



European Union Agency for the Cooperation
of Energy Regulators

ACER

Report on the implementation of the ITC mechanism in 2023

11 March 2025



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Executive summary

- (1) The Inter-Transmission System Operator Compensation (ITC) mechanism compensates all TSOs (ITC Parties) that are part of the ITC agreement for the costs resulting from hosting cross-border transit flows, such as power losses and network investments. Coordinated by ENTSO-E, the ITC mechanism forms part of Europe’s electricity infrastructure cost-sharing mechanisms alongside cross-border cost allocation and congestion income distribution. In 2023, the ITC agreement comprised 35 ITC Parties covering the vast majority of Europe¹.



(2) **Key Developments:**

- ACER finds that the ITC mechanism and fund management in 2023 is generally aligned with the legal requirements.
- The ITC fund continues an upward trend, reaching a record high of almost 1.24 billion EUR in 2023, a 105% increase from 2022, on top of the jump of +66% from 2021 to 2022.
- The value of losses determining the variable component of the fund increased for all but one ITC Party (Bosnia and Herzegovina) in 2023, with variations due to different procurement strategies and hedging instruments. Twelve ITC Parties experienced three- to six-fold increases in the value of losses.
- Valued between €56 and €400/MWh, the value of losses resulted in significantly varying costs between ITC parties raising concerns about the fairness for consumers. ACER calls for further analysis if this high discrepancy causes unjustified price differences for consumers on a national level.
- The volume-weighted average value of losses increased by 165% in 2023, reaching 201.56 EUR/MWh, thereby mirroring the unprecedented heights of the electricity wholesale prices in 2021 and increases for the follow-up years 2022 and 2023. The value had originally reached a new record at 76.09 EUR/MWh in 2022.
- The net compensations and contributions were concentrated among a few ITC Parties, with six receiving over 75% of the total net compensation and two paying more than half of the total net contributions.
- Non-ITC perimeter countries connected to the ITC Parties’ networks in 2023, including Belarus, Morocco, Russia, Turkey, Ukraine and Moldova, contributed 16.7 million EUR

¹ TSOs from all EU Member States except Cyprus and Malta, the EEA EFTA State Norway, and other non-EU countries such as Albania, Bosnia and Herzegovina, Kosovo, North Macedonia, Montenegro, Serbia, Switzerland and the United Kingdom (Great Britain and Northern Ireland stand as separate ITC parties).

to the ITC fund, representing 1.3% of the total amount, despite an increase in the perimeter country fee.

(3) **Data Accuracy, Timeliness and Improvements:**

- Errors in vertical load data from Austria led to faulty compensations in 2022 and 2023. Voluntary payments were agreed upon by 20 ITC Parties.
- ENTSO-E's internal audit: With a more transparent and granular data validation process implemented in 2023, the calculation of losses costs during the financial inspection saw improvements, with 22 changes during the first out of two data validation phases and additional updates submitted voluntarily. However, some explanations were deemed unsatisfactory by some ITC parties, and two issues concerning the Croatian ITC Party remained unresolved.
- ENTSO-E further enhanced the audit process by incorporating ACER data for the valuation of losses, increasing transparency with more detailed documentation requirements, and setting higher standards for information quality. Additionally, non-EU ITC Parties now have reporting duties related to regulatory approval of submitted data.

In addition to the incremental improvements achieved within the current ITC mechanism, such as enhancing data accuracy and timely submission of data validation, further improvements could be achieved by incorporating more granular information on the measured volume of losses, ex-post reconciliation of costs of losses and the use of forward markets where the determination of the value of losses and the procurement of energy to cover losses are market based. Rising costs associated with power losses in recent years underscore the need for these proposed measures. TSOs should further assess how different national practices lead to highly dispersed values of losses and if aligning methodologies for calculating power losses would reduce discrepancies among ITC parties and lead to fairer prices for European consumers.

(4) **Broader considerations:**

The current ITC mechanism, specifically its infrastructure compensation fund, along with cross-border cost allocation and congestion income distribution, falls short in equitably sharing infrastructure cost and benefits arising from cross-border trade². To better reflect the wider EU benefits of infrastructure, including internal and cross-border flows, ACER sees the need to review existing mechanisms³ to share costs and benefits of electricity network infrastructure arising from cross-border trade. Failing to do so may result in lower infrastructure investments, particularly in those countries bearing the costs.

² ACER, CEER: Challenges of the future electricity system – Recommendations and commitments:

https://www.acer.europa.eu/sites/default/files/documents/Publications/Future_electricity_system_challenges_2024.pdf

³ ACER: Electricity infrastructure development to support a competitive and sustainable energy system: 2024 Monitoring Report:

https://www.acer.europa.eu/sites/default/files/documents/Publications/ACER_2024_Monitoring_Electricity_Infrastructure.pdf

Recommendations

Improve data precision

Strengthen calculation accuracy by using more granular data on the measured volume of losses, ex-post reconciliation of costs of losses and forward markets for value of losses determination.

Assess valuation of losses

Assess whether aligning methodologies for calculating power losses would reduce discrepancies among ITC parties and lead to fairer prices for European consumers.

Conduct comprehensive review

Reassess cost-sharing mechanisms, including the ITC's infrastructure compensation fund, to better reflect the EU-wide benefits of cross-border infrastructure.

1. Introduction

- (5) The Inter-Transmission System Operator Compensation ('ITC') mechanism scheme is defined in Article 49 of Regulation (EU) 2019/943 and by the Commission Regulation (EU) No 838/2010 on establishing guidelines relating to the ITC mechanism and a common regulatory approach to transmission charging⁴ (the 'Regulation').
- (6) In line with the legal provisions set by these regulations, the ITC mechanism provides transmission system operators ('TSOs') with compensation for the costs of hosting cross-border flows of electricity ('transits'), including providing cross-border access to the interconnected system. The ITC scheme was implemented on 3 March 2011.
- (7) The compensation is financed through a fund, specifically the ITC Fund, which is managed by the European Network of Transmission System Operators for Electricity ('ENTSO-E').
- (8) The ITC Fund consists of two parts which aim at covering, respectively,
 - the costs of the incurred transmission losses,
 - the costs of making infrastructure available.
- (9) TSOs or groups of TSOs, which are treated as a single unit 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' networks ('Perimeter countries'⁵) pay a transmission system use fee for their scheduled imports from and scheduled exports to the ITC Parties' networks ('Perimeter countries' fee').
- (10) 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. In 2023, the ITC agreement comprised 35⁶ ITC Parties plus ENTSO-E. 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, validation of data, calculation of compensation and contribution amounts, and the clearing and settlement of the ITC Fund.
- (11) In that context, the European Union Agency for the Cooperation of Energy Regulators ('ACER') has the general duty, pursuant to point 1.4 of Annex Part A of the ITC Regulation, to oversee the implementation of the ITC mechanism and report to the European Commission each year on the implementation of the ITC mechanism and the management of the ITC fund. With regard to the valuation of losses, ACER has the specific responsibility, pursuant to point 4.4 of Annex Part A of the ITC Regulation, to 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. Since 2012, ACER prepares a yearly monitoring report on the implementation of the ITC mechanism and the management of the ITC Fund.⁷
- (12) ACER received the corresponding data and information to the implementation of the ITC mechanism in 2023 from ENTSO-E on 16 September 2024, including confirmation that the final settlements have been signed by all ITC Parties.

⁴ OJ L 250, 24.9.2010, p.5

⁵ Belarus, Moldova, Morocco, Russian Federation, Turkey and Ukraine

⁶ On 1 July 2024, the Ukrainian TSO joined the ITC mechanism.

⁷ The previous ACER ITC Monitoring Reports are available at ACER's website:

<https://www.acer.europa.eu/electricity/infrastructure/inter-tso-compensation-monitoring>

- (13) Due to a significant delay in receiving the data for the ITC mechanism 2022 in 2023, as the corresponding information requested to be submitted to ACER by 5 September 2023 was eventually shared only on 11 April 2024⁸, ACER was unable to issue a report on the implementation of the ITC mechanism in 2022 before 17 July 2024. The report on the implementation of the ITC mechanism in 2023 and its previous issue for 2022 have therefore been compiled within a respectively short timeframe, namely in less than one year.
- (14) Recent developments related to the ITC mechanism, including a sharp increase of the losses values and a delayed approval of the audit due to complications in the process for 2022, brought ENTSO-E to update the ITC mechanism by implementing a new process for a more efficient collection of ITC Parties' signatures⁹ and adopting a 'Methodology for Case (ii) countries' and a 'Guidance document on the Audit Procedure'.
- (15) In this Report, ACER has reviewed the implementation of the ITC mechanism and the management of the ITC Fund in 2023 based on:
- the ITC Agreement and its amendments,
 - relevant data and information received from ENTSO-E in relation to the implementation of the ITC mechanism in 2023,
 - new supporting documents in relation to the audit process.
- (16) Additionally, ACER collected information from the National Regulatory Authorities ('NRAs') on the country-specific data on the values and valuation of losses. The information was collected from NRAs within the timeframe of 27 September and 16 October 2024 and is presented in Tables 9 and 10 in the Annex.

2. Alignment between the 2023 ITC implementation and the Regulations

- (17) No major amendments to the ITC Agreement were introduced in 2023, as there were only annual and technical amendments, which do not affect the main elements of the ITC agreement. Amendments were made for:
- updated schedules due to yearly updates (Schedule P: ENTSO-E convention on Business Day),
 - results of the last ITC audit (Schedule T: List of used Yearly vertical loads, Schedule X: Table of losses costs, Schedule O: Ex-Ante Financial Spreadsheet),
 - updated schedules due to new tie-lines between ITC Parties (Schedule U: List of lines and measurement points).
- (18) ACER concludes that the arrangements are generally in line with the guidelines set out in the Regulation. However, this finding is without prejudice to the need to introduce methodological improvements in line with previous recommendations made by ACER. ACER recalls that in its recent monitoring report on the implementation of the ITC

⁸ The reason for the late submission were delayed provision and signatures of all settlements following delayed approval of the audited losses costs values.

⁹ ENTSO-E informed ACER that the new signature process involves several key initiatives aimed at enhancing the efficiency of signature collection from ITC Parties. Firstly, weekly calls have been introduced between ENTSO-E Secretariat and Data Administrators to address general issues and specifically discuss any delays in signature submissions. Secondly, there is a centralised repository on the ENTSO-E extranet, continuously updated with an overview of signature collection for the entire year. Additionally, in case of delays, there is an increased reporting frequency at Market Committee level to ensure timely resolution of any issues that arise.

mechanism¹⁰, also considering the extreme price volatility effects in 2021-2022 and the general tariffication principle of cost reflectivity introduced by Regulation (EU) 2019/943, ACER identified some shortcomings in the implementation of the ITC mechanism regarding the treatment of losses.

- (19) In April 2023, ACER issued its Recommendation No 01/2023 on the Treatment of Losses for the Purpose of the ITC Mechanism¹¹ to ENTSO-E, TSOs and NRAs, addressing the lack of cost reflectivity with measures which may be implemented without amendments of Regulation (EU) 2019/943 and without amendments of Commission Regulation (EU) No 838/2010, in particular regarding the use of snapshots for calculating the volume of losses as well as how and when/how often the values of losses are determined for the purpose of the ITC mechanism.
- (20) In summary, the recommendations call for:
- increase of the number of snapshots used for the estimation of the volume of losses due to transits;
 - ex-post reconciliation of the costs of losses due to transits to be applied in the ITC mechanism, to reflect the costs actually incurred; and
 - consideration of liquid forward-market prices instead of historical prices for determination of the relevant components of the value of losses for the ITC mechanism, where relevant.
- (21) ENTSO-E answered ACER's recommendation No 01/2023 through its response to ACER's data request for the ITC mechanism in 2023 by carrying out several assessments related to increasing the number of snapshots, moving towards ex-post valuation of losses, and using forward prices as reference for setting losses costs. ACER's assessment of the ENTSO-E response to the recommendations can be found under section Compensation for transmission losses.
- (22) Finally, in 2013 ACER issued its Recommendation No 05/2013 to the European Commission for a reform of the ITC mechanism. In its recommendation, ACER proposed limiting the scope of the mechanism to existing infrastructures and phasing out the corresponding ITC infrastructure fund, while suggested NRAs, where appropriate, to engage in ex-ante cross-border cost allocation agreements for new investments of EU relevance and implement an ex-post compensation mechanism for certain costs. While these proposals still remain valid, more broadly, in light of the fragmented and somewhat insufficient mechanisms for sharing cost and benefits of building and operating electricity network infrastructure across Europe, discussions among regulators on the potential need for a holistic review of such mechanisms are ongoing¹².

3. Accuracy of data

- (23) 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. Every year, before the financial settlements begin, an audit of the vertical load, the costs of losses and the capacity not allocated in a manner compatible with the congestion management methods as initially set out in Point 2 of Annex I of Regulation (EC) No 714/2009 and now required according to Regulation (EU)

¹⁰ ACER Report on the implementation of the ITC mechanism in 2021, https://acer.europa.eu/sites/default/files/documents/Publications/ITC_MR_2022.pdf

¹¹ https://www.acer.europa.eu/sites/default/files/documents/Recommendations/ACER_Recommendation_01_2023_on_the_Treatment_of_Losses_for_the_Purpose_of_the_ITC_Mechanism.pdf

¹² https://www.acer.europa.eu/sites/default/files/documents/Publications/Future_electricity_system_challenges_2024.pdf

2019/943¹³ is carried out. During the year, before the monthly settlements are issued, several data validation procedures are performed involving all ITC Parties.

- (24) In a letter dated 16 September 2024, ENTSO-E submitted to ACER data relating to the implementation of the ITC mechanism in 2023, as well as relevant descriptive information. Data and explanations of the results for the 2023 ITC mechanism that were submitted cover:
- the explanations on reduced transits submitted by each relevant ITC Party,
 - the overview of audit results and approved values, including the exchanges between ITC Parties,
 - the calculation of the Perimeter countries' fee,
 - the decisions on the values of losses in non-EU countries,
 - the computation of losses resulting from transit flows,
 - the amendments of the ITC Agreement,
- (25) In November 2024, ENTSO-E submitted to ACER documents 'Moving towards higher granularity snapshots' and 'Roadmap for a Common Methodology on Losses for ITC'.
- (26) Regarding the data quality, ENTSO-E reported no missing or insufficient quality data in the 2023 ITC mechanism settlement and that no difficulties were encountered for any kind of data for 2023.

3.1. Audit process

- (27) As set out in the ITC Agreement, each ITC Party is entitled to audit the values of yearly vertical load, of the capacity allocated in a manner not compatible with the congestion management guidelines and of the losses costs. This data needs to be provided by ITC Parties every November for the following year. The audit has two phases. During the first self-revision phase, ITC Parties are asked to either confirm their value or provide a revised figure, while during the second phase, each ITC Party may request an explanation on other ITC Party's value, in case it encounters difficulties understanding the value. If the provided explanation is insufficient by the requesting Party, the responding Party should provide a document certifying that the relevant data was determined in compliance with definitions of the ITC procedure and requirements of the ITC Agreement.
- (28) In June 2024, ENTSO-E shared with ACER two documents adopted by the Market Committee in February 2023 (i.e. Guidance document on the Audit Procedure and Methodology for Case (ii) countries¹⁴), providing an update of the ITC mechanism's Audit process with an intention to streamline the day-to-day execution of the ITC mechanism. Both documents inform that they have been developed in parallel in order to 'bring forward implementable short- and long-term solutions to ensure greater alignment of all Parties with the aims of the ITC Regulation and the Electricity Regulation', thereby reflecting upon

¹³ Initially the applicable congestion management methods were set out in Point 2 of Annex I of Regulation (EC) No 714/2009 was valid until 31 December 2019. Since 1 January 2020, Regulation (EU) 2019/943 shall apply (in particular Article 16 on general principles of capacity allocation and congestion management and Article 17 on allocation of cross-zonal capacity across timeframes).

¹⁴ Case (ii) countries include those which fall under 4.4 of the ITC Regulation, specifically 'where the relevant regulatory authority has not approved a basis for the calculation of losses for a period of time for which the ITC mechanism applies, the value of losses for the purposes of the ITC mechanism shall be estimated by ENTSO for Electricity'. Case (i) countries include those which do not fall under case (ii) countries.

previous experience in relation to uncertainties in 2019, 2020, and 2022¹⁵ on the valuation of losses.

- (29) Additional measures introduced in the Guidance document on the Audit Procedure and Methodology for Case (ii) countries were applied to the ITC mechanism 2023 for the first time.
- (30) As neither Regulation (EU) 2019/943 (the ‘Electricity Regulation’) nor the ITC Regulation sets out specific legal provisions concerning the audit of the ITC mechanism, ACER’s inspection regarding the Guidance document on the Audit Procedure and Methodology for Case (ii) countries is limited to the legal provisions touching upon the general handling of financial mechanisms within the inter-TSO compensation. While Article 49 of the Electricity Regulation refers to the general mechanism in relation to financial compensation¹⁶, Part A of the Annex of the ITC Regulation establishes guidelines in relation to the compensation of TSOs for costs incurred as a result of hosting transits of electricity in their networks¹⁷.

3.1.1. Guidance document on the Audit Procedure

- (31) ENTSO-E explained that the Guidance document on the Audit Procedure aims at clarifying provisions, creating common understanding, reducing the risk of misalignment and potential disputes among ITC Parties by providing a defined process for resolving disputes without requiring an escalation to Assembly, and developing recommendations for further improvements¹⁸ for a smooth functioning of the ITC mechanism. The document provides a justification of the legality of the new process and does not include procedures which would require any explicit amendment of the ITC Agreement nor the ITC Regulation.
- (32) An essential part of the Guidance document on the Audit Procedure are the guidelines on how to distinguish case (i) and case (ii) countries¹⁹ based on information regarding the NRA’s approval of the losses’ value (or of the basis for its calculation) and regarding the use of this value (or of the basis for its calculation) for other purposes. In order to conclude for each ITC Party whether it falls under case(i) or case (ii) countries, an advance notice

¹⁵ ACER Report on the implementation of the ITC mechanism in 2022, chapter 2

¹⁶ Providing in particular:

- The compensation TSOs shall receive for costs incurred as a result of hosting cross-border flows of electricity on their networks shall be paid by the TSOs from which cross-border flows originate and the TSOs where those flows end,
- Compensation payments shall be made on a regular basis with regard to a given period in the past. Ex-post adjustments of compensation paid shall be made where necessary, to reflect costs actually incurred,
- The costs incurred as a result of hosting cross-border flows shall be established on the basis of the forward-looking long-run average incremental costs, taking into account losses, investment in new infrastructure, and an appropriate proportion of the cost of existing infrastructure, in so far as such infrastructure is used for the transmission of cross-border flows, in particular taking into account the need to guarantee security of supply. When establishing the costs incurred, recognised standard-costing methodologies shall be used. Benefits that a network incurs as a result of hosting cross-border flows shall be taken into account to reduce the compensation received.

¹⁷ Especially setting out:

- ENTSO-E shall be responsible for establishing arrangements for the collection and disbursement of all payments relating to the ITC Fund, and shall also be responsible for determining the timing of payments. All contributions and payments shall be made as soon as possible, and at the latest within six months of the end of the period to which they apply (point 1.3),
- ENTSO-E shall facilitate the conclusion of multi-party agreements relating to the compensation for the costs of hosting cross-border flows of electricity between transmission system operators participating in the ITC mechanism and those transmission system operators from third countries which have not concluded agreements with the Union whereby they have adopted and are applying Union law in the field of electricity, and which, on 16 December 2009, signed the voluntary agreement between transmission system operators on inter-transmission system operator compensation (point 3.1),
- ENTSO-E shall be responsible for carrying out the calculation referred to in point 4.2 and shall publish this calculation and its method in an appropriate format. This calculation may be derived from estimates for a number of points of time during the relevant period (point 4.3).
- Where the relevant regulatory authority has not approved a basis for the calculation of losses for a period of time for which the ITC mechanism applies, the value of losses for the purposes of the ITC mechanism shall be estimated by ENTSO-E (point 4.4).

¹⁸ improvements which may in future lead to amendments of the ITC Regulation and the ITC Agreement

¹⁹ under the proposition of aligning the interpretations of the Electricity Regulation, ITC Regulation and ITC Agreement

has been introduced either before the Audit begins (i.e. during the initial data collection in November) or during its first phase (between 3 January and 15 January). More specifically:

- for the EU ITC Parties, the latest available relevant information on the valuation of losses provided by ACER²⁰ shall be used as a base input in the November data collection phase,
- the non-EU ITC Parties are asked to clarify in written the regulatory approval during the data collection and confirmation phase.

In addition, in subsequent phases of the Audit (between 15 January and 25 February), any ITC Party can request from another ITC Party further clarification about and, if necessary, also evidence of regulatory approval of the losses costs value or the methodology for estimating the losses. During this phase, an ITC Party can also appeal ACER's assessment by sending an email to ENTSO-E with a justified explanation for their appeal.

(33) ACER notes that the Guidance document on the Audit procedure also provides:

- details on how to proceed as regards late modification of values,
- a description and documentation of the quality of information to be delivered during the Audit, as well as a definition of what constitutes an unsatisfactory answer and what the final acceptance report should include in order to guarantee a well-informed and efficient approval of the Audit results by ENTSO-E's Market Committee,
- description of the Audit through a chart and diagram and an example of communicating the delay in submission of updated losses costs.

(34) ACER noticed ENTSO-E's remark that 'the ITC Agreement and ITC Regulation are not perfectly aligned on the actual definition of the requirements to be considered a 'case(i)' country. While the ITC Agreement only mentions the value approved in the tariff setting process, the ITC Regulation has a wider scope by referring to the values being calculated on the same basis as the ones approved by NRAs for all losses on the national transmission systems.' ACER recognises ENTSO-E's efforts to address this gap with their Guidance document on the Audit Procedure. ACER furthermore invites ENTSO-E to continue monitoring the effects of its Guidelines in this regard.

3.1.2. Methodology for Case (ii) countries

(35) The document 'Methodology for Case(ii) countries' provides details on ENTSO-E's estimation of the value of losses for the purpose of the ITC mechanism for case (ii) countries (i.e. where the relevant NRA has not approved a basis for the calculation of losses).

(36) ACER notes the methodology is composed of the following main steps:

- Identification of potential outliers: An outlier indicator is calculated for each ITC Party (using the data on ITC Parties' losses costs submitted and forward product baseloads on the relevant markets) and a predefined threshold is applied. If no case(ii) ITC Party is an outlier, all the submitted values of losses are accepted and the process stops.
- Application of two caps (high and low): Two caps are applied to the average of baseload calendar average to calculate the range limiting the losses costs of the concerned ITC Party which may, during the Audit, submit a new value within this range or has its value set at the interval's endpoint.

²⁰ ACER information shall only be used if it is less than 3 years old. If ACER information is more than 3 years old, the ITC Parties should clarify in written the regulatory approval during the data collection and confirmation phases. For ITC mechanism in 2023, ACER data was not used, as the latest data available at the time of the launch of the 2023 Audit (i.e. data inside ACER's ITC Monitoring report 2019) was older than three years.

- (37) Based on the documentation received regarding the updated audit procedure, including the 'Guidance document on the Audit Procedure' and 'Methodology for Case (ii) countries', ACER notes that significant efforts have been made by ENTSO-E to prevent the recurrence of issues similar to those recently experienced. These efforts aim to address potential difficulties that arose from the lack of established procedures for disputes related to late modifications of values or varying quality of information received in the past.

3.1.3. Audit of values in 2023

3.1.3.1. Vertical load

- (38) ENTSO-E informed ACER that during the Audit process of the ITC mechanism 2022, no errors for vertical load values were found. However, after completion of the Audit process for the year 2023, an ENTSO-E internal analysis detected that the values of yearly vertical load submitted by the Austrian ITC Party for the ITC mechanism in 2022 and were not correct, thus resulting in erroneous compensation payments in 2022 and 2023. As the Audits in question have already been completed and formally accepted by ENTSO-E, it expressed that there was at that time no foreseen contractual possibility stemming from the ITC Agreement to retrospectively correct the audited values. Due to the audit having been already closed, it did not lead to a formal correction in the ITC mechanism.
- (39) Following the erroneous compensation payments in 2022 and 2023 due to the incorrect values of the vertical load submitted by the Austrian ITC Party, the Austrian ITC Party proposed voluntary compensation payments based on independently drafted contracts. It also reviewed and adapted its internal data delivery process for the ITC mechanism's vertical load reporting to prevent such cases in future. Additionally, ENTSO-E has established enhanced 'plausibility check' routine²¹, where reported vertical load data are checked for year-on-year differences to identify possible outliers. ENTSO-E also reported that further structural measures for the ITC mechanism to deal with such errors, which were not detected during the audit process, would be analysed during the currently ongoing ITC re-evaluation process.
- (40) In September 2024, ENTSO-E informed ACER that after the Austrian's ITC Party's proposal of voluntary compensation payments, 20 ITC Parties agreed to participate in the corrective payment process for both the 2022 and 2023 years of implementation of the ITC mechanism.

3.1.3.2. Capacity allocated in a manner not compatible with the Congestion Management Guidelines

- (41) ENTSO-E informed ACER that during the audit process of the ITC mechanism 2023, there were no changes on the capacity allocated in a manner not compatible with the Congestion Management Guidelines.

3.1.3.3. Audit of the value of losses

- (42) In relation to the Audit process of the values of losses for the ITC mechanism in 2023, ACER notes the following:
- The first phase of the Audit process where ITC Parties can revise their submitted data resulted in 2222 changes in the costs of losses with accompanying explanatory notes, following NRA's approval or losses tendering process.
 - For the Danish ITC Party, a recalculation of the value has been carried out based on the newly adopted Methodology for case (ii) countries. The Danish ITC Party provided

²¹ 'plausibility check' to be incorporated into the yearly audit process from 2024

²² Two additional updates were voluntarily submitted after the first phase of the Audit.

information about it falling under case(ii) ITC Parties (for which neither the value nor the basis for calculating losses costs is approved by the NRA) and it was found to be a statistical outlier in 2023²³. Consequently, its cost of losses was adjusted (i.e. from initially submitted 333.25 EUR/MWh to 268.13 EUR/MWh).

- The second phase of the Audit process where ITC Parties can request other ITC Parties to provide explanations on the information submitted, resulted in 41 individual requests in relation to the cost of losses for 2023, representing 6 requests fewer than the 47 requests in 2022, however, still 5 times the average requests made in the preceding years 2019-2021. Out of the 41 individual requests, the most requested ITC Parties included Austria (7), Denmark (5) and Slovakia (4). The Belgian and Polish ITC Parties were the ones asking the most explanations, with 13 and 10 requests respectively. Out of the 41 requests, 3 requests concerning ITC Parties from Austria, Belgium and Sweden were considered unsatisfactory. While the Austrian and the Swedish ITC Party's values were confirmed by the Market Committee, the Belgian Party had its value updated. After the second phase of Audit, 2 open issues remained concerning the Croatian losses costs which were finally voluntarily changed.
 - Between the preliminary data collection and the validation of the Audit, the initially submitted values of losses were updated for 21²⁴ out of 35 ITC Parties.
- (43) As remarked by ACER in previous reports, increased efforts are required in the data Audit, including more transparency regarding the determination of the value of losses and the input data used and enforcement of contractual deadlines. The adopted Guidance document on the Audit procedure together with accompanying Methodology for Case(ii) countries with the enhanced 'plausibility check' routines aims to address these issues. In this regard, ACER recognises ENTSO-E's efforts taken to tackle the experienced drawbacks from previous years.
- (44) ACER welcomes that ENTSO-E improved the audit via introduction of ACER data regarding the valuation of losses, increased transparency in the audit process, including a more detailed description of the documentation and of the required quality of information to be delivered during the Audit, and additional reporting duties by non-EU ITC Parties as regards regulatory approval of submitted data.
- (45) In line with its considerations in previous reports on the implementation of the ITC mechanism, ACER regards that the self-governance arrangement in the operation of the ITC mechanism is still a broadly appropriate approach for assuring the accuracy of the operation of the ITC mechanism.

4. Treatment of third countries

- (46) ACER notes that the ITC Agreement has not changed regarding the general treatment of the ITC Parties, including TSOs from those third countries which have adopted and apply European Union 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 through a voluntary multi-party agreement. Thus, the former findings of ACER are still valid.
- (47) 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 concludes that the requirements of points 3.2 and 3.4 of Annex Part A of the Regulation are met.

²³ The Danish ITC Party calculated the value of losses by using simple average forward price for 2023 for every trading day of the month closest to the deadline for delivery of data. The same method was used as for the previous years.

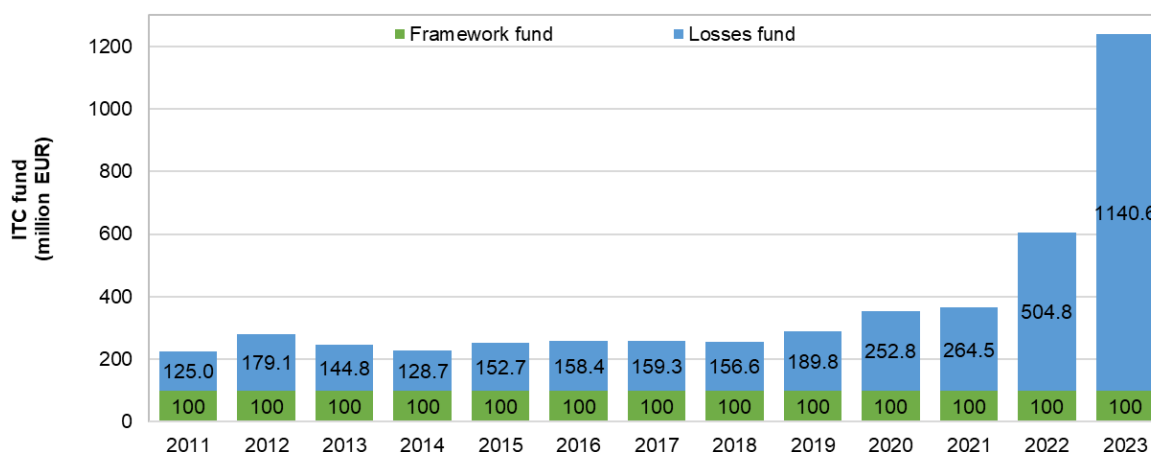
²⁴ AL, BA, BE, CH, EE, ES, FI, GB, GR, HR, HU, IE, IT, ME, MK, NI, NO, PL, RS, SI, SK

- (48) ACER recalls that in order not to discriminate regarding the treatment of ITC Parties as set out in Annex Part A of Regulation (EU) No 838/2010, the recommended practices in ACER’s 2023 Recommendation on the treatment of losses for the purpose of the ITC Mechanism²⁵ should be applied not only to EU ITC Parties, but to all parties participating in the ITC mechanism.

5. ITC fund

- (49) In 2023, the ITC Fund amounted to 1.2406 billion EUR, consisting of 100 million EUR related to the costs of the transmission infrastructure made available for transits and 1.1406 billion EUR related to the costs of the incurred transmission losses due to transits. 1.224 billion EUR or 98.7% of the total ITC fund was recovered through contributions from the ITC Parties and the remaining 16.7 million EUR or 1.3% through the Perimeter countries’ fees.
- (50) As presented in Figure 1, after being relatively stable between 2015 and 2018, the ITC fund has continuously been increasing in the last five years, and after an initial exponential jump in 2022, reached its highest ever amount in 2023. Compared to its size in 2021, it increased by 66% in 2022, whilst the 2022 size increased by 105% by 2023. Compared to its size in 2018, the ITC fund almost quintupled, meaning it increased by 384% over the last five years.
- (51) While the sum of the infrastructure part of the fund, which is set by the Regulation, has not changed its value since the establishment of the ITC fund, the losses part of the ITC Fund increased by 126% between 2022-2023, which relates to a 629% increase compared to five years ago.

Figure 1: ITC Fund size between 2011 and 2023



- (52) An overview of the compensations drawn from, and contributions made to the 2023 ITC Fund is provided in Table 2 in the Annex. The table includes the contributions from both the ITC Parties and Perimeter countries which made their contributions through their directly-connected ITC Parties.

²⁵ ACER Recommendation 01/2023 on the Treatment of Losses for the Purpose of the ITC Mechanism, https://www.acer.europa.eu/sites/default/files/documents/Recommendations/ACER_Recommendation_01_2023_on_the_Treatment_of_Losses_for_the_Purpose_of_the_ITC_Mechanism.pdf

- (53) The difference between the compensations drawn from, and contributions made to the ITC Fund by an ITC Party in a particular year provides its net position (i.e. net compensation from or net contribution to the ITC Fund). The share of net compensation or net contribution of each ITC Party (which is calculated as the net compensation/sum of all net compensations or as the net contribution/sum of all net contributions) in 2023 is presented in Figure 2 and Figure 3. As additional information, the corresponding shares for 2022 are also added to these figures and negative values indicate a shift in an ITC Party's beneficiary role to the contributing one or vice versa. The total net compensation (which equals to the total net contribution) in 2023 amounted to 379.8 million EUR, resulting in a significant 77% increase compared to the 214.7 million EUR from the previous year.
- (54) ACER notes that in 2023, 6 ITC Parties, namely Denmark, Austria, Switzerland, Poland, Slovakia, and Czechia²⁶ received more than 3/4 of the total net compensation. All of the mentioned ITC Parties received net compensations in 2022 as well.
- (55) Regarding net contributions, ACER observes that two ITC Parties (IT, NO) paid more than half of the total net contributions in 2023. ACER also observes that since the first implementation of the ITC mechanism in 2011, the highest share of net contribution to the ITC mechanism was all but one year provided by the Italian ITC Party (varying between 20-36%), while the second highest contribution came from the Norwegian ITC Party (varying between 5-18%). The French ITC Party, historically the second-largest net contributor (varying between 7-29% in years when it was a net contributor), became a net receiver with 1% in net compensation shares in 2023²⁷.
- (56) As illustrated in Figures 2 and 3, while almost all ITC parties maintained their negative or positive net position in 2023 compared to 2022, 4 ITC Parties (GB, HU, LT, NI) changed the direction of their net position by becoming net recipients²⁸. Great Britain changed their position from net receiver to net contributor, whilst Hungary, Lithuania and Northern Ireland changed their position from net contributor to net receiver.
- (57) ACER notes that in terms of percentage points, those countries that showed an increase in net contributions (IT, PT, NL, RO, IE, BA, GR, AL, KS) implied a varying marginal increase between 0.2% and 2.1% in comparison to their shares in 2022, except for Italy, which net contribution increased for almost 6%. In Bulgaria, Sweden and Spain the net relative contribution decreased for slightly less than 5%, while in Norway, Luxembourg and Finland, the relative contribution decreased by maximum 1.1%.
- (58) ACER notes that in terms of percentage points, among those countries that showed an increase in receiving net compensation (DK, AT, CZ, SK, SI, HR, RS, LV), Slovakia, Slovenia, Croatia, Serbia and Latvia implied a varying marginal increase between 0.03% and 3.1% in comparison to their compensations or contributions in 2022. Denmark, Austria and the Czech Republic received about 5% to 10% higher compensations in comparison to 2022. Among the countries that received lower relative compensations (EE, CH, FR, PL, DE, ME, BE, MK), substantial decrease in the relative compensation occurred in Estonia (7%), Switzerland (6%) and France (5%), while for the remaining ITC Parties the relative decrease varies between 0.2% for North Macedonia and 2.9% for Poland.
- (59) While their share in the overall ITC budget is rather limited, in terms of relative increase of the amount of contribution to ITC fund in 2023, the Netherlands, Kosovo and Bosnia increased the most, whilst Bulgaria and Finland decreased the most.

²⁶ AT, CZ, SK and CH in 2020 and DE, DK, PL, CH in 2021 received the biggest compensation by the respective year.

²⁷ FR was a significant contributor in almost each year since the first implementation of the ITC mechanism in 2011, with three exceptions in 2016, 2022 and 2023.

²⁸ In comparison, in 2022, CH, PL, DK, GB, EE changed the direction of their net position.

- (60) While their share in the overall ITC budget is rather limited, in terms of relative increase of the amount of compensation (EUR) to ITC fund in 2023, Croatia and the Czech Republic increased the most, whilst France and Lithuania decreased the most.
- (61) Table 3 in the Annex shows the final net positions of each ITC Party since 2011. For 14²⁹ out of 35 ITC Parties or for 40% of all ITC Parties, the direction of the net balance has been the same every year (i.e. they have always been a net contributor or they have always been a net receiver). For the remaining 21 ITC Parties, the direction of their net balance has changed at least once.

Figure 2: Share of net compensation per ITC party within total net compensation in 2023 and 2022

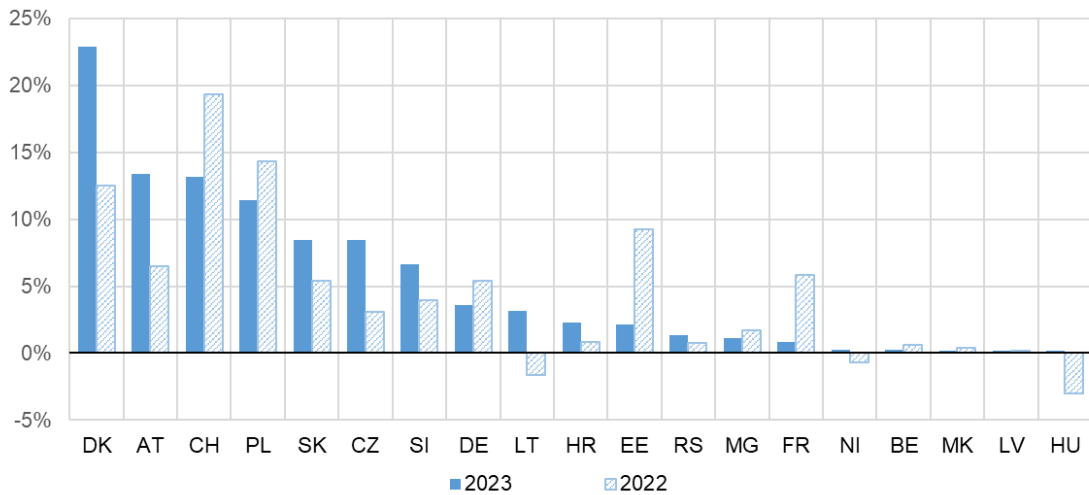
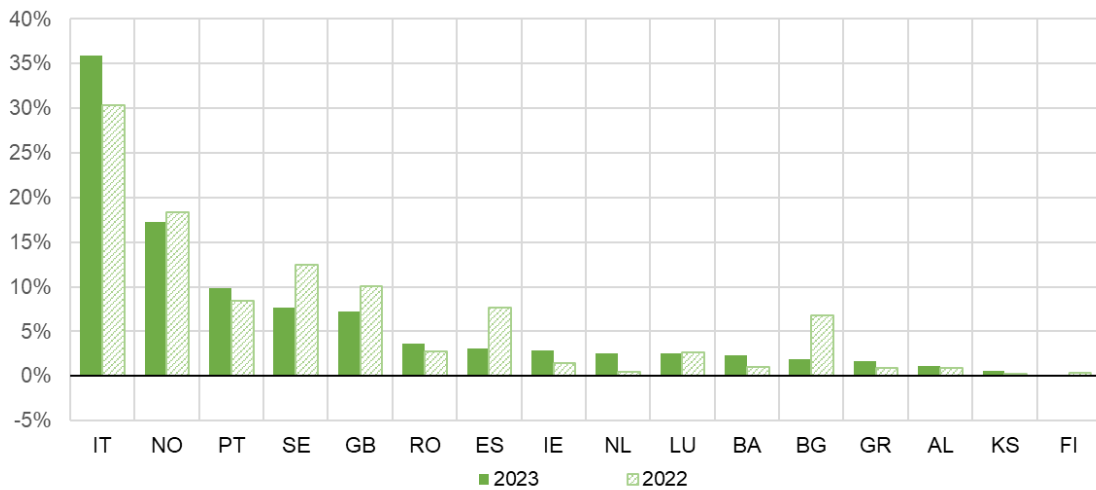


Figure 3: Share of net contribution per ITC party within total net contribution in 2023 and 2022



²⁹ Net receivers each year: AT, DK, ME, PL, RS, SK, SI, CH
 Net contributors each year: AL, IE, IT, LU, NO, RO

5.1. Contributions to the ITC fund

5.1.1. Perimeter countries' fee

- (62) 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. 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.
- (63) For 2023, ENTSO-E reported no change in the methodology for calculating the Perimeter countries' fee (or 'Perimeter fee') which is based on the equivalent losses and infrastructure compensation for historical flows of the previous year. The Perimeter fee has two elements: a losses-related and an infrastructure-related component. While the losses-related fee is calculated by dividing the 'With-and-without transit' fund size by the sum of both net and scheduled imports and exports, the infrastructure-related fee is calculated by dividing the total 'Framework Fund' contribution, which is set at 100 million EUR, by the sum of both net and scheduled import and export flows. The two components, summed and rounded to a single decimal place, create the Perimeter fee. This value is produced at the end of each year for the next year based on losses costs and vertical load data collected from ITC Parties. For timing reasons, it is calculated on the basis of unaudited data, but is updated after the data audit.
- (64) The Perimeter countries' fee for 2023 was calculated and approved by ENTSO-E's Market Committee at the value of 3.0 EUR/MWh³⁰, meaning that the value more than doubled compared to 2022 by an increase of 150%. The evolution of the Perimeter fee between 2011 and 2023 is presented in Figure 4, along with the Perimeter countries' contributions to the fund, which latter is evaluated in more details in the next section.
- (65) According to the explanation by ENTSO-E, the main reason for the recurring significant increase in the perimeter fee in 2023 compared to 2022 and 2021 is driven by a significant increase in losses costs as a result of a general increase in market prices for electricity across Europe³¹, resulting in a significantly increased size of the 'With-and-without transit' fund. Since the amount of the considered historical flows³² remained similar as in the respective years (i.e. 424 TWh compared to 418 TWh for ITC in 2022)³³, the increase of the 'With-and-without transit' fund was not balanced out by a comparable level of increase in the flows.
- (66) ACER further notes that perimeter fee for 2024 has been established at 2.8 EUR/MWh³⁴ and starting from July 2024 further decreased to 2.5 EUR/MWh³⁵ following the extraordinary adherence of the new Ukrainian Party to the ITC mechanism. As explained by ENTSO-E, perimeter fee is expected to further decrease in future years, assuming losses costs continue their downward trend.

³⁰<https://www.entsoe.eu/news/2023/05/30/market-committee-approves-itc-audit-results-and-2023-perimeter-fee/>

³¹ Average value of the cost of losses increased from 76 EUR/MWh in 2022 to 202 EUR/MWh in 2023

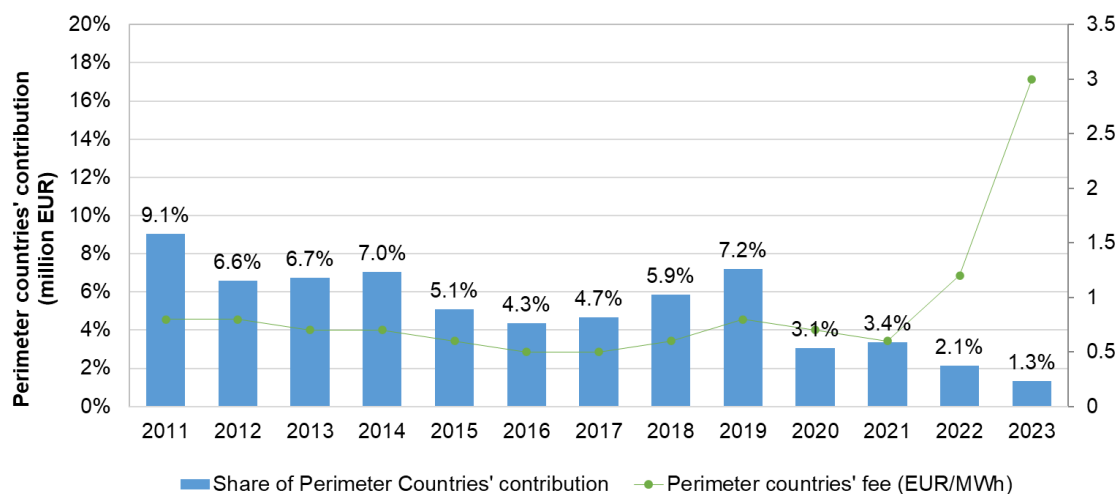
³² i.e. The flows include the sum of net import flows of all ITC parties, the sum of net export flows of all ITC parties, the sum of scheduled import flows of all Perimeter Countries with each Edge ITC party and the sum of scheduled export flows of all Perimeter Countries with each Edge ITC party.

³³ The amount of flows in year Y-2 is used as an input for the calculation of the Perimeter countries' fee for year Y. I.e. year 2021 for the ITC mechanism implementation in 2023.

³⁴ <https://preview.entsoe.eu/news/2024/04/22/market-committee-approves-itc-audit-results-and-2024-perimeter-fee/>

³⁵ <https://www.entsoe.eu/news/2024/09/30/market-committee-approves-new-itc-audit-results-and-2024-perimeter-fee/>

Figure 4: Perimeter countries' relative contributions and Perimeter countries' fee between 2011 and 2023



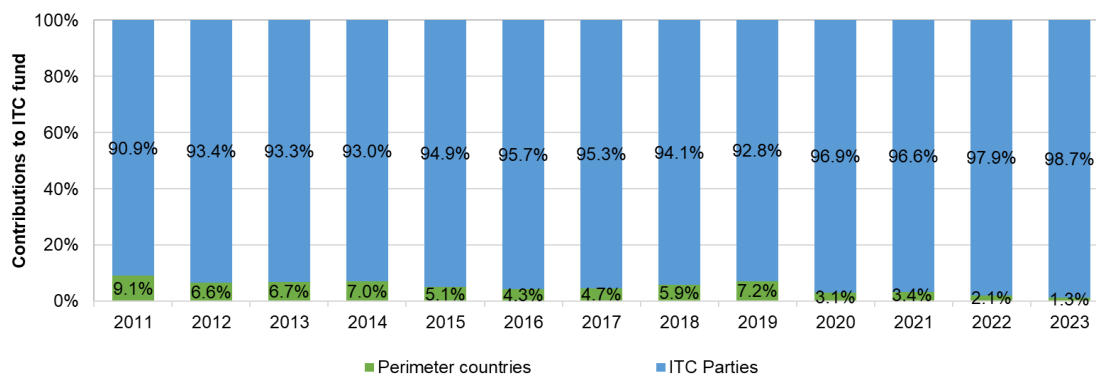
5.1.2. ITC Parties' and Perimeter countries' contributions

- (67) 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.
- (68) Table 4 in the Annex provides a summary of the annual net import, net export and the contribution amount that each ITC Party paid into the ITC Fund in 2023, including the contributions made on behalf of the Perimeter countries with whom it has a direct connection. Shares of contributions from ITC parties and Perimeter countries between 2011 and 2023 are presented in Figure 5.
- (69) In 2023, Perimeter countries paid 16.7 million EUR to the ITC fund, representing 1.3% of its total amount and overall, the lowest relative contribution since the instalment of the ITC fund. Other lower relative contributions were raised in 2020, 2021 and 2022 when the ITC parties contributed with 10.8 million EUR (3.1%), 12.3 million EUR (3.4%) and 13 million EUR (2.1%) respectively, and significantly lower than during the period before (i.e. between 2011 and 2019 when their contribution ranged between 4.3% and 9.1%).
- (70) The lower relative contribution was observed despite the fact that the perimeter country fee increased by 150% in 2023 (compared to 2022), and was therefore significantly higher than any year since the establishment of the ITC fund³⁶. The reason behind the decrease of the Perimeter countries' relative contribution to the ITC fund lies in the significantly lower volume of the scheduled flows between the Perimeter countries and the ITC parties compared to the past volumes³⁷, as well as in the reported significantly increased overall amount of the ITC Fund (for the latter, see Figure 1).

³⁶ i.e. third highest perimeter country fee was 0.8 EUR/MWh in 2019, 2012 and 2011, whilst second highest perimeter fee was 1.2 EUR/MWh in 2022.

³⁷ 15.4 TWh in 2020, 20.4 TWh in 2021, 10.9 TWh in 2022, 5.5 TWh in 2023

Figure 5: Shares of contributions to the ITC fund between 2011 and 2023



(71) Based on the review of the ITC Agreement and the final dataset submitted by ENTSO-E, ACER is able to confirm that the ITC fund contribution amounts were derived according to the requirements of points 6 and 7 of Annex Part A of the Regulation.

5.2. Compensations from the ITC fund

(72) Under the Regulation, the ITC Parties should receive compensation for losses incurred due to hosting cross-border flows and for making their infrastructure available to host these flows. The key input for the determination of the compensation amounts are the transits. More information on the transit consideration is provided in section and on the compensations in sections 6.2.1 and 6.2.2 of this report.

5.2.1. Transit and its reduction

(73) Point 1.6 of Annex Part A of the Regulation requires that transit of electricity is calculated by taking the lower of the absolute amount of imports and the absolute amount of exports between national transmission systems. In addition, for the purpose of calculating transits, the amount of imports and exports at each interconnection between the ITC Parties must be reduced in proportion to the share of capacity allocated in a manner which is not compatible with the congestion management methods as initially set out in Point 2 of Annex I of Regulation (EC) No 714/2009³⁸ and required according to Regulation (EU) 2019/943. Ultimately, these reductions lead to decreased financial net positions of the concerned ITC Parties.

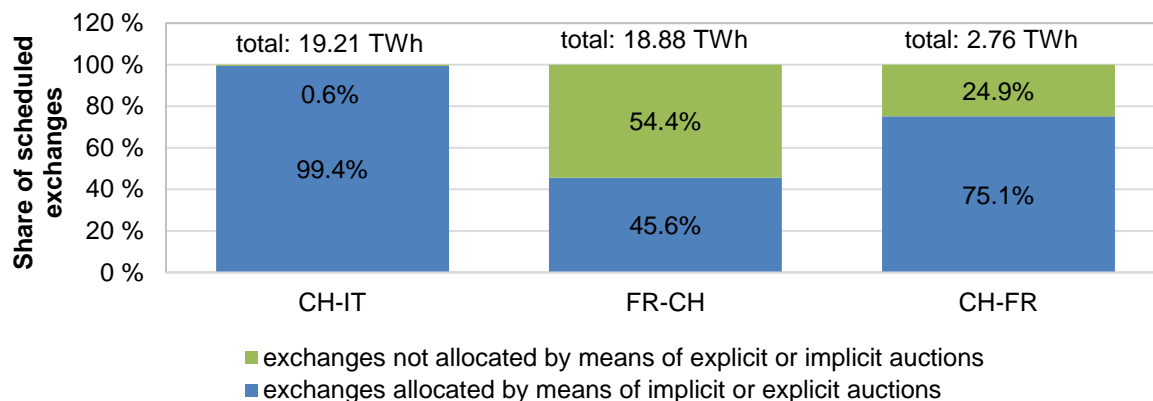
(74) ACER notes that ENTSO-E took the following steps in line with the definition in the Regulation related to transit reductions:

- The affected ITC Parties indicated, for each concerned border, the overall exports and imports, as well as the schedules allocated in a manner compatible with the congestion management guidelines;
- The ITC Data Administrators translated this information into the amount by which the relevant transit needs to be reduced;
- The reduced transit represented the basis for calculating the compensation amounts relating to both the infrastructure and the losses parts of the ITC Fund.

³⁸ 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'.

- (75) Table 5 in the Annex provides a summary of the transits through each ITC Party’s network before and after such reductions. The following borders were affected by the reduced transits in 2023 due to existence of long-term priority contracts:
- the French-Swiss border (in both directions),
 - the Swiss-Italian border (in the direction towards Italy),
 - the Austrian-Swiss border (in the direction towards Switzerland).
- (76) Based on the information provided by ENTSO-E, for the French-Swiss border (in direction towards Switzerland), capacity not allocated in a manner compatible with congestion management guidelines remained the same in 2023 as in 2022, 2021 and in 2020³⁹. In the direction towards France, capacity not allocated in a manner compliant with congestion management guidelines was 1100 MW in winter and 461 MW in summer.
- (77) For the Swiss-Italian border (in the direction towards Italy) the capacity allocated in a manner not compatible with the congestion management guidelines was 125 MW in both winter and summer, thereby reflecting the same amount as in 2022, when capacity further decreased compared to the amounts in previous years⁴⁰.
- (78) On the Austrian-Swiss border, 12 MW of capacity was allocated in a manner not compatible with the congestion management guidelines.
- (79) Shares of scheduled exchanges in 2023 that were allocated in a manner compatible or not compatible with the congestion management guidelines are presented in Figure 6. ACER notes that on each of the concerned borders the relative share of exchanges not allocated by means of implicit and explicit auctions increased compared to 2022⁴¹.
- (80) In absolute amounts, such exchanges decreased compared to last year, except on the Swiss-French border in the direction towards Switzerland.⁴²

Figure 6: Shares of scheduled exchanges according to the manner of their allocation for the three borders affected by reduced transits in 2023



- (81) Figure 7 provides a comparison of transits before and after reduction in the period between 2011 and 2023. ACER notes that in 2023, the amount of transits before reduction reached

³⁹ In winter, the LTC capacity a maximum of 2015 MW, while in summer the LTC capacity a maximum of 1857 MW.

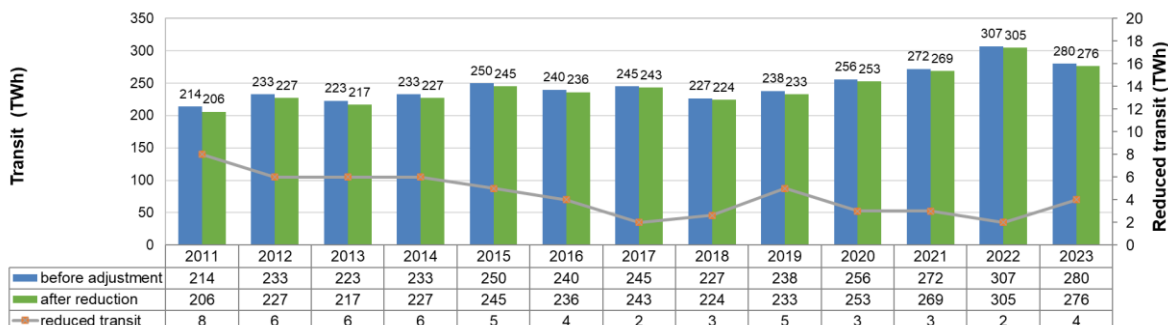
⁴⁰ In winter, the LTC capacity a maximum of 325 MW and changed from 9 July 2022 to 125 MW, while in summer, the LTC capacity a maximum of 325 MW and changed from 9 July 2022 to 125 MW.

⁴¹ CH-IT (from 0.3% to 0.6%), FR-CH (from 41.1% to 54.4%), CH-FR (from 17.3% to 24.9%).

⁴² CH-IT (from 19.85 TWh to 19.21 TWh), FR-CH (from 18.09 TWh to 18.88 TWh), CH-FR (from 6.01 TWh to 2.76 TWh).

280 TWh whilst the amount of transits after reduction reached 276 TWh, thereby noting a reduction in transit volumes since 2022⁴³ to a level similar to the one in 2021.

Figure 7: Amounts of transits before and after reduction between 2011 and 2023 (all values are rounded)



5.2.2. Compensation for transmission losses

(82) The key steps for calculating the amount of compensation received by each ITC Party for the transmission losses incurred by carrying cross-border flows of electricity are defined under Point 4 of Annex Part A of the Regulation. They are summarised below:

- 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.
- 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.

5.2.2.1. Volume of losses

(83) ENTSO-E sets out the detailed method for the calculation of the volume of losses in the ITC Agreement.

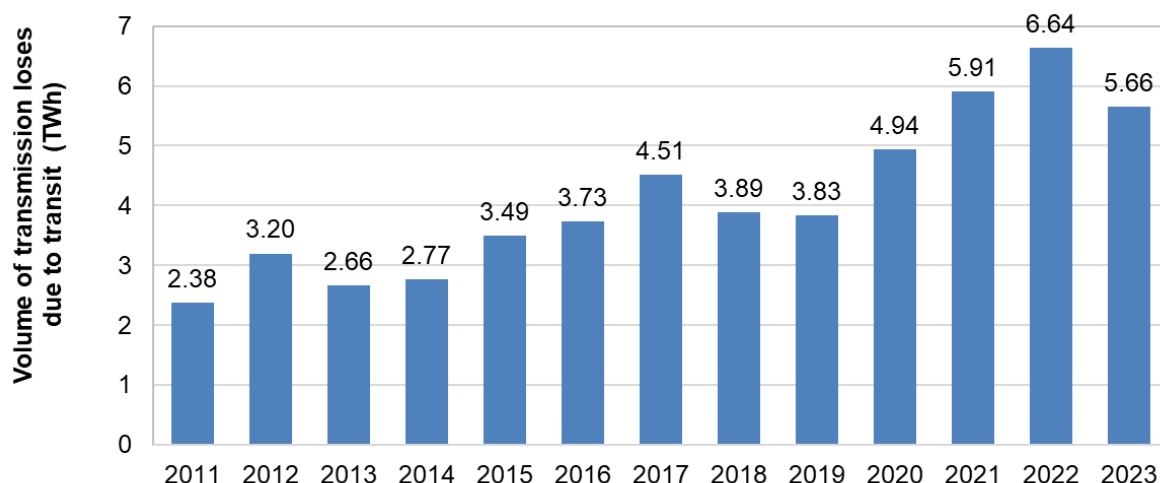
(84) The Regulation requires ENTSO-E to publish the calculation of the volume of losses and its method. ACER notes that on 5 November, ENTSO-E published the calculation method and the results for 2023⁴⁴.

(85) For each ITC party, Table 6 in the Annex provides a summary of the volume of annual losses due to transits, the respective values of losses and the compensation received from the ITC Fund in 2022 and 2023. Further on, the evolution of the overall volume of transmission losses due to transits is presented in Figure 8.

⁴³ In 2022, ACER noted that the amount of transits before reduction reached 308 TWh and the amount of transits after reduction reached 305 TWh in 2022, which are the highest transit volumes observed since the first implementation of the ITC mechanism in 2011.

⁴⁴ ENTSO-E ITC Transit Losses Data Report 2023, https://eepublicdownloads.azureedge.net/clean-documents/mc-documents/ITC_Transit_Losses_Data/entso-e_ITC_transit_losses_data_report_2023_241108.pdf.

Figure 8: Volume of transmission losses due to transits between 2011 and 2023



- (86) ACER notes that for the first time in four years, the volume of transmission losses due to transits decreased by 14.8%, from 6.64 TWh in 2022 down to 5.66 TWh in 2023. However, compared to its amount in 2018, the volume of transmission losses increased overall by 46% until 2023. As explained by ENTSO-E, the recent decrease is largely driven by a decrease of flows observed in France and Germany.
- (87) This 14.8% decrease of losses due to transits compared to the previous year happened in parallel to a 165% increase in the volume-weighted average value of losses, whilst the losses component to the ITC fund in 2023 increased by 126% and reached its highest ever value of 1.1406 billion EUR.
- (88) In its previous monitoring reports on the implementation of the ITC mechanism and in the assessment provided in Sections 1–3 of ACER’s Recommendation No 01/2023 on the Treatment of Losses for the Purpose of the ITC Mechanism⁴⁵, ACER identified some shortcomings in the implementation of the ITC mechanism regarding the use of snapshots for calculating the volume of losses and provided recommendations to overcome them.
- (89) According to ACER’s Recommendation No 01/2023, as soon as possible, ideally for the implementation of the ITC mechanism in 2023, but not later than for the implementation of the ITC mechanism in 2024, it is recommended that ENTSO-E and TSOs amend the ITC agreement by increasing the number of snapshots used for the estimation of the volume of losses due to transits for the purpose of the ITC mechanism, to an extent which ensures representativeness of the snapshots, aiming - as swiftly as possible – ideally at an hourly resolution.
- (90) ENTSO-E provided their response on the abovementioned ACER recommendation addressing the number of snapshots by delivering a document ‘*Moving towards higher granularity snapshots*’ that includes a depiction of the current usage of six snapshots per month, and of two additional scenarios considered⁴⁶. Hypothesis that increased number of snapshots would minimise the impact of disturbances or other factors affecting the system state by reducing the weight of each was used. The results of the analysis confirmed that increasing the number of snapshots would result in higher accuracy of the transit volumes calculations, therefore in a better representation of monthly transit losses. On the other hand, ENTSO-E found that increased number of snapshots would also result in an

⁴⁵

https://www.acer.europa.eu/sites/default/files/documents/Recommendations/ACER_Recommendation_01_2023_on_the_Treatment_of_Losses_for_the_Purpose_of_the_ITC_Mechanism.pdf

⁴⁶ One additional scenario considered 12 snapshots per month and the other 6 snapshots per week.

increased human effort⁴⁷, higher costs due to a need for new or upgraded IT tools and in an increased potential for more errors due to more snapshots. ENTSO-E also reports on an uncertainty related to concrete benefits of an increased number of snapshots, explaining the correlation between transit losses and physical transits did not increase in the scenarios considered. ENTSO-E estimated these drawbacks and uncertainties would justify delaying the implementation of higher snapshot granularity. Finally, ENTSO-E achieved no consensus to increase the number of snapshots for the implementation of the ITC mechanism in 2023 and the existing practice remained.

- (91) ENTSO-E concludes its report '*Moving towards higher granularity snapshots*' by providing its views on the open issues and on the recommended way forward, claiming it remains unclear whether the proposed increase of the number of snapshots in the short-term would fit in the wider and longer-term picture. It also finds it sensible that a transition to new data format standards such as 'common grid model exchange standard'⁴⁸ would be a prerequisite for a substantial increase in snapshot granularity⁴⁹.
- (92) ACER remarks that ENTSO-E made extensive efforts to respond to its recommendation on increasing the number of snapshots used for the estimation of the volume of losses due to transits and acknowledges the related difficulties and uncertainties reported by ENTSO-E. However, ACER finds that the number of snapshots has not been increased in the ITC mechanism 2023. ACER re-emphasises the importance of an accurate calculation method for the estimation of the volume of losses directly impacting the size of the ITC losses fund and reiterates its recommendation to ENTSO-E and TSOs to amend the ITC agreement by increasing the number of snapshots used for the estimation of the volume of losses due to transits for the purpose of the ITC mechanism, to an extent which ensures representativeness of the snapshots, aiming – as swiftly as possible – ideally at an hourly resolution⁵⁰.

5.2.2.2. Value of losses⁵¹

- (93) 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 NRA 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.
- (94) In its previous ITC monitoring reports, ACER already described that different prices for different energy products in different markets and from auctions and bilateral contracts result in a broad range of values of losses for the EU ITC Parties⁵². The summary of the losses values used for the purpose of the implementation of the ITC mechanism between 2011 and 2023 is provided in Table 8 in Annex.
- (95) Figure 9 presents average values of losses, weighted by their volume, for all ITC Parties between 2011 and 2023. ACER notes that in line with its previous expectations, due to the unprecedented heights of the electricity wholesale prices in 2021 and significant volatility

⁴⁷ ENTSO-E assessed that only doubling or quadrupling the number of snapshots would significantly impact TSOs' human efforts, even for TSOs with an automatized process.

⁴⁸ ENTSO-E also mentions that other proposals could also be considered in parallel, for instance moving to scenario-based timestamps as an alternative to the current status quo or elaborating fallback process where there are no available snapshots.

⁴⁹ ENTSO-E explained that substantial increase of the number of snapshots would require a deeper review of the data formats, computation tools and methods and the underlying process for the generation, verification, correction and merging of individual grid models.

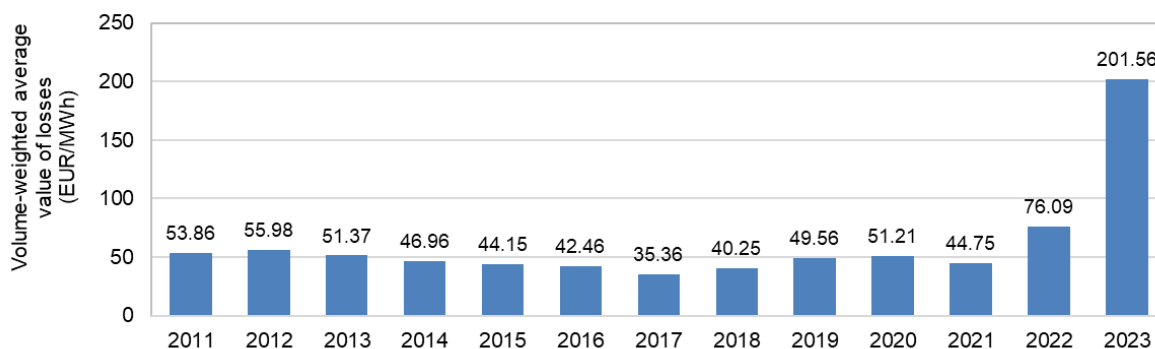
⁵⁰ ACER Recommendation No 01/2023 on the treatment of losses for the purpose of the ITC mechanism

⁵¹ The values reported in this section are the losses' values used for the implementation of the ITC mechanism, which are typically calculated or estimated ex-ante (i.e. at the end of the previous year based on forecasted market prices) and they may not be the same as the 'actual' losses' values, which are typically registered ex-post (i.e. using the actual costs/market prices).

⁵² e.g. ACER Report on the implementation of the ITC mechanism in 2020, p. 14-16

within that year, the value of losses indeed significantly increased for the follow-up years 2022 and 2023. In 2023, the volume-weighted average value of losses of all ITC parties increased by 165% up to 201.56 EUR/MWh compared to 2022, when the value originally reached a new record at 76.09 EUR/MWh⁵³. This reiterated enormous increase additionally means that the volume-weighted average value of losses is almost six times as high as the lowest volume-weighted average value of 35.36 EUR/MWh as recorded in 2017.

Figure 9: Volume-weighted average value of losses for all ITC Parties between 2011 and 2023



(96) Table 1 and Figure 10 provide an overview of the values of losses used for the ITC mechanism in the period between 2017 and 2022 differentiated between EU and non-EU ITC Parties. ACER notes that in 2023, the weighted average value of losses significantly increased for both the EU ITC Parties and the non-EU ITC Parties compared to 2022 (196% increase for EU ITC Parties and 86% increase for the non-EU ITC Parties)⁵⁴. While the weighted average value of losses had been slightly higher for the non-EU ITC Parties compared to the EU ITC Parties in each year since 2011, the results were almost twice as high for the non-EU ITC Parties compared to the EU ITC Parties in 2022. In 2023 the difference decreased to 195.70 EUR/MWh for EU ITC Parties vs. 239.31 EUR/MWh for non-EU ITC Parties⁵⁵. When comparing the simple average value of losses for the EU ITC Parties (238.03 EUR/MWh) and the non-EU ITC Parties (182.45 EUR/MWh) in 2023, the difference is similar as for the weighed-average values.

(97) ACER notes that the difference between the minimum and the maximum values of the losses in 2023 significantly increased both among the EU ITC Parties and among the non-EU ITC Parties, showing a much greater volatility of the value of losses across the countries than ever before. The highest losses value in 2023 was applied for Slovakia (400.68 EUR/MWh) and the lowest for Bosnia (56.21 EUR/MWh). ACER calls for further analysis if this high discrepancy causes unjustified price differences for consumers on a national level.

Table 1: Comparison of losses values in the EU and the non-EU ITC Parties between 2017 and 2023⁵⁶

	Average value weighted by the volume of losses (EUR/MWh)	Average value weighted by the volume of losses (EUR/MWh)	Maximum value (EUR/MWh)	Maximum value (EUR/MWh)	Minimum value (EUR/MWh)	Minimum value (EUR/MWh)

⁵³ ACER also notes that the straight average value is even higher, amounting to up to 222.15 EUR/MWh in 2023 compared to 87.31 EUR/MWh in 2022.

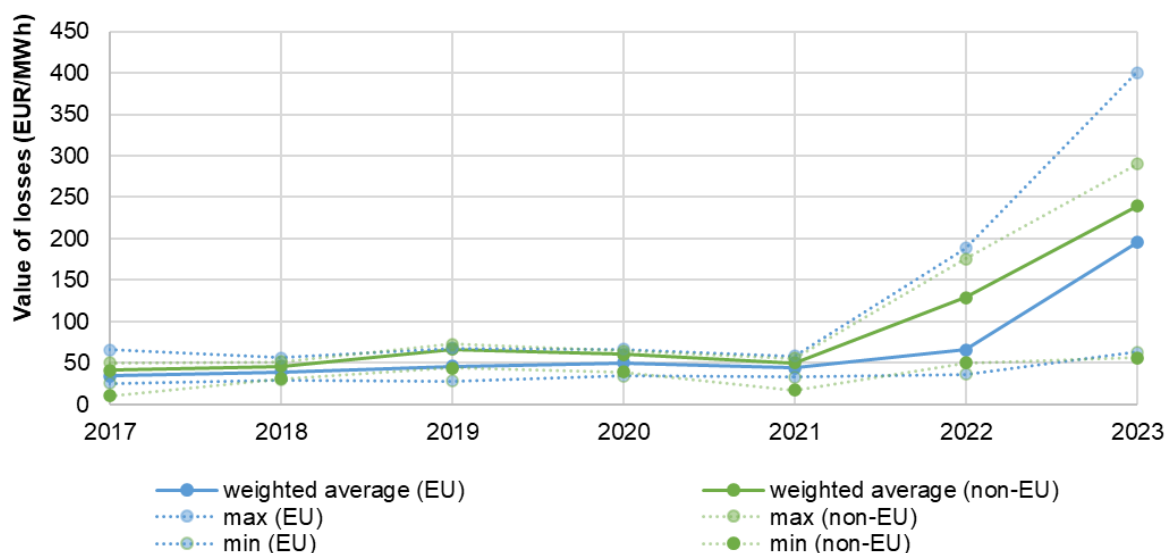
⁵⁴ In 2022, the weighted average value of losses significantly increased for both the EU ITC Parties and the non-EU ITC Parties compared to 2021 (i.e. 44% increase for EU ITC Parties and 131% increase for the non-EU ITC Parties).

⁵⁵ Compared to 2022, the difference reached 66.13 EUR/MWh for EU ITC Parties and 128.72 EUR/MWh for non-EU ITC Parties.

⁵⁶ Since 2020, Great Britain and Northern Ireland are reported within the non-EU ITC Parties, while for the previous years, they are reported within the EU ITC Parties.

	EU ITC Parties	non-EU ITC Parties	EU ITC Parties	non-EU ITC Parties	EU ITC Parties	non-EU ITC Parties
2017	34.67	41.08	66.08 (GB)	50 (MK)	25.48 (LU)	10.35 (AL)
2018	39.28	45.95	56.13 (IT)	51.32 (BA)	29.62 (SE)	30.76 (NO)
2019	46.11	66.55	68.08 (GB)	72.72 (CH)	28.45 (SE)	44.00 (KS)
2020	49.93	60.39	66.6 (GR)	64.22 (BA)	34.62 (FI)	39.22 (NO)
2021	44.06	49.84	58.4 (BG)	55.93 (BA)	33.21 (SE)	17.43 (NO)
2022	66.13	128.72	188.5 (GR)	175.75 (MK)	36.48 (FI)	50 (AL)
2023	195.70	239.31	400.68 (SK)	318.49 (GB)	63.00 (FI)	56.21 (BA)

Figure 10: Evolution of the value of losses (average weighted by the volume of losses, minimum and maximum values) between 2017 and 2023

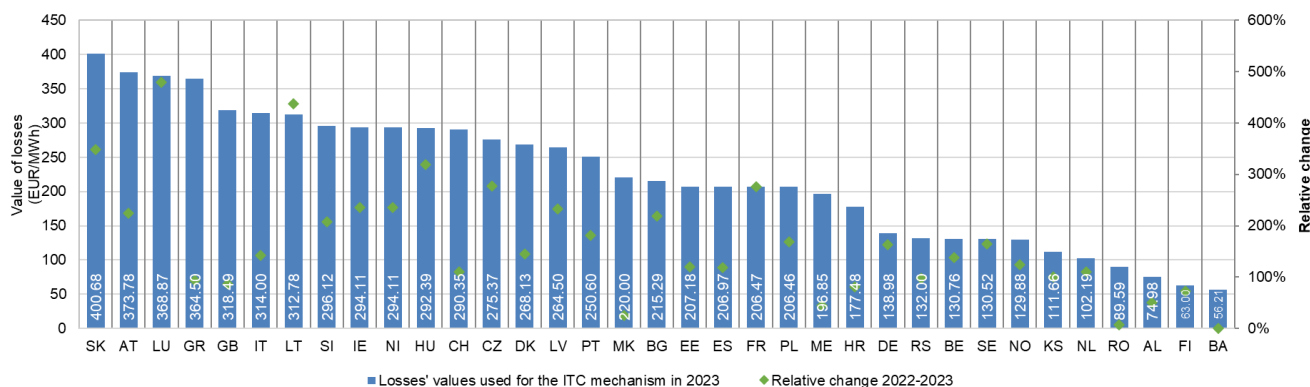


- (98) Values of losses of individual ITC Parties in each year are shown in Table 8 in the Annex, while Figure 11 shows the value of losses in each ITC Party in 2023 and the relative change compared to 2022. ACER notes that Bosnia and Herzegovina provided the same value of losses in 2023 as in 2022, while the remaining 34 ITC Parties all reported increased values. Out of those, in case of twelve ITC Parties (AT, BG, CZ, FR, HU, IE, LV, LT, LU, NI, SK, SI) the value of losses in 2023 was more than three times as high as in 2022. Among those, two ITC Parties (SK, HU) reported more than four-fold increase and two ITC Parties (LT, LU) more than five-fold increase in comparison to 2022⁵⁷.
- (99) The abovementioned significant increases of the value of losses in the vast majority of the ITC Parties in 2023 compared to the previous year is largely explained by unprecedented

⁵⁷ In comparison, in 2022, three countries (BE, NL, AL) provided the same or marginally lower values in 2022 compared to 2021, while the remaining 32 ITC Parties reported increased values. Out of those, five ITC Parties (GR, NO, GB, IT, MK) reported values of losses three times higher than in 2021. Apart from the three-fold increase for five of them, no ITC Party reported drastic changes for their value of losses amounts.

heights of the electricity wholesale prices in 2021⁵⁸ and 2022⁵⁹ as power exchange prices are the most frequently used as a basis to value the losses⁶⁰ and that ITC Parties, following the procedure laid down in the ITC Agreement, determine and provide the value of losses for the ITC mechanism on a yearly basis in advance, meaning at the end of each year for the next year.

Figure 11: value of losses in each ITC Party in 2023 and the relative change compared to 2022



(100) ACER performed a comparison between the losses' values used for the purpose of the ITC mechanism in 2023, and the 'actual' value of losses, which is typically registered ex-post (i.e. using the actual costs/market prices) for the EU ITC Parties. As shown in Table 9 in the Annex, for all but four EU ITC Parties (i.e. AT, DE, NL, RO) for which the data were available, the value of losses used for the ITC mechanism 2023 was higher than the actual value. For most of the ITC Parties, the difference was about 2-fold, but for three almost 3-fold (i.e. DK, GR, PT) and for one ITC Party more than 4-fold (i.e. LT). For some cases (i.e. FI, FR, HU, IE, PL), the difference was below 1.5-fold. For Luxemborug, the difference between the two values was below 1 EUR/MWh.

(101) ACER notes that had the actual value of losses been used for the ITC mechanism (where such data was available), rather than the calculated/estimated ones, this would have led to approximately 12% decrease of the overall ITC compensation for losses in 2023 (i.e. 1,002 billion EUR instead of 1,141 billion EUR).

(102) ACER's latest detailed review of the criteria for the valuation of losses at national level based on the information on the criteria for valuing losses received from all NRAs of the EU ITC Parties at that time, as well as from the NRA of Norway is provided in section 3 of ACER's Recommendation No 01/2023 on the Treatment of Losses for the Purpose of the ITC Mechanism⁶¹. An updated country-specific information on the valuation of losses is provided in Table 10 in Annex 1 to this Report. Updates compared to the information provided for the previous report were reported for the following countries:

- In Croatia, a new methodology was introduced in 2022 and was first applied in 2024 for 2025 and onwards, which provides formulas that are used in year Y as a basis for the price

⁵⁸ACER/CEER Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2020 Snapshot November 2021, p.2
<https://acer.europa.eu/en/Electricity/Market%20monitoring/Documents/MMR%202020%20Summary%20-%20Final.pdf>

⁵⁹

⁶⁰Cf. ACER Recommendation No 01/2023, p.7.
https://www.acer.europa.eu/sites/default/files/documents/Recommendations/ACER_Recommendation_01_2023_on_the_Treatment_of_Losses_for_the_Purpose_of_the_ITC_Mechanism.pdf

⁶¹ ACER Recommendation No 01/2023 on the Treatment of Losses for the Purpose of the ITC Mechanism
https://www.acer.europa.eu/sites/default/files/documents/Recommendations/ACER_Recommendation_01_2023_on_the_Treatment_of_Losses_for_the_Purpose_of_the_ITC_Mechanism.pdf

of anticipated costs and anticipated unit price for losses for the year Y+1. EEX CROPEX future price are to be used as an input.

- In Germany, the fixed period to calculate the weighted average of the base and peak future prices was changed.
- In Greece, since 2021 (for the calculation of the value of losses for the year 2022), the basis for the calculation of the value of losses for the purpose of the ITC mechanism are no longer the weighted average day-ahead market price and imbalance settlement, but the annual baseload forward product price.
- In the Netherlands, the value of losses is no longer determined based on the procurement costs in the reference year, but on the losses costs and volumes included in the tariff decision 2023.
- In Slovenia, additionally to volumes already purchased in advance on a long-term basis through tenders, the final price for losses is determined by volumes purchased on the short-term market.

(103) In 2023, ACER identified some shortcomings in the implementation of the ITC mechanism regarding the treatment of losses and provided recommendations on how and when/how often the values of losses should be determined for the purpose of the ITC mechanism. In this regard, ACER addressed the following recommendations to ENTSO-E, TSOs and NRAs:

- a. From the implementation of the ITC mechanism in 2023 or, in case such timeline is not feasible for duly justified reasons, from implementation of the ITC mechanism in 2024, ENTSO-E and TSOs should amend the ITC agreement by applying an ex-post reconciliation of the costs of losses due to transits, to reflect the costs actually incurred and audited/approved by NRAs, where relevant, in each ITC Party country⁶².
- b. At least until an ex-post reconciliation of the costs of losses due to transits is applied in the ITC mechanism, where procurement of energy to cover losses is done from the power exchange markets and the valuation of losses (including for national purposes) is market based, TSOs should determine the relevant components of the value of losses for the purpose of the ITC mechanism by considering liquid forward-market prices instead of historical prices⁶³.

(104) In relation to ACER's recommendation on the ex-post reconciliation of the costs of losses, ENTSO-E informed ACER that it had considered various alternative options for the valuation of losses of ITC Parties, weighing them against several criteria⁶⁴. ENTSO-E's preferred option relies on monthly ex-post settlements based on a mix of forward and spot prices for which the weights would be the same for all ITC Parties and thus would not require reconciliation at the end of the year⁶⁵. This option would require introducing a common methodology for setting the losses costs which would require reopening the ITC Regulation.

⁶² The ITC settlement would therefore consist of an initial process, in which the ex-ante set values of losses are provided (e.g. for the purpose of estimating the ITC economic impacts and their implications on national tariffs), and a final settlement (ex-post reconciliation of the values of losses, subject to ENTSO-E internal audits) as described above.

⁶³ At the time of calculation, the most recent forward price should be taken into account to the extent feasible. In absence of a liquid forward-market, price evolution in non-liquid markets complemented with prices of long-term transmission rights between the nonliquid market and a liquid market may be considered.

⁶⁴ Fairness, non-discrimination between ITC Parties and perimeter countries

⁶⁵ ENTSO-E explained that in this case the number of settlements would remain stable, while the Audit would be relieved of lengthy discussions and exchanges due to different procurement strategies. However, this would require a compromise between ITC Parties due to assumed losses costs not exactly reflecting the real national occurred losses costs basis. Furthermore, the perimeter fee would have to be calculated ex-ante, only using forward prices, while settlements would be ex-post, using a mix of forward and spot prices. This would introduce a minor asymmetry between ITC parties and perimeter countries.

- (105) ACER welcomes ENTSO-E's continued efforts on analysing potential improvements to the ITC mechanism and an interest in future interactions with ACER and NRAs on the topics and challenges related to the valuation of losses for the purpose of the ITC mechanism.
- (106) ACER finds that ex-post reconciliation of the costs of losses due to transits has not been applied to the ITC mechanism in 2023 and reiterates its view that an ex-post reconciliation of the costs of losses due to transits should be applied to the ITC mechanism in order to reflect the costs actually incurred and audited/approved by NRAs, where relevant, in each ITC Party country⁶⁶.
- (107) In relation to ACER's recommendation to consider liquid forward-market prices for the determination of the relevant components of the value of losses for the purpose of the ITC mechanism⁶⁷, based on information provided by NRAs, ACER welcomes that in Croatia⁶⁸ and Greece⁶⁹ the use of forward prices to determine the costs of losses has been introduced in recent years.
- (108) ACER repeats its recommendation that at least until an ex-post reconciliation of the costs of losses due to transits is applied in the ITC mechanism, where procurement of energy to cover losses is done from the power exchange markets and the valuation of losses (including for national purposes) is market based, TSOs should determine the relevant components of the value of losses for the purpose of the ITC mechanism by considering liquid forward-market prices instead of historical prices⁷⁰.
- (109) In 2023, ENTSO-E approved the Guidance document on the Audit Procedure and an accompanying Methodology for Case (ii) countries for identifying and estimating the value of losses used for the purpose of the ITC mechanism for countries which do not fall under point 4.4, paragraph 1 of the ITC Regulation (i.e. where the value of losses incurred by a national transmission system as a result of the cross-border flow of electricity is not calculated on the same basis as the one approved by the NRA in respect of all losses on the national transmission systems). According to the information provided by ENTSO-E, both documents were applied to the ITC mechanism 2023 for the first time. More details related to an updated Audit procedure is provided in chapter 3.1 of this Report.

5.2.3. Compensation for infrastructure availability for cross-border flows

- (110) The key parameters for calculating the amount of compensation an ITC Party should receive for provision of infrastructure to carry cross-border flows are defined in Point 5 of Annex Part A of the Regulation. They are summarised below:
- The annual cross-border infrastructure sum is set at 100 million EUR until determined otherwise by the European Commission.
 - 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 all 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 all ITC Parties' transits. In apportioning the

⁶⁶ ACER Recommendation No 01/2023 on the Treatment of Losses for the Purpose of the ITC Mechanism

⁶⁷ This recommendation is valid at least until an ex-post reconciliation of the costs of losses due to transits is applied and is relevant where procurement of energy to cover losses is done from the power exchange markets and the valuation of losses (including for national purposes) is market based.

⁶⁸ A new methodology provides formulas to be used as a basis for determination of the price of anticipated costs and unit price for losses and future prices from the market are to be used as an input.

⁶⁹ The basis for the calculation of the value of losses for the purpose of the ITC mechanism are no longer the weighted average day-ahead market price and imbalance settlement, but the annual baseload forward product price.

⁷⁰ At the time of calculation, the most recent forward price should be taken into account to the extent feasible. In absence of a liquid forward-market, price evolution in non-liquid markets complemented with prices of long-term transmission rights between the nonliquid market and a liquid market may be considered.

infrastructure compensation amount for an ITC Party, the Transit Factor has a weighting of 75% and the Load Factor a weighting of 25%.

- (111) 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.
- (112) Table 7 in the Annex provides a summary of the annual amount each ITC Party received in 2023 based on their transit factors and load factors.

Annex 1: ITC Party specific information

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 2: Overview of compensations and contributions to the ITC fund in 2023

ITC Party	Compensation (million EUR)		Contribution on behalf of Perimeter countries (million EUR)		Contribution from ITC Party (million EUR)		Final net position (million EUR)
	losses	infrastructure	losses	infrastructure	losses	infrastructure	
Albania	1.042	0.460	0.000	0.000	5.363	0.434	-4.294
Austria	75.003	6.864	0.000	0.000	28.643	2.319	50.905
Belgium	24.785	4.873	0.000	0.000	26.525	2.147	0.986
Bosnia	1.949	1.398	0.000	0.000	11.114	0.900	-8.667
Bulgaria	6.173	1.135	1.72	1.72	10.226	0.828	-7.181
Croatia	15.677	2.921	0.000	0.000	9.275	0.751	8.572
Czech Republic	58.298	4.712	0.000	0.000	28.504	2.308	32.198
Denmark	108.771	5.846	0.000	0.000	25.583	2.071	86.963
Estonia	15.190	1.791	0.000	0.000	8.229	0.666	8.086
Finland	18.290	2.030	0.000	0.000	19.203	1.555	-0.438
France	158.387	5.956	0.000	0.000	149.132	12.074	3.136
Germany	143.266	12.830	0.000	0.000	131.708	10.663	13.724
Great Britain	53.539	2.003	0.000	0.000	76.679	6.208	-27.346
Greece	12.345	0.573	0.67	0.67	16.637	1.347	-6.413
Hungary	27.261	2.927	0.000	0.000	27.344	2.214	0.630
Ireland	0.310	0.024	0.000	0.000	10.253	0.830	-10.748
Italy	10.810	0.565	0.000	0.000	136.480	11.050	-136.154
Kosovo	1.628	0.831	0.000	0.000	4.104	0.332	-1.978
Latvia	7.405	0.805	0.000	0.000	6.925	0.561	0.724
Lithuania	26.855	1.573	0.000	0.000	15.255	1.235	11.937
Luxembourg	0.229	0.017	0.000	0.000	9.206	0.745	-9.705
Montenegro	5.087	2.900	0.000	0.000	3.421	0.277	4.289
Netherlands	24.541	5.380	0.000	0.000	36.670	2.969	-9.718
North Macedonia	1.953	1.363	0.000	0.000	2.388	0.193	0.735
Northern Ireland	5.396	0.444	0.000	0.000	4.430	0.359	1.051
Norway	11.073	2.285	0.000	0.000	72.893	5.901	-65.437
Poland	63.397	2.745	0.17	0.17	20.764	1.681	43.354
Portugal	2.556	0.394	0.000	0.000	37.284	3.019	-37.352
Romania	0.532	0.827	0.82	0.82	12.338	0.999	-13.616
Serbia	10.975	1.663	0.000	0.000	7.103	0.575	4.960
Slovakia	37.983	4.448	1.06	1.06	7.504	0.608	32.199
Slovenia	30.383	3.764	0.000	0.000	8.232	0.666	25.249
Spain	41.189	2.568	3.89	3.89	44.026	3.564	-11.606
Sweden	49.065	3.355	0.000	0.000	75.452	6.109	-29.141
Switzerland	89.297	7.731	0.000	0.000	43.420	3.515	50.092
TOTAL	1,140.638	100.000	8.33	8.33	1,132.312	91.673	0.000

Table 3: Final net positions of ITC Parties between 2011 and 2023

ITC party	Final net position (million EUR)												
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Albania	-2.176	-2.320	-1.518	-1.607	-1.364	-1.239	-1.878	-1.624	-1.271	-1.534	-2.273	-2.002	-4.294
Austria	11.144	17.915	11.263	6.223	7.136	5.526	9.817	7.650	16.176	12.584	4.531	13.873	50.905
Belgium	2.566	-3.077	-1.604	-5.964	-9.933	1.989	0.592	-5.768	3.030	3.507	2.856	1.254	0.986
Bosnia	3.398	3.444	1.018	0.897	2.329	0.375	1.132	0.488	-0.148	-0.696	-1.177	-2.062	-8.667
Bulgaria	-4.265	-2.815	-0.713	0.002	-2.691	0.907	0.137	-2.333	-1.500	-1.062	-5.843	-14.639	-7.181
Croatia	2.147	0.110	5.264	2.359	0.974	2.556	-0.472	4.604	-0.294	-0.767	2.226	1.744	8.572
Czech Republic	-5.702	-4.941	-4.544	0.841	7.842	6.447	5.946	8.785	12.291	20.456	7.975	6.676	32.198
Denmark	4.600	13.108	12.675	11.154	8.674	5.411	9.356	7.640	9.207	9.878	14.204	26.809	86.963
Estonia	-0.532	1.389	1.853	5.471	8.378	3.854	2.813	3.701	4.759	3.764	7.435	19.821	8.086
Finland	0.769	-9.125	-5.713	-1.262	3.545	-2.886	-8.054	-5.116	-4.953	2.981	4.693	-0.860	-0.438
France	-25.685	-22.123	-19.032	-29.079	-27.331	2.070	-6.880	-20.893	-21.004	-19.808	-15.255	12.505	3.136
Germany	20.974	26.786	13.207	0.912	-6.101	-12.475	-2.156	-8.435	-9.168	6.791	29.786	11.627	13.724
Great Britain	-6.794	-11.534	-12.706	-13.274	-14.063	-10.028	-10.344	-7.506	-8.875	-12.489	-10.209	21.602	-27.346
Greece	0.317	4.693	0.612	-3.634	-3.065	-4.637	-0.686	0.278	-4.676	-6.323	-0.948	-1.903	-6.413
Hungary	1.765	2.507	-4.412	-3.910	-3.938	-4.034	-2.745	-5.058	-2.753	-3.366	-4.212	-6.502	0.630
Ireland	-0.661	-0.449	-1.217	-0.934	-0.932	-1.167	-1.413	-1.410	-1.818	-1.681	-2.518	-3.139	-10.748
Italy	-30.544	-33.931	-29.760	-24.035	-29.726	-25.559	-24.901	-25.849	-22.122	-27.355	-36.336	-65.052	-136.154
Kosovo	-	-	-	-	-	0.225	0.069	1.036	0.499	-0.028	0.169	-0.444	-1.978
Latvia	0.764	3.185	3.676	2.995	3.548	3.126	2.798	2.966	2.383	0.100	-1.228	0.345	0.724
Lithuania	-4.969	-5.447	-4.359	-3.719	-3.371	1.454	-0.397	-1.858	-2.642	-0.124	-0.169	-3.543	11.937
Luxembourg	-2.846	-3.264	-2.849	-2.309	-2.551	-2.905	-2.783	-2.405	-2.769	-3.398	-3.418	-5.738	-9.705
Montenegro	0.425	0.784	1.032	2.127	0.672	0.504	0.419	0.791	2.128	4.270	2.484	3.659	4.289
Netherlands	-0.184	-4.540	-1.799	4.559	11.181	4.526	6.230	10.030	7.959	10.576	9.237	-1.084	-9.718
North Macedonia	-0.833	-1.031	-0.695	0.395	0.803	1.096	0.218	0.349	0.571	-0.192	-0.652	0.862	0.735
Northern Ireland	-0.305	-0.896	-0.818	-0.664	-0.619	-0.539	-0.729	-0.315	-0.587	-0.718	-0.109	-1.418	1.051
Norway	-10.870	-13.643	-9.100	-6.274	-5.813	-12.794	-11.978	-10.358	-10.378	-20.503	-18.586	-39.328	-65.437
Poland	2.635	5.013	2.853	10.106	15.532	8.342	5.775	3.381	5.072	8.226	14.258	30.749	43.354
Portugal	-2.692	-3.281	-2.102	-0.292	0.255	-2.894	-3.476	-2.331	-6.321	-9.330	-9.354	-17.983	-37.352
Romania	-2.282	-3.329	-1.737	-4.257	-4.352	-3.725	-3.762	-1.303	-4.345	-2.331	-3.812	-5.899	-13.616
Serbia	3.297	2.015	1.461	2.012	3.740	2.221	2.473	3.785	1.100	1.645	2.158	1.611	4.960
Slovakia	6.994	11.415	6.985	7.722	7.737	5.298	6.573	4.218	8.035	11.643	9.545	11.550	32.199
Slovenia	4.130	3.808	4.023	4.624	5.919	5.186	6.612	1.360	5.597	2.164	4.255	8.414	25.249
Spain	-1.064	-5.317	-0.191	0.989	1.195	4.972	1.249	10.312	8.820	4.058	-3.847	-16.423	-11.606
Sweden	14.311	10.400	16.074	19.795	3.996	4.007	4.391	10.438	-7.205	-7.960	-5.565	-26.633	-29.141
Switzerland	22.172	24.491	22.877	18.030	22.396	14.789	16.056	20.752	25.201	17.022	9.699	41.550	50.092
TOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4: Derivation of contributions to the ITC Fund in 2023

ITC Party	Net Import (MWh)	Net Export (MWh)	Contribution to infrastructure (million EUR)		Contribution to losses (million EUR)	
			Perimeter countries	ITC Party	Perimeter countries	ITC Party
Albania	571,509	1,491,320	0.000	0.434	0.000	5.363
Austria	6,240,712	4,777,163	0.000	2.319	0.000	28.643
Belgium	6,534,218	3,668,826	0.000	2.147	0.000	26.525
Bosnia	21,809	4,253,255	0.000	0.900	0.000	11.114
Bulgaria	752,312	3,181,228	1.717	0.828	1.717	10.226
Croatia	2,904,104	663,762	0.000	0.751	0.000	9.275
Czech Republic	887,157	10,077,460	0.000	2.308	0.000	28.504
Denmark	6,629,845	3,210,863	0.000	2.071	0.000	25.583
Estonia	3,164,437	844	0.000	0.666	0.000	8.229
Finland	4,625,985	2,760,673	0.000	1.555	0.000	19.203
France	3,906,671	53,459,253	0.000	12.074	0.000	149.132
Germany	29,753,015	20,910,535	0.000	10.663	0.000	131.708
Great Britain	26,915,116	2,580,747	0.000	6.208	0.000	76.679
Greece	5,183,679	1,216,171	0.674	1.347	0.674	16.637
Hungary	9,895,051	623,023	0.000	2.214	0.000	27.344
Ireland	3,600,723	343,172	0.000	0.830	0.000	10.253
Italy	52,490,646	8,357	0.000	11.050	0.000	136.480
Kosovo	1,292,580	285,933	0.000	0.332	0.000	4.104
Latvia	1,532,157	1,131,685	0.000	0.561	0.000	6.925
Lithuania	5,867,990	249	0.000	1.235	0.000	15.255
Luxembourg	3,541,159	0	0.000	0.745	0.000	9.206
Montenegro	224,715	1,091,232	0.000	0.277	0.000	3.421
Netherlands	4,221,865	9,883,885	0.000	2.969	0.000	36.670
North Macedonia	527,602	390,860	0.000	0.193	0.000	2.388
Northern Ireland	931,432	772,584	0.000	0.359	0.000	4.430
Norway	5,698,322	22,340,926	0.000	5.901	0.000	72.893
Poland	5,876,440	2,110,750	0.171	1.681	0.171	20.764
Portugal	12,285,775	2,056,107	0.000	3.019	0.000	37.284
Romania	1,359,418	3,386,408	0.819	0.999	0.819	12.338
Serbia	298,046	2,434,043	0.000	0.575	0.000	7.103
Slovakia	247,910	2,638,736	1.060	0.608	1.060	7.504
Slovenia	830,344	2,336,130	0.000	0.666	0.000	8.232
Spain	2,382,709	14,552,390	3.886	3.564	3.886	44.026
Sweden	29,656	28,993,979	0.000	6.109	0.000	75.452
Switzerland	5,415,723	11,286,484	0.000	3.515	0.000	43.420
TOTAL	216,640,830	218,919,034	8.327	91.673	8.327	1132.312
			100.000		1140.638	

Table 5: Reduction in transits in 2023

ITC party	Transit before adjustment (MWh)	Reduction due to non-auctioned interconnection capacity (MWh)	Transit after reduction (MWh)
Albania	1,350,234	0	1,350,234
Austria	17,200,865	0	17,200,865
Belgium	13,753,289	0	13,753,289
Bosnia	3,633,150	0	3,633,150
Bulgaria	3,553,051	0	3,553,051
Croatia	7,133,136	0	7,133,136
Czech Republic	12,425,050	0	12,425,050
Denmark	13,414,512	0	13,414,512
Estonia	4,146,836	0	4,146,836
Finland	6,479,416	0	6,479,416
France	21,000,772	753,619	20,247,153
Germany	38,411,558	0	38,411,558
Great Britain	7,044,265	0	7,044,265
Greece	1,971,422	0	1,971,422
Hungary	8,127,273	0	8,127,273
Ireland	89,450	0	89,450
Italy	2,053,852	16	2,053,836
Kosovo	2,156,385	0	2,156,385
Latvia	2,083,222	0	2,083,222
Lithuania	3,979,902	0	3,979,902
Luxembourg	62,017	0	62,017
Montenegro	5,196,562	0	5,196,562
Netherlands	15,322,983	0	15,322,983
North Macedonia	3,278,775	0	3,278,775
Northern Ireland	1,329,531	0	1,329,531
Norway	7,363,197	0	7,363,197
Poland	8,887,113	0	8,887,113
Portugal	1,368,618	0	1,368,618
Romania	2,740,083	0	2,740,083
Serbia	4,879,434	0	4,879,434
Slovakia	10,286,795	0	10,286,795
Slovenia	8,283,708	0	8,283,708
Spain	8,771,656	0	8,771,656
Sweden	10,497,722	0	10,497,722
Switzerland	21,601,297	2,767,067	18,834,229
TOTAL	279,877,130	3,520,702	276,356,428

Table 6: Derivation of compensation for transmission losses in 2022 and 2023

ITC party	2022			2023		
	Impact of transits on losses volume (MWh)	Value of losses (EUR/MWh)	Compensation (million EUR)	Impact of transits on losses volume (MWh)	Value of losses (EUR/MWh)	Compensation (million EUR)
Albania	15,066	50.00	0.753	13,901	74.98	1.04
Austria	230,008	115.00	26.451	200,660	373.78	75.00
Belgium	191,556	55.02	10.539	189,546	130.76	24.79
Bosnia	28,444	56.21	1.599	34,666	56.21	1.95
Bulgaria	21,134	67.51	1.427	28,672	215.29	6.17
Croatia	80,901	98.02	7.930	88,332	177.48	15.68
Czech Republic	316,932	73.03	23.146	211,708	275.37	58.30
Denmark	319,473	109.58	35.008	405,667	268.13	108.77
Estonia	209,377	94.33	19.751	73,320	207.18	15.19
Finland	440,546	36.48	16.071	290,311	63.00	18.29
France	999,473	54.85	54.821	767,117	206.47	158.39
Germany	1,269,018	52.77	66.966	1,030,842	138.98	143.27
Great Britain	317,663	170.85	54.273	168,103	318.49	53.54
Greece	28,849	188.50	5.438	33,869	364.50	12.35
Hungary	70,707	69.76	4.933	93,236	292.39	27.26
Ireland	4,100	87.50	0.359	1,055	294.11	0.31
Italy	16,723	129.69	2.169	34,426	314.00	10.81
Kosovo	18,810	55.78	1.049	14,577	111.66	1.63
Latvia	38,368	79.39	3.046	27,996	264.50	7.40
Lithuania	87,490	58.24	5.095	85,858	312.78	26.85
Luxembourg	1,604	63.66	0.102	620	368.87	0.23
Montenegro	22,287	135.67	3.024	25,843	196.85	5.09
Netherlands	278,887	48.52	13.532	240,154	102.19	24.54
North Macedonia	13,655	175.75	2.400	8,877	220.00	1.95
Northern Ireland	9,738	87.50	0.852	18,347	294.11	5.40
Norway	-126,336	57.80	-7.302	85,253	129.88	11.07
Poland	437,663	76.87	33.643	307,065	206.46	63.40
Portugal	14,607	89.01	1.300	10,199	250.60	2.56
Romania	-5,355	83.99	-0.450	5,936	89.59	0.53
Serbia	66,832	66.72	4.459	83,142	132.00	10.97
Slovakia	106,247	89.42	9.500	94,797	400.68	37.98
Slovenia	93,605	96.15	9.000	102,603	296.12	30.38
Spain	167,105	94.48	15.788	199,008	206.97	41.19
Sweden	443,342	49.43	21.914	375,918	130.52	49.06
Switzerland	406,553	138.42	56.275	307,551	290.35	89.30
TOTAL	6,635,072	-	504.861	5,659,173	-	1,140.64

Table 7: Derivation of compensation for cross-border infrastructure in 2023

ITC Party	Transit (MWh)	Load* (GWh)	Transit Factor based compensation (million EUR)	Load Factor based compensation (million EUR)	Total Infrastructure compensation (million EUR)
Albania	1,350,234	7,656	0.366	0.094	0.460
Austria	17,200,865	45,349	4.668	2.196	6.864
Belgium	13,753,289	63,207	3.732	1.141	4.873
Bosnia	3,633,150	11,232	0.986	0.412	1.398
Bulgaria	3,553,051	30,829	0.964	0.170	1.135
Croatia	7,133,136	16,837	1.936	0.985	2.921
Czech Republic	12,425,050	41,057	3.372	1.340	4.712
Denmark	13,414,512	24,463	3.641	2.205	5.846
Estonia	4,146,836	7,847	1.125	0.666	1.791
Finland	6,479,416	65,241	1.758	0.272	2.030
France	20,247,153	392,204	5.495	0.461	5.956
Germany	38,411,558	246,354	10.424	2.405	12.830
Great Britain	7,044,265	246,382	1.912	0.091	2.003
Greece	1,971,422	45,408	0.535	0.038	0.573
Hungary	8,127,273	34,405	2.206	0.721	2.927
Ireland	89,450	31,700	0.024	0.000	0.024
Italy	2,053,836	239,611	0.557	0.008	0.565
Kosovo	2,156,385	6,642	0.585	0.245	0.831
Latvia	2,083,222	6,312	0.565	0.240	0.805
Lithuania	3,979,902	10,936	1.080	0.493	1.573
Luxembourg	62,017	3,925	0.017	0.000	0.017
Montenegro	5,196,562	3,220	1.410	1.489	2.900
Netherlands	15,322,983	73,927	4.158	1.221	5.380
North Macedonia	3,278,775	7,272	0.890	0.473	1.363
Northern Ireland	1,329,531	8,580	0.361	0.083	0.444
Norway	7,363,197	80,471	1.998	0.287	2.285
Poland	8,887,113	101,159	2.412	0.333	2.745
Portugal	1,368,618	36,667	0.371	0.023	0.394
Romania	2,740,083	39,241	0.744	0.083	0.827
Serbia	4,879,434	27,776	1.324	0.338	1.663
Slovakia	10,286,795	19,377	2.792	1.656	4.448
Slovenia	8,283,708	12,725	2.248	1.516	3.764
Spain	8,771,656	181,709	2.381	0.188	2.568
Sweden	10,497,722	90,563	2.849	0.506	3.355
Switzerland	18,834,229	44,033	5.111	2.619	7.731
TOTAL	276,356,428	2,304,317	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 8: Value of losses used for the ITC mechanism between 2011 and 2023 and relative change compared to the previous year

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
ITC Party	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Change compared to 2022
AL	3.00	3.00	7.00	7.00	10.35	10.35	10.35	50.00	50.00	50.00	50.00	50.00	74.98	50%
AT	58.97	58.68	56.07	47.96	37.57	33.64	27.88	30.18	47.04	57.79	50.74	115.00	373.78	225%
BE	51.23	60.34	60.32	61.34	62.24	44.44	44.44	44.44	44.44	53.84	55.76	55.02	130.76	138%
BA	35.89	46.63	46.63	46.63	46.63	48.60	42.30	51.32	69.78	64.22	55.93	56.21	56.21	0%
BG	47.03	47.12	50.66	51.35	15.34	34.17	38.74	55.07	56.18	56.76	58.40	67.51	215.29	219%
HR	60.00	57.89	63.38	51.80	51.51	46.07	42.21	47.67	56.69	59.02	53.86	98.02	177.48	81%
CZ	61.56	63.65	57.60	42.41	39.26	36.25	32.79	42.32	55.24	55.73	44.30	73.03	275.37	277%
DK	57.77	47.57	43.69	41.30	38.00	28.80	34.94	35.73	50.87	46.02	37.48	109.58	268.13	145%
EE	29.40	29.40	40.67	44.04	44.10	33.85	33.78	36.30	47.57	45.23	42.12	94.33	207.18	120%
FI	46.13	48.40	52.13	48.58	46.48	43.88	39.48	35.23	34.40	34.62	33.46	36.48	63.00	73%
FR	62.35	65.22	69.44	51.44	51.44	50.61	42.45	40.37	40.27	45.18	50.01	54.85	206.47	276%
DE	51.84	54.00	53.42	44.79	40.00	40.00	27.51	29.64	36.59	49.32	45.27	52.77	138.98	163%
GB	52.18	55.59	63.96	61.69	63.02	55.30	66.08	54.34	68.08	56.19	52.51	170.85	318.49	86%
GR	0.00	65.07	68.12	65.00	64.00	60.00	48.70	53.30	56.70	66.60	54.00	188.50	364.50	93%
HU	52.74	54.13	54.48	43.14	39.25	38.01	37.60	40.78	49.05	58.09	48.32	69.76	292.39	319%
IE	56.12	70.38	66.51	64.53	60.74	48.92	40.33	47.55	64.14	59.44	50.61	87.50	294.11	236%
IT	66.70	74.50	75.50	62.40	51.06	53.43	41.12	56.13	62.96	54.09	41.07	129.69	314.00	142%
KS	-	-	-	-	-	28.24	34.11	46.17	44.00	44.88	46.42	55.78	111.66	100%
LV	53.93	50.00	45.84	47.00	51.54	43.81	38.73	37.00	47.90	46.06	41.90	79.39	264.50	233%
LT	49.58	49.58	50.10	55.00	55.52	45.20	39.90	37.10	47.25	46.38	39.38	58.24	312.78	437%
LU	54.11	61.19	54.47	42.32	37.22	34.27	25.48	31.86	41.45	51.62	39.81	63.66	368.87	479%
ME	47.75	62.65	62.62	49.59	50.03	47.92	40.84	48.52	62.99	54.94	53.39	135.67	196.85	45%
NL	55.00	62.50	62.70	49.20	45.60	45.75	38.34	42.99	60.36	49.73	48.74	48.52	102.19	111%
MK	38.89	70.00	66.00	60.00	62.00	50.00	50.00	50.07	64.25	59.87	55.90	175.75	220.00	25%
NI	56.12	70.38	66.51	64.53	60.74	48.92	40.33	47.55	64.14	59.44	50.61	87.50	294.11	236%
NO	46.92	41.22	38.82	37.29	33.17	21.48	34.56	30.76	44.03	39.22	17.43	57.80	129.88	125%
PL	49.80	45.50	46.38	41.40	41.87	41.28	38.07	40.93	56.06	62.85	53.94	76.87	206.46	169%
PT	46.60	56.16	57.60	53.50	50.49	49.22	47.34	51.44	61.00	57.82	45.03	89.01	250.60	182%
RO	48.90	58.66	50.22	45.84	39.59	37.61	35.20	42.15	43.15	57.18	57.26	83.99	89.59	7%
RS	44.10	44.10	60.00	45.27	48.05	46.53	42.46	47.48	60.00	58.00	50.20	66.72	132.00	98%
SK	55.96	67.47	63.66	55.77	46.86	41.13	33.96	38.42	45.27	58.16	52.29	89.42	400.68	348%
SI	56.32	59.51	55.51	55.73	56.22	44.60	44.61	44.69	46.08	45.80	45.80	96.15	296.12	208%
ES	45.52	51.79	50.33	43.02	43.65	50.37	38.37	53.13	57.34	55.48	34.06	94.48	206.97	119%
SE	56.32	55.89	51.38	44.30	42.58	37.46	30.00	29.62	28.45	43.73	33.21	49.43	130.52	164%
CH	65.21	69.13	65.35	56.25	52.92	46.88	41.07	45.91	72.72	63.95	50.58	138.42	290.35	110%

Table 9: Country specific data on the value and valuation of losses⁷¹

ITC Party	Value used for tariffs (before reconciliation) [EUR/MWh]				Is the value used in tariffs reconciled ex-post based on actual costs?	Actual costs of procurement of energy to cover losses [EUR/MWh]			
	2020	2021	2022	2023		2020	2021	2022	2023
Austria	57.54	50.74	69.7	374.04 ⁷²	yes	57.54	50.74	69.7	374.04 ⁷²
Belgium	53.84	55.76	48.75	57.60	yes ⁷³	45.25	76.81	167.97	121
Bulgaria	56.76	58.4	67.51	215.29	no	48.99	105.41	263.23	137.63
Croatia	59.02	53.86	70.61	177.48	yes	51.63	79.8 ⁷⁴	185.98	107.41 ⁷⁵
Czech Republic ⁷⁶	55.73	44.3	75.16 ⁷⁷	288.45	yes	47.02	78.44	163.82 ⁷⁸	168.04 ⁷⁹
Denmark	41.04	34.94	104.06	370.71	yes	20	79 ⁸⁰	237.81	92.99
Estonia	36.002	36.002	78.98	78.98	yes	35.04	93.21	206.84	98.21
Finland	no data	no data	no data	no data	no data	40.205	49.473	60.32	45.09
France	42.17	50.01	47.52	46.82	yes	45.28	50.01	44.60	193.70
Germany	49.32	45.28	52.77	138.98	yes ⁸¹	46.85	44.59	58.51 ⁸²	139.30 ⁸³
Greece	no value used ⁸⁴				no value used	48.22	128.22	285.82 ⁸⁵	125.32 ⁸⁶
Hungary ⁸⁷	57.31	51.24	65.78	269.14	yes	52.73	58.54	119.18	277.90
Ireland	no value used				no value used	59.44	50.61	87.50	294.11
Italy	no value used				no value used	41.13	129.25	314.51	130.29
Latvia	31.28	36.07	79.18	143.8	yes	33.1	96.56	236.92	143.16
Lithuania	46.38	39.38	58.24	36.91	yes	33.43	95.34	201.73	76.14
Luxembourg	51.62	39.81	63.66	368.87	yes	54.84	43.76	65.24	368.91
the Netherlands	56.22	56.62	51.33	57.20	yes ⁸⁸	41.29	86.19	233.09	251.92
Norway ⁸⁹	36.56	20.66	41.98	131.59	yes	10.74	65.94	144.39	66.19

⁷¹ The table includes the values of losses used for national tariff purposes and the value of losses corresponding to actual costs of procurement of energy to cover losses. The information for year 2022, was provided by NRAs in May and June 2024. The information for years 2019-2021 is imported from ACER's Recommendation No 01/2023 (p. 12.) and available here: https://www.acer.europa.eu/sites/default/files/documents/Recommendations/ACER_Recommendation_01_2023_on_the_Treatment_of_Losses_for_the_Purpose_of_the_ITC_Mechanism.pdf

⁷² AT: The values for 2023 do not apply for the months of January and February in which a value of 438,31 EUR/MWh was applied.

⁷³ BE: The Belgian NRA explains the tariffs for the ongoing period compensate the values before reconciliation but the tariffs for the next period will compensate for the difference between the actual costs and the value before reconciliation.

⁷⁴ HR: Yearly average exchange rates between HRK and EUR: 7.53 in 2020, 7.52 in 2021, 7.53 in 2022. Since 1 January 2023, Croatia has been in the eurozone.

⁷⁵ HR: Preliminary value.

⁷⁶ CZ: Yearly average exchange rates between CZK and EUR: 26.44 in 2020, 25.65 in 2021, 24.57 in 2022 and 24.01 in 2023 (for 'actual costs of procurement of losses'), 26.05 for 2020, 27.00 for 2021, 24.57 for 2022 and 24.01 for 2023 (for 'values used for the ITC mechanism' and 'value used for tariffs')

⁷⁷ CZ: using the exchange rate of 11.10.2021

⁷⁸ CZ: using the exchange rate of 15.06.2023

⁷⁹ CZ: Fixed exchange rate EUR/CZK as of 18.10.2024.

⁸⁰ DK: Yearly average exchange rates between DKK and EUR: 7.45 in 2020, 2021, 7.44 in 2022 and 7.45 in 2023

⁸¹ DE: The German NRA explains that the ex-ante estimated losses costs are reimbursed via tariffs. The difference between estimated and actual losses costs including a potential bonus or malus are reimbursed ex-post via a regulatory account.

⁸² DE: the values include technically-related operating consumption of the TSOs but they do not include offshore losses.

⁸³ DE: the values include technical operating consumption of the TSOs but they do not include offshore losses.

⁸⁴ GR: No formal value exists for the purpose of tariff setting. Each supplier includes the estimated cost of losses in their total retail tariff to final consumers

⁸⁵ GR: Ex-post annual average cost of losses in the wholesale market as passed on to suppliers

⁸⁶ GR: Ex-post annual average cost of losses in the wholesale market as passed on to suppliers

⁸⁷ Yearly average exchange rates between HUF and EUR: 335 in 2020, 375 in 2021, 391.33 in 2022, 382,78 in 2023.

⁸⁸ NL: The Dutch NRA explains 75% of the difference between the estimated the realized costs (volume*price) is settled ex-post. When the deviation between the estimated costs and realized costs exceeds 20%, all costs above the 20% threshold are settled.

⁸⁹ NO: Yearly average exchange rates between NOK and EUR: 10.7207 in 2020, 10.1648 in 2021, 10.1040 in 2022 and 11,4206 in 2023.

ITC Party	Value used for tariffs (before reconciliation) [EUR/MWh]				Is the value used in tariffs reconciled ex-post based on actual costs?	Actual costs of procurement of energy to cover losses [EUR/MWh]			
	2020	2021	2022	2023		2020	2021	2022	2023
Poland⁹⁰	62.85	53.94	76.87	206.46	no	55.95	69.74	122.47	186.07
Portugal	no value used				No value used	34.74	113.38	167.68	87.91
Romania	57.18	57.26	84.67	90.19	yes	53.14	92.03	158.15 ⁹¹	95.71
Slovakia⁹²	58.16	52.29	89.41	400.68	no	information not available to the NRA			
Slovenia	45.8	45.8	96.15	296.12 ₉₃	yes	52.32	70.85	160.66	141.99 ⁹⁴
Spain	no value used				no value used	34.83	112.16	197.04	95.89
Sweden	18.3	56	98	56.44	yes	18.3	56 ⁹⁵	98	56.44

⁹⁰ PL: Yearly average exchange rates between PLN and EUR: 4.4448 in 2020, 4.5674 in 2021, 4.6838 in 2022 and 4.541 in 2023

⁹¹ RO: Yearly average exchange rates between RON and EUR: 4.8694 in 2020, 4.9481 in 2021, 4.9315 in 2022 and 4,9465 in 2023

⁹² SK: The NRA sets the price ex-ante (t-1), based on the average market price (volumes of losses are subject to later adjustments).

⁹³ See footnote 98.

⁹⁴ Only around 40% of the volumes were purchased under long-term contracts before the start of 2023. For the remainder of the volumes, the plan took into account the market price in PX in accordance with the methodology. The final price was the result of actual purchases on the long and short term markets.

⁹⁵ Yearly average exchange rates between SEK and EUR: 10.4867 in 2020, 10.1449 in 2021, 10.6317 in 2022 and 11.4765 in 2023.

Table 10: Country-specific information on the procurement of losses, on determination of the value of losses and on the respective basis⁹⁶

	How are losses procured?	What is the basis for the calculation of losses and how is the value of losses determined (for the purpose of the ITC mechanism)?	How is the basis for the valuation of losses defined?	Is the value of losses used for the ITC mechanism calculated on the same basis/criteria as for national purposes?
Austria	The TSO procures the energy on the short-term and long-term market and organizes tenders.	Power exchange market and tenders <u>Calculation method: Long-term market data, short-term market data and tenders</u> The average price of TSO's procurement in year Y becomes the value of losses in year Y+2, which is audited and approved by the NRA. This value is also used for the ITC monitoring in year y+2.	The procurement path is confirmed at the beginning of the period. The final value is confirmed by the NRA via the cost audit process based on the costs occurred by the procurement of energy to cover losses.	yes
Belgium	Balance Responsible Parties compensate transmission losses of voltage level >70 kV 'in kind' and TSO compensates at regional level, i.e. between 30kV and 70 kV) by organising monthly, yearly and quarterly tenders.	Power exchange market and tenders <u>Long-term market data, short-term market data and tenders</u> Valuation of losses is done with the tariffs proposal every four years taking into account historical, present and forward (Cal 1, 2, 3) market values. The value of losses used for the purpose of the ITC mechanism are approved values in the tariff proposal.	Proposed by the TSO in the tariffs proposal and approved by the NRA.	yes
Bulgaria	The TSO procures the energy on the short-term and long-term market.	Power exchange market <u>Long-term market and short-term market data</u> Prices of futures traded at Power Exchange for the next regulatory period are multiplied by an adjustment factor reflecting the deviations between the average day-ahead market price for base load for the preceding calendar year and the TSO's achieved weighted average day-ahead market price for the preceding calendar year.	set by the NRA	yes

⁹⁶ The information is imported from ACER's Recommendation No 01/2023 (and updated based on information provided by NRAs in autumn 2024), p. 13-20 available here: https://www.acer.europa.eu/sites/default/files/documents/Recommendations/ACER_Recommendation_01_2023_on_the_Treatment_of_Losses_for_the_Purpose_of_the_ITC_Mechanism.pdf

	How are losses procured?	What is the basis for the calculation of losses and how is the value of losses determined (for the purpose of the ITC mechanism)?	How is the basis for the valuation of losses defined?	Is the value of losses used for the ITC mechanism calculated on the same basis/criteria as for national purposes?
Croatia	The TSO procures the energy on the short-term and long-term market and organizes tenders.	<p>Power exchange market and tenders <u>Long-term market data, short-term market data and tenders</u></p> <p>The value was usually determined in September of year Y for the year Y+1 and previous tenders for the planned year were considered. For the remaining part, futures contracts on HUDEX and projections using day-ahead prices from CROPEX were used. The ratio of long and short-term procurement was determined by the TSO for the next year. The usual delivery period of the tendered energy was 1 year or several years and less often 1 quarter or 1 month. In the new methodology from 2022, price for anticipated costs and unit price for losses (with first application in 2024 for 2025 and onwards, is determined based on formulas in the methodology. Input in the methodology is the EEX CROPEX futures price. Relative value of losses for Y+1 corresponding to a volume of transmitted electricity (%) is also determined by the Methodology based on the historical data. Final volume (MWh) for Y+1 is determined based on the transmitted volume of electricity for Y+1 (MWh) anticipated by TSO.</p>	The TSO sends annually to the NRA the document including the value and the corresponding calculation method and the NRA approves it.	yes
Czech Republic	The TSO procures the energy on the short-term market and suppliers via tenders.	<p>Power exchange market and tenders <u>Long-term market data short-term market data and tenders</u></p> <p>Future contracts (BL CAL, BL Q) and day-ahead market data are used. All the tenders already organised are also considered. Tenders are organised approximately 4 times per year with the delivery period of 3 months or 1 year.</p>	Valuation of losses is done in regard with Methodology set by the NRA.	yes
Denmark	The TSO procures the energy on the short-term market.	<p>Power exchange market <u>Long-term market data</u></p> <p>Weighted average value of Nasdaq commodities OMX forward price is used. The price used in year Y is based on the forward price from November of year Y-1. Price of the EPAD contracts and balancing costs is also included.</p>	The TSO determines the value of losses for the purpose of the ITC without NRA approval, however the NRA assesses whether the method defined by the TSO meets certain high-level principles, such as being objective, reasonable, non-discriminatory and transparent.	yes ⁹⁷
Estonia	The TSO procures the energy on the short-term market.	<p>Power exchange market <u>Short-term market data</u></p> <p>Day-ahead prices of Nord Poll market are used. 1/2/3/6/12 months average price of the Estonian price area is used.</p>	The value of losses for the purpose of the ITC mechanism in 2021 is determined by the TSO without NRA approvals.	yes

⁹⁷ The Danish NRA explains the only difference is that for internal losses, the TSO uses a price based on actual short-term market price per bidding zone with an additional supplement to cover risks.

	How are losses procured?	What is the basis for the calculation of losses and how is the value of losses determined (for the purpose of the ITC mechanism)?	How is the basis for the valuation of losses defined?	Is the value of losses used for the ITC mechanism calculated on the same basis/criteria as for national purposes?
Finland	The TSO procures the energy on the short-term market.	<p>Power exchange market</p> <p><u>Long-term market data</u></p> <p>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 and yearly cost is sum of monthly costs.</p>	set by the TSO, whereas the NRA is only able to supervise calculation methods and costs of losses ex-post	yes
France	The TSO procures the energy on the short-term and long-term market and it organizes tenders.	<p>Power exchange market</p> <p><u>Long-term market data and tenders</u></p> <p>Future prices from market exchange are used to adjust the historical data about cost of energy and capacity for losses compensation. For the value in 2021, the prices published in October 2020 were used. The historical data used is based on the actual costs of purchases made by the TSO and on costs from the previous years. The value of losses for the purpose of the ITC mechanism in 2021 is the cost of losses in 2021 as defined by the tarif d'utilisation des réseaux publics de transport d'électricité (TURPE HTB) deliberation (published January 21st, 2021).</p>	The basis is set by the NRA in the tarif d'utilisation des réseaux publics de transport d'électricité.	yes
Germany	The TSO procures the energy on the short-term and long-term market and organizes tenders.	<p>Power exchange market</p> <p><u>Long-term market data</u></p> <p>The value of losses is calculated as the weighted average of the base and peak future prices. The future prices are the mean of the settlement prices over a fixed period (1 July of Y-2 to 30 June of Y-1) and the weighting of the Base and Peak Future prices is based on historical data.</p>	The methodology for valuing losses is laid down in the respective TSOs' voluntary self-commitments on grid losses which is approved by the NRA ⁹⁸ .	yes
Greece	The TSO procures the energy on the short-term market.	<p>Power exchange market</p> <p><u>Long-term market data</u></p> <p>The annual baseload forward product price (as observed in relevant markets at the time of the submission of the value) is used as a best estimate for the market prices and the cost of losses in the next year.</p>	The NRA approves the basis for the calculation of the value of losses for the purpose of the ITC mechanism which is the annual baseload forward product price.	yes

⁹⁸ The German NRA provides the link to the respective publications:
https://www.bundesnetzagentur.de/DE/Beschlusskammern/BK08/BK8_05_EOG/52_Kostenpruefung/522_Verlustenergie/BK8-18-0009-A/BK8-18-0009-A.html

	How are losses procured?	What is the basis for the calculation of losses and how is the value of losses determined (for the purpose of the ITC mechanism)?	How is the basis for the valuation of losses defined?	Is the value of losses used for the ITC mechanism calculated on the same basis/criteria as for national purposes?
Hungary	The TSO procures the energy on the short-term and long-term market and organizes tenders.	Power exchange market <u>Long-term market data and short-term market data</u> For year Y, the average of HUDEX Future Baseload prices of the first 8-9 months of year Y-1 and HUPX DAM prices continuously are taken into account. The prices of tenders substitute the prices on HUDEX, if they are lower, however, there has been no successful tender for years.	The method of determination of the value of losses as well as the criteria used for the valuation of losses is set in the tariff methodology issued by the NRA. ⁹⁹	yes
Ireland	The Transmission Loss Adjustment Factors (TLAFs) are applied to generators to ensure that the costs of transmission losses are borne by market participants who cause them. TLAFs are applied to generators' outputs so that their contribution to the market is adjusted. The value of TLAFs depends on the generator point of connection to the grid. ¹⁰⁰	Direct contracts 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 basis is set by the NRA for the ITC mechanism purposes only.	not applicable (no value is calculated for national purposes)
Italy	Suppliers procure the energy by buying additional energy for their consumers from all markets available.	Power exchange market <u>Short-term market data</u> The volume-weighted average clearing price which resulted from the Italian Power exchange (day-ahead market) was used. For the ITC mechanism in 2023, market data until October 2022 were used.	The basis is set by the TSO using the basis defined by the NRA for the procurement of losses ¹⁰¹ .	yes
Latvia	The TSO procures the energy on the short-term market.	Power exchange market <u>Short-term market data</u> Day-ahead market price forecast provided by an external party (SKM Market predictor) for the Latvian area was used.	The basis is set when the NRA approves network tariffs.	yes

⁹⁹ The Hungarian NRA provides the link to the respective publication:
http://www.mekh.hu/download/f/a5/11000/MU_2_masodik_modositott_honlapra.pdf

¹⁰⁰ Cf. ACER transmission tariff report (2019).

¹⁰¹ The Italian NRA explains that the regulation sets out that the values of national losses depend on market outcomes, because losses are procured directly in the market. The TSO takes into account that the losses are paid directly in the market as extra-energy to be bought by supplier and eventually implicitly charged to consumers at the market price.

	How are losses procured?	What is the basis for the calculation of losses and how is the value of losses determined (for the purpose of the ITC mechanism)?	How is the basis for the valuation of losses defined?	Is the value of losses used for the ITC mechanism calculated on the same basis/criteria as for national purposes?
Lithuania	The TSO procures the energy on the short-term market.	Power exchange market <u>Long-term market data</u> Electricity future prices on Nasdaq exchange are used.	The NRA approves the cost of losses on the national system. The same value is used for the ITC mechanism, although the TSO is not obliged by the NRA to use the same value.	yes
Luxembourg	The TSO organizes tenders. Differences between real and ex-ante estimated volumes are sold or bought from the spot market.	Tenders 3 tenders are organised each year by the TSO to cover the losses of the coming year and the winning prices are used. Quantities are estimated based on past experience.	The legal framework in Luxembourg obliges the TSO to organise the procurement of losses through transparent and non-discriminatory market-based procedures.	yes
The Netherlands	The TSO procures the energy through tenders. The settlement is based on a fixed price agreed through the tender (half of the estimated tender) and the day-ahead price (the other half of the estimated volume). The TSO performs this settlement with the supplying party from the tender and is therefore not active on the day-ahead market itself.	The value of losses is based on the losses costs and volumes included in the tariff decision 2023. These losses include an estimate based on the average losses in 2018-2020 and an ex-post correction for 2021. Losses costs are divided by a weighted average of the volumes of 2018-2021.	The method for the valuation of losses is set by the TSO without NRA approval.	yes
Norway	The TSO procures the energy on the short-term market.	Power exchange market <u>Long-term market data</u> Nasdaq quarterly forward price is used with some adjustments. It is gathered around 1 November each year, depending on the deadline set by the ENTSO-E. A volume-weighted average day-ahead price for previous years is calculated and compared to the NO1 area price. The calculated difference for the last 4 years is added to the forward price as a risk premium which can also be negative. In addition, 11 Nok is added to the price in order to cover risk and expenses related to losses.	The NRA sets a method for calculating losses for network tariff purposes. The TSO applies the same method for the ITC mechanism. ¹⁰²	yes

¹⁰² The Norwegian NRA explains that due to the reconciliation of the estimation of losses in the revenue cap with actual spot prices at the end of the year, there may be a considerable difference in the respective values depending on the situation in the power markets.

	How are losses procured?	What is the basis for the calculation of losses and how is the value of losses determined (for the purpose of the ITC mechanism)?	How is the basis for the valuation of losses defined?	Is the value of losses used for the ITC mechanism calculated on the same basis/criteria as for national purposes?
Poland	The TSO procures the energy on the short-term and long-term market and it can also organize tenders.	<p>Power exchange market <u>Long-term market data</u></p> <p>The value of losses for 2023 was calculated on the basis of future contracts for year 2023 traded from January 2020 to October 2022 (BASE_Y and PEAK_Y) at the Polish Power Exchange. The value of losses is determined as a volume-weighted average of traded volumes since beginning of contract trading for the given year, applying BASE/PEAK share weight of 81% and 19%.</p>	<p>The basis of calculation of the value of losses is approved during the process of approving the network tariffs.</p> <p>There is no separate approval of the value of losses used for the ITC mechanism, but the unit price of losses included in the calculation of national tariff is used for the ITC purpose of the ITC mechanism.</p>	yes
Portugal	Suppliers procure the energy by buying additional energy for their consumers from the short-term market.	<p>Power exchange market <u>Short-term market data</u></p> <p>Values of losses are calculated based on the weighted-average hourly price for day-ahead energy market MIBEL for the whole year for the Portuguese area.</p>	<p>Rules and principles for the procurement of energy and for losses compensation are set by the 'Access to Networks and Interconnections Code' approved by the NRA.</p>	not applicable (no value of losses is used for national purposes)
Romania	The TSO and DSOs procure the energy directly from producers, from the power exchange (long-term and short term market) or through suppliers.	<p>Power exchange market and Bilateral contracts <u>Long-term, short-term market data and bilateral contracts</u></p> <p>The price is estimated in the reference year of the regulatory period and is established based on historical data available at that time. The calculation is based on the average price achieved by the DSOs and the TSO. The recognized purchase price of electricity to cover losses is the minimum between the price realized by the TSO and a reference price (which is calculated as an average between the prices achieved by DSOs and TSO, limiting the imbalances to 5% and eliminating extreme values).</p> <p>The estimated price is corrected annually ex-ante and ex-post, so that the costs of losses covered by tariffs are the costs effectively realized by the TSO (in efficient conditions).</p> <p>Every November, NRA provides to the TSO the value of losses used in the tariff calculation for the next year (estimated price) for the purpose of the ITC mechanism.</p>	<p>The basis is set by the NRA in Methodology for setting transmission tariffs.</p>	yes

	How are losses procured?	What is the basis for the calculation of losses and how is the value of losses determined (for the purpose of the ITC mechanism)?	How is the basis for the valuation of losses defined?	Is the value of losses used for the ITC mechanism calculated on the same basis/criteria as for national purposes?
Slovakia	The TSO procures via long-term markets and additionally (if needed) on short-term market.	<p>Power exchange market</p> <p><u>Long-term market data</u></p> <p>Daily average price of futures contracts traded at Slovakian Power Futures Cal-t (from 1 April of Y-1 to 30 June of Y-1) are used for year Y.</p> $PLE(y) = CEPXE(y) \times (1 + 0.01 k(y)) + Q(y),$ <p>where:</p> <ul style="list-style-type: none"> - <i>PLE</i>... price of electricity covering electricity losses during transmission in year y, - <i>CEPXE</i>(y)... average value of the daily prices of the official forward exchange rate list published by the PXE exchange (product Futures PXE SK BL Cal-t) for year y, - <i>k</i>(y)... coefficient for year y determined by the price decision, ranging up to 10 %, - <i>Q</i>(y)... the planned costs of the regulated entity for year y to cover deviation related to planned losses in year y; 	Methodology to determine the value of losses is defined in the Slovak NRA decree No. 18/2017.	yes
Slovenia	The TSO procures the energy on the short-term and long-term market and organizes tenders.	<p>Power exchange market and tenders</p> <p><u>Long-term market data and tenders</u></p> <p>For each year of the regulatory period, the planned price of electricity for losses for the purchases already made shall be determined on the basis of the prices already achieved for the annual purchases of electricity for losses made, and for the remaining quantities of electricity for losses, the planned price shall be determined on the basis of the average of the electricity prices for the band and peak products of all daily trades for the year of the regulatory period up to and including 31 August of the year preceding the start of the regulatory period, achieved on the Hungarian Energy Exchange. The planned annual price takes into account a 75 % share of the price for band energy and a 25 % share of the price for peaking energy, which is derived from the profile of the average daily electricity consumption diagram in the Republic of Slovenia.</p> <p>The final price for losses is a combination of the volumes already purchased in advance on a long term basis through tenders and volumes purchased on short term market (PX)..</p>	Methodology set by the NRA is determined in Legal Act on the methodology for determining the regulatory framework for the system operators ¹⁰³ .	yes

¹⁰³ The Slovenian NRA provides the link to the respective publication: https://pisrs.si/pregledNpb?idPredpisa=AKT_1280&idPredpisaChng=ANJP34

	How are losses procured?	What is the basis for the calculation of losses and how is the value of losses determined (for the purpose of the ITC mechanism)?	How is the basis for the valuation of losses defined?	Is the value of losses used for the ITC mechanism calculated on the same basis/criteria as for national purposes?
Spain	Suppliers procure the energy by buying additional energy for their consumers from the short-term market.	<p>Power exchange market <u>Short-term market data</u></p> <p>Hourly Power Exchange market prices are directly applied to national demand to obtain weighted estimation of the value. The computation for year Y is based on data from the rolling year at the time it must be reported (September to October of Y-1). The ITC value calculated by the TSO is typically based on the final electricity prices for the last 12 available months.</p>	The calculation of the final electricity price for the demand (same value as losses) is designed and approved by the NRA after each month. The NRA also approved that any supplier or consumer must buy losses as any other part of their energy consumption. ¹⁰⁴	yes ¹⁰⁵
Sweden	The TSO procures the energy on the short-term market.	<p>Power exchange market <u>Long-term market data</u></p> <p>The value is based on the average price of purchased futures during the year prior the year of delivery. There is a mark-up on the ITC price based on volume and profile risk, price area risk, imbalance risk, cost for financial hedging and cost for physical trading. All risks are calculated based on outcome from the last three years.</p>	The method for the valuation of losses is set by the TSO without NRA approval ¹⁰⁶ .	yes ¹⁰⁷

¹⁰⁴ The Spanish NRA provides the links to the relevant publications:
https://www.ree.es/sites/default/files/01_ACTIVIDADES/Documentos/ProcedimientosOperacion/BOE-A-2022-4969.pdf
https://www.cnmec.es/sites/default/files/2022-05/ComposicionPrecios_desde_abril2022_web.pdf
https://www.cnmec.es/sites/default/files/2023-02/Provisionales_2022.zip

¹⁰⁵ The Spanish NRA explains losses' price estimation is also used in incentives schemes for minimising losses for distribution.

¹⁰⁶ The Swedish NRA explains the NRA approved the total income, but not specifically the value of losses and that there are regulations and incentives in place to streamline the costs of losses.

¹⁰⁷ The Swedish NRA explains the only difference is that for internal losses, the TSO uses a price based on actual short-term market price per bidding zone with an additional supplement to cover risks.