | -0.006 | 4,124 | 50.00 | 0.206 |
| Austria / AT | 230,324 | 27.88 | 6.421 | 193,145 | 30.18 | 5.829 |
| Belgium / BE | 95,839 | 44.44 | 4.259 | 69,248 | 44.44 | 3.077 |
| Bosnia / BA | 32,240 | 42.30 | 1.364 | 37,363 | 51.32 | 1.917 |
| Bulgaria / BG | 54,414 | 38.74 | 2.108 | 23,424 | 55.07 | 1.290 |
| Croatia / HR | 57,505 | 42.21 | 2.427 | 106,716 | 47.67 | 5.087 |
| Czech Rep. / CZ | 249,706 | 32.79 | 8.188 | 274,065 | 42.32 | 11.598 |
| Denmark / DK | 334,158 | 34.94 | 11.675 | 258,956 | 35.73 | 9.252 |
| Estonia / EE | 91,270 | 33.78 | 3.083 | 86,994 | 36.30 | 3.158 |
| Finland / FI | 96,234 | 39.48 | 3.799 | 155,273 | 35.23 | 5.470 |
| France / FR | 437,515 | 42.45 | 18.573 | 304,755 | 40.37 | 12.303 |
| Germany / DE | 926,535 | 27.51 | 25.489 | 391,983 | 29.64 | 11.618 |
| Great Britain / GB | 19,182 | 66.08 | 1.268 | 65,624 | 54.34 | 3.566 |
| Greece / GR | 29,658 | 48.70 | 1.444 | 41,015 | 53.30 | 2.186 |
| Hungary / HU | 54,074 | 37.60 | 2.033 | 25,325 | 40.78 | 1.033 |
| Ireland / IE | 0 | 40.33 | 0.000 | 53 | 47.55 | 0.003 |
| Italy / IT | 6,135 | 41.12 | 0.252 | 928 | 56.13 | 0.052 |
| Kosovo / KS | 17,189 | 34.11 | 0.586 | 21,371 | 46.17 | 0.987 |
| Latvia / LV | 61,888 | 38.73 | 2.397 | 55,713 | 37.00 | 2.061 |
| Lithuania / LT | 79,561 | 39.90 | 3.174 | 80,835 | 37.10 | 2.999 |
| Luxembourg/ LU | 602 | 25.48 | 0.015 | 617 | 31.86 | 0.020 |
| North Macedonia / MK | 11,317 | 50.00 | 0.566 | 8,627 | 50.07 | 0.432 |
| Montenegro / ME | 7,568 | 40.84 | 0.309 | 3,718 | 48.52 | 0.180 |
| Netherlands / NL | 160,062 | 38.34 | 6.137 | 200,540 | 42.99 | 8.621 |
| Northern Ireland / NI | 2,221 | 40.33 | 0.090 | 5,779 | 47.55 | 0.275 |
| Norway / NO | 10,672 | 34.56 | 0.369 | 23,045 | 30.76 | 0.709 |
| Poland / PL | 178,268 | 38.07 | 6.787 | 145,682 | 40.93 | 5.963 |
| Portugal / PT | 26,899 | 47.34 | 1.273 | 31,602 | 51.44 | 1.626 |
| Romania / RO | -40,117 | 35.20 | -1.412 | 8,263 | 42.15 | 0.348 |
| Serbia / RS | 51,304 | 42.46 | 2.178 | 64,771 | 47.48 | 3.075 |
| Slovakia / SK | 96,225 | 33.96 | 3.268 | 59,967 | 38.42 | 2.304 |
| Slovenia / SI | 80,874 | 44.61 | 3.608 | 84,926 | 44.69 | 3.795 |
| Spain / ES | 260,170 | 38.37 | 9.983 | 326,718 | 53.13 | 17.359 |
| Sweden / SE | 419,557 | 30.00 | 12.587 | 323,429 | 29.62 | 9.580 |
| Switzerland / CH | 366,633 | 41.07 | 15.058 | 404,419 | 45.91 | 18.567 |
| **TOTAL** | **4,505,135** | **N/A** | **159.351** | **3,889,010** | **N/A** | **156.548** |

## Table 3 Derivation of compensation for cross-border infrastructure

| ITC Party | Transits (MWh) | Load* (GWh) | Transit Factor based compensation (€million) | Load Factor based compensation (€million) | Total Infrastructure compensation (€million) |
|---|---|---|---|---|---|
| Albania / AL | 508,290 | 6,404 | 0.170 | 0.022 | 0.192 |
| Austria / AT | 17,590,292 | 30,445 | 5.888 | 3.741 | 9.629 |
| Belgium / BE | 4,128,027 | 67,558 | 1.382 | 0.138 | 1.520 |
| Bosnia / BA | 3,019,063 | 12,015 | 1.011 | 0.352 | 1.363 |
| Bulgaria / BG | 2,208,283 | 31,148 | 0.739 | 0.085 | 0.824 |
| Croatia / HR | 6,468,799 | 16,773 | 2.165 | 1.046 | 3.211 |
| Czech Rep. / CZ | 11,314,858 | 37,011 | 3.787 | 1.539 | 5.326 |
| Denmark / DK | 8,214,583 | 22,227 | 2.750 | 1.287 | 4.037 |
| Estonia / EE | 3,216,027 | 7,672 | 1.076 | 0.552 | 1.628 |
| Finland / FI | 3,463,143 | 64,922 | 1.159 | 0.102 | 1.261 |
| France / FR | 11,021,421 | 433,770 | 3.689 | 0.159 | 3.848 |
| Germany / DE | 28,946,363 | 273,450 | 9.689 | 1.609 | 11.298 |
| Great Britain / GB | 2,374,601 | 273,074 | 0.795 | 0.012 | 0.807 |
| Greece / GR | 2,221,283 | 46,511 | 0.744 | 0.059 | 0.802 |
| Hungary / HU | 4,265,039 | 33,567 | 1.428 | 0.279 | 1.707 |
| Ireland / IE | 303,996 | 27,360 | 0.102 | 0.002 | 0.104 |
| Italy / IT | 1,976,490 | 240,227 | 0.662 | 0.009 | 0.671 |
| Kosovo / KS | 1,804,619 | 5,306 | 0.604 | 0.266 | 0.870 |
| Latvia / LV | 3,478,766 | 5,822 | 1.164 | 0.756 | 1.920 |
| Lithuania / LT | 3,215,125 | 9,729 | 1.076 | 0.464 | 1.540 |
| Luxembourg / LU | 147,010 | 4,176 | 0.049 | 0.003 | 0.052 |
| North Macedonia / MK | 2,218,580 | 7,008 | 0.743 | 0.310 | 1.052 |
| Montenegro / ME | 2,275,818 | 3,023 | 0.762 | 0.568 | 1.329 |
| Netherlands / NL | 17,451,788 | 79,951 | 5.842 | 1.816 | 7.658 |
| Northern Ireland/ NI | 769,305 | 8,707 | 0.258 | 0.036 | 0.294 |
| Norway / NO | 2,708,211 | 75,136 | 0.907 | 0.055 | 0.961 |
| Poland / PL | 6,636,757 | 90,672 | 2.221 | 0.263 | 2.484 |
| Portugal / PT | 2,750,808 | 36,176 | 0.921 | 0.113 | 1.034 |
| Romania / RO | 1,793,665 | 35,345 | 0.600 | 0.050 | 0.651 |
| Serbia / RS | 5,053,330 | 27,622 | 1.691 | 0.454 | 2.145 |
| Slovakia / SK | 8,535,953 | 18,385 | 2.857 | 1.572 | 4.429 |
| Slovenia / SI | 8,175,585 | 12,718 | 2.737 | 1.858 | 4.595 |
| Spain / ES | 10,619,918 | 190,512 | 3.555 | 0.326 | 3.880 |
| Sweden / SE | 13,716,824 | 90,137 | 4.591 | 1.052 | 5.644 |
| Switzerland / CH | 21,471,600 | 44,683 | 7.187 | 4.047 | 11.234 |
| **TOTAL** | **224,064,219** | **2,369,242** | **75.000** | **25.000** | **100.000** |

* This is the total amount of electricity which exits the national transmission system to distribution systems and to end consumers directly connected to the transmission system, as well as to electricity producers for their consumption in the generation of electricity.

## Table 4 Derivation of contributions to the ITC Fund

| ITC Party | Net Import (MWh) | Net Export (MWh) | Contribution to infrastructure (€million) | | Contribution to losses (€million) | |
|---|---|---|---|---|---|---|
| | | | Perimeter countries | ITC Party | Perimeter countries | ITC Party |
| Albania / AL | 1,263,450 | 2,176,755 | 0.000 | 0.774 | 0.000 | 1.248 |
| Austria / AT | 11,823,490 | 1,463,497 | 0.000 | 2.990 | 0.000 | 4.818 |
| Belgium / BE | 17,579,165 | 59,634 | 0.000 | 3.969 | 0.000 | 6.396 |
| Bosnia / BA | 72,873 | 4,678,703 | 0.000 | 1.069 | 0.000 | 1.723 |
| Bulgaria / BG | 10,971 | 5,867,870 | 0.496 | 1.323 | 0.496 | 2.132 |
| Croatia / HR | 6,223,529 | 62,796 | 0.000 | 1.415 | 0.000 | 2.280 |
| Czech Rep. / CZ | 98,458 | 13,752,868 | 0.000 | 3.117 | 0.000 | 5.023 |
| Denmark / DK | 7,396,902 | 2,216,795 | 0.000 | 2.163 | 0.000 | 3.486 |
| Estonia / EE | 196,550 | 1,650,298 | 0.000 | 0.416 | 0.000 | 0.670 |
| Finland / FI | 12,175,591 | 1,450 | 2.346 | 2.740 | 2.346 | 4.416 |
| France / FR | 1,104,827 | 61,931,547 | 0.000 | 14.185 | 0.000 | 22.859 |
| Germany / DE | 1,349,565 | 51,999,626 | 0.000 | 12.005 | 0.000 | 19.346 |
| Great Britain / GB | 19,928,314 | 285,526 | 0.000 | 4.549 | 0.000 | 7.330 |
| Greece / GR | 3,803,514 | 56,191 | 0.221 | 0.869 | 0.221 | 1.400 |
| Hungary / HU | 9,385,656 | 28 | 1.141 | 2.112 | 1.141 | 3.404 |
| Ireland / IE | 1,270,550 | 1,310,030 | 0.000 | 0.581 | 0.000 | 0.936 |
| Italy / IT | 45,180,351 | 35,810 | 0.000 | 10.175 | 0.000 | 16.397 |
| Kosovo / KS | 878,776 | 517,703 | 0.000 | 0.314 | 0.000 | 0.506 |
| Latvia / LV | 944,128 | 783,341 | 0.000 | 0.389 | 0.000 | 0.626 |
| Lithuania / LT | 5,267,242 | 0 | 1.651 | 1.185 | 1.651 | 1.910 |
| Luxembourg / LU | 4,214,395 | 0 | 0.000 | 0.948 | 0.000 | 1.528 |
| North Macedonia / MK | 1,926,603 | 5,369 | 0.000 | 0.435 | 0.000 | 0.701 |
| Montenegro / ME | 485,182 | 737,991 | 0.000 | 0.275 | 0.000 | 0.444 |
| Netherlands / NL | 9,303,087 | 1,330,332 | 0.000 | 2.393 | 0.000 | 3.856 |
| Northern Ireland /NI | 846,769 | 657,187 | 0.000 | 0.338 | 0.000 | 0.545 |
| Norway / NO | 5,435,641 | 15,011,870 | 0.006 | 4.601 | 0.006 | 7.415 |
| Poland / PL | 5,852,432 | 1,325,281 | 0.424 | 1.615 | 0.424 | 2.603 |
| Portugal / PT | 2,918,159 | 5,573,294 | 0.000 | 1.911 | 0.000 | 3.079 |
| Romania / RO | 631,078 | 3,167,017 | 0.035 | 0.855 | 0.035 | 1.377 |
| Serbia / RS | 1,340,504 | 1,102,059 | 0.000 | 0.550 | 0.000 | 0.886 |
| Slovakia / SK | 3,794,786 | 96,516 | 0.114 | 0.876 | 0.114 | 1.411 |
| Slovenia / SI | 754,654 | 1,141,339 | 0.000 | 0.427 | 0.000 | 6.604 |
| Spain / ES | 13,298,806 | 1,580,309 | 1.092 | 3.348 | 1.092 | 5.396 |
| Sweden / SE | 341,646 | 17,868,660 | 0.000 | 4.098 | 0.000 | 0.688 |
| Switzerland / CH | 7,059,096 | 8,340,123 | 0.000 | 3.465 | 0.000 | 5.584 |
| **TOTAL** | **204,156,738** | **206,787,815** | **100.000** | | **156.548** | |

## Table 5 Overview of compensation and contribution to the ITC Fund

| (All figures in € million) | Compensation | | Contribution on behalf of Perimeter countries | | Contribution ITC Party | | Final net position |
|---|---|---|---|---|---|---|---|
| | losses | infrastructure | losses | infrastructure | losses | infrastructure | |
| Albania / AL | 0.206 | 0.192 | 0.000 | 0.000 | 1.248 | 0.774 | -1.624 |
| Austria / AT | 5.829 | 9.629 | 0.000 | 0.000 | 4.818 | 2.990 | 7.650 |
| Bosnia / BA | 1.917 | 1.363 | 0.000 | 0.000 | 1.723 | 1.069 | 0.488 |
| Belgium / BE | 3.077 | 1.520 | 0.000 | 0.000 | 6.396 | 3.969 | -5.768 |
| Bulgaria / BG | 1.290 | 0.824 | 0.496 | 0.496 | 2.132 | 1.323 | -2.333 |
| Czech Rep. / CZ | 11.598 | 5.326 | 0.000 | 0.000 | 5.023 | 3.117 | 8.785 |
| Germany / DE | 11.618 | 11.298 | 0.000 | 0.000 | 19.346 | 12.005 | -8.435 |
| Denmark / DK | 9.252 | 4.037 | 0.000 | 0.000 | 3.486 | 2.163 | 7.640 |
| Estonia / EE | 3.158 | 1.628 | 0.000 | 0.000 | 0.670 | 0.416 | 3.701 |
| Finland / FI | 5.470 | 1.261 | 2.346 | 2.346 | 4.416 | 2.740 | -5.116 |
| France / FR | 12.303 | 3.848 | 0.000 | 0.000 | 22.859 | 14.185 | -20.893 |
| Great Britain / GB | 3.566 | 0.807 | 0.000 | 0.000 | 7.330 | 4.549 | -7.506 |
| Greece / GR | 2.186 | 0.802 | 0.221 | 0.221 | 1.400 | 0.869 | 0.278 |
| Croatia / HR | 5.087 | 3.211 | 0.000 | 0.000 | 2.280 | 1.415 | 4.604 |
| Hungary / HU | 1.033 | 1.707 | 1.141 | 1.141 | 3.404 | 2.112 | -5.058 |
| Ireland / IE | 0.003 | 0.104 | 0.000 | 0.000 | 0.936 | 0.581 | -1.410 |
| Italy / IT | 0.052 | 0.671 | 0.000 | 0.000 | 16.397 | 10.175 | -25.849 |
| Kosovo / KS | 0.987 | 0.870 | 0.000 | 0.000 | 0.506 | 0.314 | 1.036 |
| Lithuania / LT | 2.999 | 1.540 | 1.651 | 1.651 | 1.910 | 1.185 | -1.858 |
| Luxembourg / LU | 0.020 | 0.052 | 0.000 | 0.000 | 1.528 | 0.948 | -2.405 |
| Latvia / LV | 2.061 | 1.920 | 0.000 | 0.000 | 0.626 | 0.389 | 2.966 |
| Montenegro / ME | 0.180 | 1.329 | 0.000 | 0.000 | 0.444 | 0.275 | 0.791 |
| North Macedonia / MK | 0.432 | 1.052 | 0.000 | 0.000 | 0.701 | 0.435 | 0.349 |
| Northern Ireland / NI | 0.275 | 0.294 | 0.000 | 0.000 | 0.545 | 0.338 | -0.315 |
| Netherlands / NL | 8.621 | 7.658 | 0.000 | 0.000 | 3.856 | 2.393 | 10.030 |
| Norway / NO | 0.709 | 0.961 | 0.006 | 0.006 | 7.415 | 4.601 | -10.358 |
| Poland / PL | 5.963 | 2.484 | 0.424 | 0.424 | 2.603 | 1.615 | 3.381 |
| Portugal / PT | 1.626 | 1.034 | 0.000 | 0.000 | 3.079 | 1.911 | -2.331 |
| Romania / RO | 0.348 | 0.651 | 0.035 | 0.035 | 1.377 | 0.855 | -1.303 |
| Serbia / RS | 3.075 | 2.145 | 0.000 | 0.000 | 0.886 | 0.550 | 3.785 |
| Spain / ES | 17.359 | 3.880 | 1.092 | 1.092 | 5.396 | 3.348 | 10.312 |
| Slovenia / SI | 3.795 | 4.595 | 0.000 | 0.000 | 6.604 | 0.427 | 1.360 |
| Slovakia / SK | 2.304 | 4.429 | 0.114 | 0.114 | 1.411 | 0.876 | 4.218 |
| Sweden / SE | 9.580 | 5.644 | 0.000 | 0.000 | 0.688 | 4.098 | 10.438 |
| Switzerland / CH | 18.567 | 11.234 | 0.000 | 0.000 | 5.584 | 3.465 | 20.752 |
| **TOTAL** | **156.548** | **100.000** | **7.525** | **7.525** | **149.022** | **92.475** | **0.000** |

## Table 6 Summary of criteria for valuing losses (2018)

| Jurisdiction | Approval of the criteria for the valuation of losses | Basis (criteria) used for assigning value to losses | Further description of the basis (criteria) used | Is the same basis (criteria) applied for the valuation of losses for the ITC 2018 as the one applied at national level? | NRA approval of the value of losses for the ITC 2018 |
|---|---|---|---|---|---|
| AT | NRA | Auctions / tenders | The TSO buys yearly (up to 2 years in advance), monthly and daily products through auctions according to the predicted required quantities in a regular process (weekly products). The average price of these procurements becomes the value of losses. | Yes[21] | Yes |
| BE | NRA | Auctions / tenders | The value of losses is computed based on average prices received through several tenders for various products and time horizons.[22] | ITC losses value is based on estimated forward prices and actual procurement prices | Yes |
| BG | NRA | Regulated prices | The price for procurement of electricity for covering grid losses is fixed on yearly base by the Bulgarian regulatory authority (EWRC) pursuant to the national legislation. Losses' values are calculated based on generators' weighted average price. | Yes | No |
| CH | NRA | PX prices / pool prices; Auctions / tenders | Losses' value are calculated based on monthly tenders and Day-ahead and Intraday prices. | Yes | Partially[23] |
| CZ | NRA | PX prices / pool prices | The value of losses is calculated based on electricity purchased through electronic auctions (annual, quarterly, monthly, day ahead or intraday basis) on the balancing market and on market data of the futures products of Power Exchange Central Europe (PXE). | Yes | Yes |
| DE | NRA | PX prices/ pool prices | The reference price is calculated taking into account exchange prices for a 12-month period from 1 July (t-2) to 30 June (t-1) | Yes | No |
| DK | NRA does not approve the basis, but defines the principles for the calculation | PX prices / pool prices | Loses values are calculated on a weighted average of Nasdaq commodities OMX forward prices plus price of the EPAD contracts and balancing costs. | The only difference is that the value of losses for the ITC is based on forward prices, while for the value of losses at | No |

[21] In Austria, the value of losses for year n is used in the tariffs ordinance for year n+2.

[22] The value of losses was approved by CREG for the tariff period 2016-2019. The price was calculated on the basis of estimated forward prices of electricity (estimations made by IHS CERA) for the period 2016-2019, as well as on the real procurement price for the share of volumes that were already procured for the period 2016-2019 at the time of estimation.

[23] Indirect approval by monitoring the functioning of the market based allocation and intervention if market based allocation is disturbed.

| | | | | | |
|---|---|---|---|---|---|
| | | | | national level the actual prices are used | |
| EE | NRA | PX prices / pool prices | The losses' values are calculated as weighted average of PX prices adjusted by balancing price. (previous 12 months Nord Pool Estonia price area electricity prices) | The value of losses used for the ITC mechanism is also estimated on basis of Nord Pool Estonia price area electricity prices, but the TSO calculates the value of losses used for the ITC mechanism on the basis of different time-horizon (e.g. previous one, two, three, six or 12 months price) | Yes |
| ES | Defined in operational codes approved by the Government | PX prices / pool prices | Losses are valued according to a weighted average of day ahead market price for all acquisition units | Yes | Yes |
| FI | TSO sets | PX prices / pool prices | The losses' values are calculated by the TSO based on the power-exchange prices.[24] | Yes | No |
| FR | NRA | Auctions / tenders; Bilateral contracts; Regulated prices | Losses' values are calculated based on forward products and hourly adjustments with spot products and balancing market prices and regulated prices of ARENH mechanism - the regulated access to EDF's incumbent nuclear electricity.[25] | Yes | No |
| GB | NRA | PX prices / pool prices | Losses' values are calculated based on forward market prices, quarterly weighted. | Yes | No |
| GR | NRA | PX prices / pool prices | Losses' values are estimated based on weighted average Day-ahead market prices.[26] | Yes | Yes |

[24] Losses Costs are calculated by budget total cost divided by estimated total loss energy. The estimated total cost of losses is calculated by grid losses x (system price + SYS-FI area price difference) + half of the estimated losses on the FI-SE interconnectors x (system price + SYS-SE area price difference) + hedged volume x (hedged price - system price), where system price, SYS-FI&SYS-SE area price differences are based on Nasdaq's forward prices at the time of budgeting; SYS-SE price difference = average of SYS-SE1 and SYS-SE3 prices; hedged price does not include SYS-FI area price difference; resolution is one month (yearly cost is sum of monthly costs).

[25] Forecasted yearly costs and volumes are usually published by the French NRA in tariff decisions (usually valid for 4 years) or public consultation documents. Actual costs are usually published in NRA's decision for yearly tariff updates.

[26] The expected System Marginal Price (SMP) was used as the basis for the value of losses, following the proposal made by IPTO (the Greek TSO). According to the market and grid codes for the Hellenic System, losses are paid by the market participants who inject energy into the Day-Ahead market, which is a compulsory Pool. For a given load level and depending on the area where the energy is injected, there are pre-specified generation loss factors, which are applied to injection. Consequently, for each hour, the losses are calculated and paid according to the SMP (weighted). Since the SMP determines the losses value in the Greek System

| | | | | | |
|---|---|---|---|---|---|
| HR | NRA | PX prices / pool prices; Other | forward market price (HUPX PhF), balancing market prices, insurance premium and weighted average price of cross-border transmission capacity (HU->HR) | Yes | Yes |
| HU | NRA | PX prices / pool prices; Auctions / tenders; | Losses are calculated based on the weighted average market purchase price (based on HUPX / HUDEX futures) | Yes | Yes |
| IE | NRA | Regulated prices | Losses' values are calculated based on the average Directed Contracts (DC) price for the same period. DC contracts are set by the NRAs quarterly for both Ireland and Northern Ireland. The DC prices are calculated using a formula which takes as inputs the prices of gas, coal and CO2. | The value of losses for the ITC mechanism is calculated based on the DC figures. At national level, no financially estimated value of losses is used, instead a site-specific transmission loss adjustment factors are applied to the producers outputs. | Yes |
| IT | No approval (A regulatory order defines how losses are managed. The market sets the basis.) | PX prices / pool prices | Losses' values are calculated as the volume-weighted average wholesale market price (i.e. clearing price from the Italian Power Exchange, GME).[27] | Same basis from a methodological perspective. The value of losses for the ITC is calculated ex-ante based on historical data. Therefore, it differs from the actual value of losses at national level, quantified ex-post based on actual market results. | No |
| LT | NRA | PX prices / pool prices; Bilateral contracts; | The value of losses is calculated taking into account forecast of bilateral contract prices, prices in the spot market, forecasted balancing costs. | Yes | No |
| LU | Set in the national law | Auctions / tenders | Value of losses is based on yearly tender for transmission and | Yes | No |

only ex-post, an estimation should be taken into account for the determination of losses value of the year ahead. Moreover, since there is no forward power market operating in Greece, the only available forecast for the SMP is the yearly average SMP estimated by HEnEX S.A. (the Greek Market Operator) and published in his monthly report.

[27] The energy covering losses is directly procured by suppliers. The corresponding volume is estimated as a ratio of the energy withdrawn by their own customers. ARERA defines with regulatory order the standard percentage of losses over the withdrawn volumes, which is differentiated according to the voltage level of the connection points. These percentages represent adjustment factors fictitiously to increase the energy withdrawals attributed to each supplier. In real time, the difference between the actual and the standard losses is purchased (or sold) by the TSO according to the market spot price (balancing market price). The relevant costs (or revenues) are then shared among all customers (through the uplift component to the transmission tariff).

| | | | | | |
|---|---|---|---|---|---|
| | | | distribution losses (subdivided in 3 batches having each a different offer deadline) | | |
| LV | The TSO is free to set the basis for the calculations of the value of losses[28]. | PX prices / pool prices | Losses value are calculated as weighted average of Nord Pool Spot prices of the Latvian trading area adjusted by balancing price. | Yes | No |
| NI | NRA | Regulated prices | Losses' values are calculated based on the average Directed Contracts (DC) price for the same period. DC contracts (and quantities) are set by the NRA quarterly for both Ireland and Northern Ireland. The DC prices are calculated using a formula which takes as inputs the prices of gas, coal and CO2. | The value of losses for the ITC mechanism is calculated based on the DC figures. At national level, no financially estimated value of losses is used, instead a site-specific transmission loss adjustment factors are applied to the producers outputs. | Yes |
| NL | Defined in NRA's decision, international accounting standards and in additional TSO-specific accounting instructions[29] | Auction / tenders | Losses' values are calculated based on yearly tenders. For the interconnector DC cable to Norway (NorNed), the market coupling algorithm covers the network losses through a constraint (with a standard quantity of losses of 3.2%). The remainder of the net losses is obtained through a separate tender process. | Yes | No |
| NO | NRA | PX prices / pool prices | The NRA uses the volume weighted monthly electricity prices from Nord Pool Spot plus a mark-up covering risk and expenses when setting the revenue cap for the TSO. As the final prices are not known until after the end of the year, the NRA uses forward prices for the relevant year - as an estimate for the reference price – in the pre-calculation of the revenue cap. This estimate is based on volume weighted quarterly system prices as they are listed at Nasdaq OMX in addition to the mark-up covering risk and expenses. | Yes | No |
| PL | NRA | PX prices / pool prices; Bilateral contracts; | The basis of calculation the value of losses is approved during the process of approving the tariff. The value of losses calculation is based on the forward electricity | Yes | No |

[28] When setting the use of system tariffs, the costs are approved by the NRA.

[29] Defined in the "Meetcode elektriciteit" adopted by the NRA, in international accounting standards and in "Regulatorische Accounting Regels (RAR)", which are additional TSO-specific accounting instructions

| | | | | | |
|---|---|---|---|---|---|
| | | | prices, prices of bilateral contracts for next year and historical prices. | | |
| PT | NRA | PX prices / pool prices | Losses' values are calculated based on the weighted average hourly price for day ahead energy market – MIBEL - for the whole year and for the Portuguese area. | Yes | Yes |
| RO | NRA | PX prices / pool prices; Bilateral contracts; | Losses value are calculated based on annual average price established on Centralised Market for Bilateral Contracts, Day-Ahead Market, Intraday Market and Balancing Market.[30] | Yes | No |
| SE | NRA | PX prices / pool prices; Bilateral contracts; Other | Losses' values calculated by the TSO as an annual mean price for Sweden. In addition, the TSO includes costs for hedging (purchase, risk costs and administrative costs for hedging), according to the TSO's risk. . | Yes | Yes |
| SI | NRA | PX prices / pool prices | Losses' values are calculated based on average price of peak (30 %) and base load (70 %) futures price from HUPX. | Yes | No |
| SK | NRA | PX prices / pool prices | Losses' values are calculated based on Average PXE stock Exchange electricity price with adjustments. | Yes | Yes |

[30] The losses value recognized by ANRE for the year t is the annual price without exceeding the weighted average price calculated by taking into consideration the average price established on the Centralized Electricity Market for Bilateral Contracts to 80% and that on the day-ahead electricity market to 20%.

**Table 7 Actual Losses' values for years 2013-2018 and their difference compared to the Losses values used in the ITC mechanism for the same year (€/MWh)**

| | Actual losses' values in 2013 | Difference between ITC and actual figures | Actual losses' values in 2014 | Difference between ITC and actual figures | Actual losses' values in 2015 | Difference between ITC and actual figures | Actual losses' values in 2016 | Difference between ITC and actual figures | Actual losses' values in 2017 | Difference between ITC and actual figures | Actual losses' values in 2018 | Difference between ITC and actual figures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT | 56.07 | 0 | 47.96 | 0 | 37.57 | 0 | 27.88 | 5.76 | 47.04 | -19.16 | 57.54 | -27.36 |
| BE | 53.91 | 6.41 | 46.83 | 14.51 | 49.60 | 12.64 | 41.16 | 3.28 | 37.7 | 6.74 | 39.83 | 4.61 |
| BG | 45.10 | 5.56 | 34.80 | 16.55 | 23.32 | -7.98 | 34.17 | 0 | 47.67 | -8.93 | 59.68 | -4.61 |
| CH | | | | | | | 43.20 | 3.68 | 55.57 | -14.5 | 60.39 | -14.48 |
| CZ | 48.24 | 9.36 | 39.93 | 2.48 | 39.22 | 0.04 | 37.7 | -1.45 | 40.87 | -8.08 | 42.26 | 0.06 |
| DE | 52.69 | 0.73 | 44.39 | 0.4 | 36.21 | 3.79 | 40 | 0 | 27.51 | 0 | 29.64 | 0 |
| DK | 35.00 | 8.69 | 30.00 | 11.3 | 24.40 | 13.60 | 27.11 | 1.69 | 51.2 | -16.26 | 59.8 | -24.07 |
| EE | 45.03 | -4.36 | 39.45 | 4.59 | 32.74 | 11.36 | 35.3 | -1.45 | 34.87 | -1.09 | 47.24 | -10.94 |
| ES | 45.58 | 4.75 | 42.93 | 0.09 | 51.28 | -7.63 | 40.26 | 10.11 | 38.37 | 0 | 53.13 | 0 |
| FI | 51.23 | 0.9 | 50.99 | -2.41 | 48.22 | -1.74 | 44.13 | -0.25 | 37.62 | 1.86 | 37.88 | -2.65 |
| FR | 55.97 | 13.47 | 48.94 | 2.5 | 43.70 | 7.74 | 44.7[31] | 5.91 | 45.6 | -3.15 | 43.1 | -2.73 |
| GB | 58.20 | 5.76 | 59.07 | 2.62 | 55.14 | 7.88 | | | 66.08 | 0 | 54.34 | 0 |
| GR | 45.30 | 22.82 | 60.20 | 4.8 | 54.40 | 9.6 | 43.3 | 16.7 | 58 | -9.3 | 61.9 | -8.6 |
| HR | 57.67 | 5.71 | 44.87 | 6.93 | 43.16 | 8.35 | 38.67 | 7.4 | 42.21 | 0 | 54.22 | -6.55 |
| HU | 53.87 | 0.61 | 40.35 | 2.79 | 42.93 | -3.68 | 38.01 | 0 | 36 | 1.6 | 40.78 | 0 |
| IE | 65.59 | 0.92 | 63.76 | 0.77 | 48.92 | 11.82 | 41.4 | 7.52 | 40.33 | 0 | 47.55 | 0 |
| IT | 65.15 | 10.35 | 53.96 | 8.44 | 54.31 | -3.25 | 44.36 | 9.07 | 56.15 | -15.03 | 63.02 | -6.89 |
| LT | 55.52 | -5.42 | 53.74 | 1.26 | 44.85 | 10.67 | 45.2 | 0 | 39.9 | 0 | 37.1 | 0 |
| LU | 54.47 | 0 | 42.32 | 0 | 37.22 | 0 | 34.27 | 0 | 25.48 | 0 | 31.86 | 0 |
| LV | 51.01 | -5.17 | 54.10 | -7.1 | 42.48 | 9.06 | 37.84 | 5.97 | 38.73 | 0 | 52.68 | -15.68 |
| NI | 65.59 | 0.92 | 63.76 | 0.77 | 48.92 | 11.82 | 41.4 | 7.52 | 40.33 | 0 | 47.55 | 0 |
| NL | 65.05 | -2.35 | 48.32 | 0.88 | 44.90 | 0.7 | 42.19 | 3.56 | 38.33 | 0.01 | 50.89 | -7.9 |
| NO | | | | | | | 21.88 | -0.78 | 30.46 | 4.1 | 42.90 | -12.14 |
| PL | 43.74 | 2.64 | 39.33 | 1.77 | 42.71 | -0.84 | 38.19 | 3.09 | 40.34 | -2.27 | 42.28 | -1.35 |

[31] Data corrected by the NRA.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PT | 44.81 | 12.79 | 42.45 | 11.05 | 51.18 | -0.69 | 39.44 | 9.78 | 52.48 | -5.14 | 57.45 | -6.01 |
| RO | 45.40 | 4.82 | 39.60 | 6.24 | 37.80 | 1.79 | 34.96 | 2.65 | 41.74 | -6.54 | 45.93 | -3.78 |
| SE | 48.67 | 2.71 | 44.74 | -0.44 | 41.50 | 1.08 | 37.8 | -0.34 | 30 | 0 | 29.62 | 0 |
| SI | 47.39 | 8.12 | 45.54 | 10.19 | 46.68 | 9.54 | 44.60 | 0 | 45.95 | -1.34 | 44.87 | -0.18 |
| SK | 52.80 | 10.86 | 40.59 | 15.18 | 46.86 | 0 | 41.13 | 0 | 33.96 | 0 | 38.42 | 0 |

*Source: ENTSO-E provided the losses' values used in ITC mechanism; NRAs provided the actual losses' value*

## Table 8 Final net position of each ITC Parties (2011 – 2018)

| (All figures in € million) | Final net position in 2011 | Final net position in 2012 | Final net position in 2013 | Final net position in 2014 | Final net position in 2015 | Final net position in 2016 | Final net position in 2017 | Final net position in 2018 |
|---|---|---|---|---|---|---|---|---|
| Albania / AL | -2.176 | -2.320 | -1.518 | -1.607 | -1.364 | -1.239 | -1.878 | -1.624 |
| Austria / AT | 11.144 | 17.915 | 11.263 | 6.223 | 7.136 | 5.526 | 9.817 | 7.65 |
| Belgium / BE | 2.566 | -3.077 | -1.604 | -5.964 | -9.933 | 1.989 | 0.592 | -5.768 |
| Bosnia / BA | 3.398 | 3.444 | 1.018 | 0.897 | 2.329 | 0.375 | 1.132 | 0.488 |
| Bulgaria / BG | -4.265 | -2.815 | -0.713 | 0.002 | -2.691 | 0.907 | 0.137 | -2.333 |
| Croatia / HR | 2.147 | 0.110 | 5.264 | 2.359 | 0.974 | 2.556 | -0.472 | 4.604 |
| Czech Rep. / CZ | -5.702 | -4.941 | -4.544 | 0.841 | 7.842 | 6.447 | 5.946 | 8.785 |
| Denmark / DK | 4.600 | 13.108 | 12.675 | 11.154 | 8.674 | 5.411 | 9.356 | 7.64 |
| Estonia / EE | -0.532 | 1.389 | 1.853 | 5.471 | 8.378 | 3.854 | 2.813 | 3.701 |
| Finland / FI | 0.769 | -9.125 | -5.713 | -1.262 | 3.545 | -2.886 | -8.054 | -5.116 |
| France / FR | -25.685 | -22.123 | -19.032 | -29.079 | -27.331 | 2.070 | -6.880 | -20.893 |
| Germany / DE | 20.974 | 26.786 | 13.207 | 0.912 | -6.101 | -12.475 | -2.156 | -8.435 |
| Great Britain / GB | -6.794 | -11.534 | -12.706 | -13.274 | -14.063 | -10.028 | -10.344 | -7.506 |
| Greece / GR | 0.317 | 4.693 | 0.612 | -3.634 | -3.065 | -4.637 | -0.686 | 0.278 |
| Hungary / HU | 1.765 | 2.507 | -4.412 | -3.910 | -3.938 | -4.034 | -2.745 | -5.058 |
| Ireland / IE | -0.661 | -0.449 | -1.217 | -0.934 | -0.932 | -1.167 | -1.413 | -1.41 |
| Italy / IT | -30.544 | -33.931 | -29.760 | -24.035 | -29.726 | -25.559 | -24.901 | -25.849 |
| Kosovo / KS | N/A | N/A | N/A | N/A | N/A | 0.225 | 0.069 | 1.036 |
| Latvia / LV | 0.764 | 3.185 | 3.676 | 2.995 | 3.548 | 3.126 | 2.798 | 2.966 |
| Lithuania / LT | -4.969 | -5.447 | -4.359 | -3.719 | -3.371 | 1.454 | -0.397 | -1.858 |
| Luxembourg / LU | -2.846 | -3.264 | -2.849 | -2.309 | -2.551 | -2.905 | -2.783 | -2.405 |
| North Macedonia / MK | -0.833 | -1.031 | -0.695 | 0.395 | 0.803 | 1.096 | 0.218 | 0.349 |
| Montenegro / ME | 0.425 | 0.784 | 1.032 | 2.127 | 0.672 | 0.504 | 0.419 | 0.791 |
| Netherlands / NL | -0.184 | -4.540 | -1.799 | 4.559 | 11.181 | 4.526 | 6.230 | 10.03 |
| Northern Ireland / NI | -0.305 | -0.896 | -0.818 | -0.664 | -0.619 | -0.539 | -0.729 | -0.315 |
| Norway / NO | -10.870 | -13.643 | -9.100 | -6.274 | -5.813 | -12.794 | -11.978 | -10.358 |
| Poland / PL | 2.635 | 5.013 | 2.853 | 10.106 | 15.532 | 8.342 | 5.775 | 3.381 |
| Portugal / PT | -2.692 | -3.281 | -2.102 | -0.292 | 0.255 | -2.894 | -3.476 | -2.331 |
| Romania / RO | -2.282 | -3.329 | -1.737 | -4.257 | -4.352 | -3.725 | -3.762 | -1.303 |
| Serbia / RS | 3.297 | 2.015 | 1.461 | 2.012 | 3.740 | 2.221 | 2.473 | 3.785 |
| Slovakia / SK | 6.994 | 11.415 | 6.985 | 7.722 | 7.737 | 5.298 | 6.573 | 4.218 |
| Slovenia / SI | 4.130 | 3.808 | 4.023 | 4.624 | 5.919 | 5.186 | 6.612 | 1.36 |
| Spain / ES | -1,064 | -5.317 | -0.191 | 0.989 | 1.195 | 4.972 | 1.249 | 10.312 |
| Sweden / SE | 14.311 | 10.400 | 16.074 | 19.795 | 3.996 | 4.007 | 4.391 | 10.438 |
| Switzerland / CH | 22.172 | 24.491 | 22.877 | 18.030 | 22.396 | 14.789 | 16.056 | 20.752 |
| **TOTAL** | **0.000** | **0.000** | **0.000** | **0.000** | **0.000** | **0.000** | **0.000** | **0.000** |

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