



REPORT

July 2026

Implementation of the minimum threshold of 70% of interconnection capacity for electricity exchanges at French borders: review of the year 2025

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EXECUTIVE SUMMARY

The electricity Regulation (EU) 2019/943¹ (hereinafter, the “Electricity Regulation”) revised as part of the Clean Energy Package adopted in 2019 introduces a minimum threshold of 70% of interconnection capacity to be available for cross-border exchanges (article 16). This threshold came into force on 1 January 2020 for all European electricity transmission system operators (TSOs). In application of the Electricity Regulation and Article 59 of the electricity Directive (EU) 2019/944² (hereinafter, the “Electricity Directive”), CRE must ensure that RTE guarantees interconnection capacities in compliance with the electricity regulation on French borders belonging to the calculation regions Core (for borders with Belgium, Luxembourg and Germany), Northern Italy (for the Italian border) and South-Western Europe (for the Spanish border).

Pursuant to Article 16 of Electricity Regulation, a derogation under the 70% criterion may be granted in capacity calculation region by the national regulatory authority at the request of a TSO. **Since 2022, French borders have not been subject to any derogation under the 70% criterion, in the interest of the European market. Conversely, a significant number of countries in the same capacity regions as France were still granted derogation in 2025.**

As the minimum threshold of 70% is intended to increase cross-border exchanges, CRE analyses whether this threshold has been reached on the network elements of RTE considered in the capacity calculation, with regards to their ability to enable additional cross-border exchanges that bring value at European level. Within this framework, CRE pays particular attention to the network elements located in France that may restrict the interconnection capacity made available for cross-border exchanges (so-called “limiting network elements”), as well as to hours for which the capacity made available by system operators effectively limits exchanges and prevents price convergence in the capacity calculation region. Outside these situations, any additional capacity released does not actually increase cross-border trade. CRE therefore categorizes these situations, in which no gains would be possible on a European scale, as compliant. Indeed, the 70% criterion encourages TSOs to implement costly measures (operational measures or investments) to increase trade. This incentive should only apply to hours where additional capacity for trades represents real added value for the European power system.

In 2025, the levels of interconnection capacity made available for cross-border exchanges by RTE complied with the 70% criterion on 85% of the hours, on average, over the three evaluated regions. As a result, RTE has largely achieved the targets set by the regulation for 2025.

CRE stresses that, **even in periods when the 70% threshold is not reached, the capacity made available by RTE at the French borders remains high and is a significant contribution to cross-border exchanges.**

This high level of capacity available for cross-border exchanges bears witness to RTE's involvement on this topic and to the relevance of the tools developed by the TSOs, particularly under the impulse of the regulators, which contribute to the construction of the European internal electricity market and to its efficiency. RTE has finalized the development of tools to ensure high levels of capacity available for cross-border exchanges without penalizing the network's operational security. These tools make it possible to provide more systematically levels of commercial capacity equal to or greater than 70% at French borders. In this respect, RTE uses costly remedial actions (redispatching and countertrading) like its European counterparts but distinguishes itself by using non-costly remedial actions known as topological remedial actions, which consist of redirecting flows by modifying the network topology, i.e. the configuration of some of the network elements. These remedial actions make it possible to offer more cross-border capacities, while limiting the costs associated with this increase in capacity.

It also confirms the adequate dimensioning of the French electricity transmission network to support cross-border exchanges.

The year 2025 is characterised by occasional degradation of the 70% criterion at various times of the year and in each capacity-calculation region, due to planned outages of 400 kV network elements. In such situations, the unavailability of internal network elements close to the border or interconnections modifies the network topology. Power flows are then redirected to neighbouring lines, which become

¹ [Regulation \(EU\) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity](#)

² [Directive \(EU\) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU](#)

more heavily loaded and are therefore more prone to congestion. CRE considers the impact of these maintenances on cross-border capacities for the wholesale market to be a point of concern; however, maintenance of the grid is necessary and forms part of normal network operations.

Additionally, the Italy North region stands out due to a high error rate (timestamps for which the compliance with the 70% criterion cannot be assessed). The transition to a flow-based capacity calculation with the creation of the Central Europe region, foreseen for early 2028, should lead to a very significant reduction of the error rate.

CRE remarks that, even in periods when the 70% threshold is not reached, the capacity made available by RTE at the French borders remains high, averaging over 53% across all three. CRE therefore considers the results for 2025 to be very satisfactory. Despite the temporary deterioration of the 70% criterion in certain months, CRE underlines that France once again broke its export record in 2025 with a net export balance of 92.3 TWh, with benefits both French market participants and all European countries.

Finally, beyond this annual assessment exercise, CRE remind that in 2024 it undertook work aimed at strengthening, in the long-term, the incentive for RTE to comply with the 70% criterion at French borders. Thus, at the beginning of 2025, CRE introduced in RTE's network tariff (TURPE 7 HTB) a financial incentive based on the comparison between the 70% minimum threshold and the annual average values of the French network elements in the Core and South-West Europe regions. This new regulatory framework will incentivise RTE to maintain its high level of performance in managing interconnection capacities at French borders. In the first year of this new mechanism, the financial incentive generated a bonus for RTE due to its strong performance under the 70% criterion for the year 2025. CRE welcomes the effectiveness of this mechanism, which incentivises RTE to maintain a high level of performance in the management of cross-border capacities at French borders.

Data relating to the implementation of the 70% criterion and available capacities on all network lines considered in the capacity calculation for the Core, Northern Italy and South-Western Europe regions are published by RTE and are freely available³.

³ <https://opendata.reseaux-energies.fr/pages/accueil/>

1. Reminder on the context of the implementation of 70% at French borders

Following the United Kingdom's exit from the European Union on the 1st of January 2021, France is now integrated into three capacity calculation regions: Core, Italy North and South-West Europe. In coordination within these regions, grid operators calculate for each time step the capacities that can be offered to cross-border exchanges between the different countries of the European electricity market.

In order to guarantee capacity for these exchanges, a minimum threshold of 70% of network capacity to be made available for cross-border exchanges ("70% criterion") was introduced when the electricity regulation was revised as part of the Clean Energy Package adopted in 2019⁴. It came into force on 1 January 2020.

Under the provisions of the Electricity Regulation and Article 59 of the Electricity Directive, national regulatory authorities are responsible for ensuring that TSOs apply this minimum threshold. CRE is thus responsible for ensuring that RTE makes available interconnection capacities to the utmost extent pursuant to Electricity Regulation on the various French borders. It uses this competency to systematically assess the conformity of capacities made available for cross-border exchanges by RTE, and to identify areas for further progress in optimizing these capacities, while seeking to ensure transparency for the benefit of all stakeholders.

CRE thus publishes annual reports on the implementation of the 70% criterion at the French borders. The latest report, covering RTE's implementation of this criterion for the year 2024, was published in July 2025⁵.

These reports set out CRE's approach to ensuring that the application of this minimum threshold actually leads to an increase in cross-border exchanges, where this can generate value on a European scale. CRE pays particular attention to French network elements that may limit the capacities made available for cross-border exchanges (known as "limiting network elements" at the end of the capacity calculation), as well as to time steps for which the interconnection capacities made available for cross-border exchanges are fully utilized, resulting in a lack of convergence of electricity prices within the capacity calculation region. CRE's approach is detailed in the next section of the report with the annual results.

Although the Electricity Regulation does not specify the timeframe for which the criterion must be verified, the assessment of the 70% criterion carried out by CRE deals only with day ahead timeframe. In its recommendation, published in 2019 at the request of the European Commission, the Agency for the Cooperation of Energy Regulators ("ACER") considers that the 70% criterion should be assessed for the day-ahead timeframe, but may be extended to the intraday timeframe. Since then, ongoing discussions between national regulatory authorities, transmission system operators and ACER highlighted the significant technical obstacles associated with applying the 70% criterion to the intraday timeframe, particularly given the difficulty of ensuring the availability of remedial actions in intraday. These discussions and work, in which RTE and CRE are actively involved, continued in 2025, in particular in the context of the ongoing revision of the CACM regulation. Considering the operational security issues at stake, and until the above-mentioned work has been concluded, CRE considers it premature to apply the 70% criterion to the intraday timeframe.

In addition to its annual report, CRE has worked to strengthen incentives for RTE to implement the 70% criterion at French borders, as cross-border capacities play a key role in the European integration of electricity markets. In March 2025, CRE introduced a financial incentive in the transmission network tariff (TURPE 7). A financial bonus or penalty is applied on an annual basis, depending on the average level of capacity offered by RTE compared to the European target of 70%. This incentive applies to the South-West Europe region and the Core region (and eventually to the Central Europe region, which will replace the Core region and thus extend the incentive to the French border with Italy). This incentive is calculated using the approach followed in CRE's annual report. With its design, this new regulation will encourage RTE to provide the minimum required capacity, but also to maximise cross-border capacities even above the 70% threshold where technically feasible.

⁴ Article 16(8) of the Electricity Regulation

⁵ [Implementation of the minimum threshold of 70% of interconnection capacity for electricity exchanges at French borders: review of the year 2024](#)

2. Review of year 2025 for the French borders

The analyses presented in the rest of this section were carried out by CRE to assess the compliance of interconnection capacities offered by RTE on the various French borders with electricity regulations. These analyses were based on data supplied by RTE. In the interests of transparency, this data will be published by RTE on the "Open Data Energies Réseaux" (ODRE) platform⁶.

CRE's assessment is broken down into two successive phases of analysis. First, CRE determined the hours and network elements for which offering additional cross-border capacities on the French network elements considered in the coordinated capacity calculation provided added value for the European market. Then CRE analysed the capacity offered to the European market on these relevant hours.

2.1. Analysis of compliance with the "70% criterion" on the French network lines considered in the coordinated capacity calculation

Under Article 16 of the Electricity Regulation, RTE is required to maximize, for each capacity calculation region to which France belongs, the capacity made available for cross-border exchanges on the French network elements considered in the coordinated capacity calculation. The parameter to be maximized corresponds to the ratio between the capacity made available for cross-border exchanges and the operational limit of each network element (also known as "maximum flow " or "Fmax").

This margin ("MACZT") is determined by estimating the distribution of market flows internal and external to the capacity calculation region⁷ on each network element of the French network considered in the coordinated capacity calculation.

In some configurations, an increase in the capacity available for cross-border exchanges would not generate any value for the European power system, while at the same time generating unnecessary expenditure.

CRE thus determines the hours and network elements for which guaranteeing the 70% was useful on a European scale by excluding time steps and network elements corresponding to the following criteria:

1. **Unsaturated interconnection:** in situations where market coupling results in an optimum allocation where the allocated capacity is less than the total interconnection capacity available for cross-border exchanges, there is no value in increasing cross-border capacity. This corresponds to price equality in the capacity calculation region⁸.
2. **Absence of limiting French network elements:** non-limiting network elements, i.e. those which do not limit the area available for capacity allocation⁹, have no direct influence on the capacities made available to the market. Increasing their margins would not increase cross-border trade.

CRE considers that the hours covered by these two criteria comply with the provisions of Electricity Regulation, since an increase in the margins available on the TSO's network elements would not have enabled an increase in the capacity made available for cross-border exchanges within these hours. CRE is convinced of the need to encourage TSOs on the maximization of the cross-border capacity offered to market participants when this can generate a benefit in terms of social welfare.

For the Italy North region, another criterion consists in excluding the hours where an allocation constraint restricting the cross-border exchanges was applied by the Italian TSO. These allocation constraints

⁶ <https://opendata.reseaux-energies.fr/pages/accueil/>

⁷ The Margin Available for Cross-Zonal Trade ("MACZT"), the sum of the Margin from Coordinated Capacity Calculation ("MCCC") and the Margin from Non-coordinated Capacity Calculation ("MNCC"), is defined in ACER Recommendation 01/2019.

⁸ For the 2023 report, and to enable a comparison with the previous reports, price equality is calculated over the whole year on the basis of SPOT prices for the CWE region's price zones. We have thus maintained the same calculation reference throughout the year.

⁹ Here we use the convention that "limiting branch" refers to the branch that limits the range of possible configurations for exchanges, and "active branch" refers to the branch that actually limits exchanges during allocation.

enable the reduction of the offered capacity, directly within the market coupling algorithm but are not visible at the capacity calculation level. Hence, maximising the capacity available for trades in those hours, which can imply the usage of costly remedial actions, would not make sense as this available capacity would anyways be reduced ex post. CRE hence considers that this case corresponds to a case where there is no French network element limiting the trades (2nd criteria). Indeed, it is in that case a constraint on the Italian network that actually limited the trades.

Through this report, CRE emphasis once again on the importance of considering the hours and network elements that can bring value to the European power system. The Figure 1 categorizes, for each capacity calculation region of which France is a part, the hours of the year 2025 according to the criteria presented above.

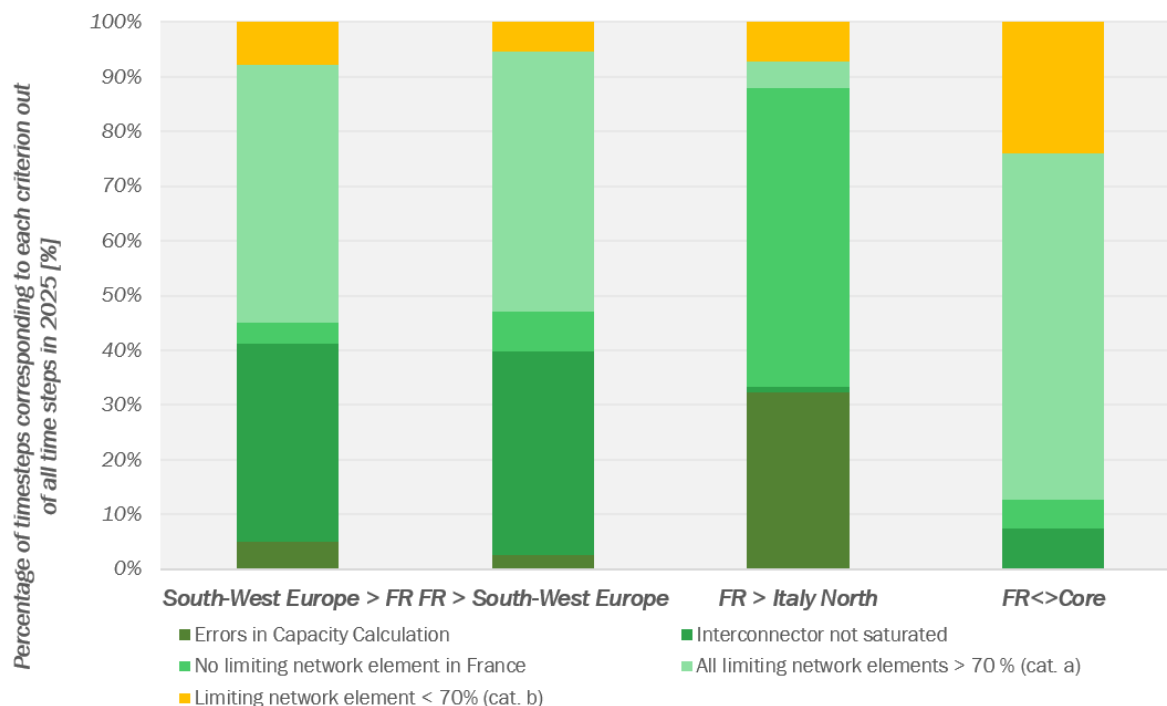


Figure 1 – Categorization of hours by criteria for the year 2025 in the three capacity calculation regions to which France belongs

Source: Data RTE, analysis CRE

Notes:

(1) In the Italy North region, since June 2025, import capacities from Italy can be calculated at the request of TSOs based on market forecasts. In 2025, RTE never requested the calculation of import capacities from Italy.

Interpretation: At the France-Spain border, in the import direction (South-West Europe > FR), around 36% of the hours in 2025 corresponded to a price convergence situation (unsaturated interconnection), 4% to a situation where the capacity calculation was not limited by a French network element, and 5% to errors in the capacity calculation. These hours are considered to comply with the provisions of Electricity Regulation. As a result, in 92% of cases, RTE met the 70% criterion, and in the remaining 8% of cases, the limiting network elements of the French network provided less than 70% margin for cross-border exchanges.

A similar reading can be applied to other borders.

In the Northern Italy region, the vast majority of the hours are covered by the two criteria presented above. These are hours for which additional capacity from RTE would not bring any value to the market. This is also the case to a lesser extent in other regions. These two criteria also cover a significant proportion of the hours in the two other regions.

For the vast majority of time steps, RTE has met its obligations for 2025.

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Based on these criteria, Table 1 shows the average monthly percentage of hours during which RTE has guaranteed capacity in compliance with the revised electricity regulations.

	January 2025	February 2025	March 2025	April 2025	May 2025	June 2025	July 2025	August 2025	September 2025	October 2025	November 2025	December 2025	2025
South West Europe	96,4%	91,7%	91,4%	89,8%	88,0%	62,8%	76,3%	94,3%	94,6%	95,2%	99,9%	97,0%	93,1%
Italy North	90,4%	87,8%	51,6%	63,7%	75,6%	91,6%	97,5%	99,4%	97,9%	87,0%	95,0%	99,3%	89,3%
Core	54,7%	55,9%	36,6%	81,0%	95,0%	99,2%	86,6%	78,0%	54,4%	70,1%	80,5%	87,6%	75,9%

Table 1 – Average monthly percentage of hours during which RTE has guaranteed capacity in accordance with the revised electricity regulation in the three capacity calculation regions of which France is a member.

Source: RTE data, CRE analysis

Notes:

(1) Hours with errors in Figure 1 are excluded.

The results for the year 2025 can be summed up as followed:

- In the **Northern Italy region, almost all relevant hours comply with Electricity Regulation (89% of the hours)**. This very good result should be nuanced, considering the high number of failures in the capacity calculations process this year. CRE calls on RTE and Italy North TSOs to continue their efforts to reduce the number of errors in capacity calculation. CRE considers that the transition to a flow-based capacity calculation with the creation of the Central Europe region that will integrate the France-Italy border, foreseen for early 2028, should lead to a very significant reduction of the error rate. In addition, the 70% criterion is unusually low in March (52% of the timestamps) and April (64% of the timestamps). This occasional degradation of the criterion is due to the planned outages of 400 kV internal network elements, notably in Lyon area.
- In the **South-West Europe region, compliance is met 93% of the time**, which is a very high level of compliance. However, CRE notes that a decrease of the performance in June (63% of the timestamps) due to a planned outages of an internal 400 kV near the interconnection "Baixas-Santa Llogaia".
- In the **Core region, compliance was achieved in 76% of hours**. The year 2025 is characterised by a degradation of the 70% criterion during the first quarter and in September. This deterioration resulted a series of planned outages on the 400kV network near the France-Germany and France-Belgium borders. In particular, these results can be attributed to the unavailability, due to maintenance, of the Franco-Belgian 'Avelin-Avelgem' interconnection in March and one of the Franco-German 'Vigy-Ensdorf' interconnection in September. Despite the degradation of the 70% criterion during the first quarter, CRE underlines the very high exports flows from France (4.5 TWh to the Core region) during the first quarter of 2025 and that the MACZT level still reached 60% on average for that quarter.

As of today, all the capacity calculation regions, to which the French borders belong, are equipped with so-called 'validation tools', which study the possibility of increasing the capacity made available for cross-border exchanges in order to ensure margin levels of 70% without leading to situations where operational limits are exceeded on the network elements concerned. These tools enable costly remedial actions to be taken into account more systematically, in addition to the non-costly remedial actions already supplied to the capacity calculation.

Finally, CRE points out that, since 2022, French borders have not been subject to any derogation for the implementation of the 70% criterion, in the interest of the European market. Conversely, a significant number of countries in the same capacity regions as France were still granted derogation in 2025.

2.2. Analysis of capacities offered to cross-border trade for relevant hours

CRE considers that while compliance with the 70% threshold is a legislative objective, it is essential to offer the maximum amount of capacity available for cross-border exchanges on the relevant hours, regardless of whether this threshold is met.

Figure 2 shows a breakdown of all relevant hours by margin level observed at the French borders.

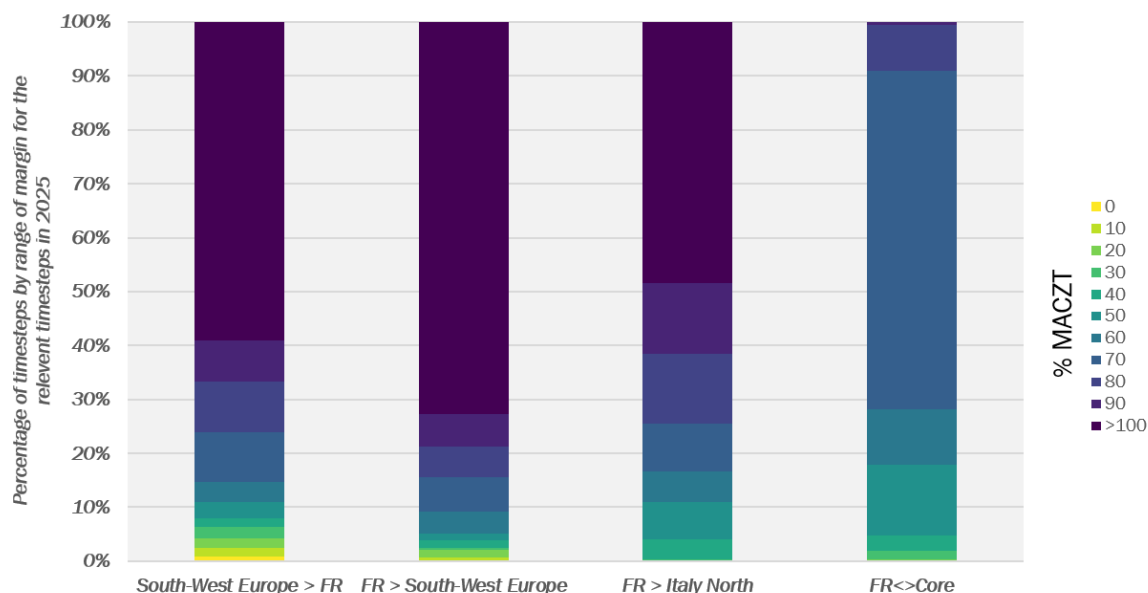


Figure 2 – Categorization of hours by decile rank of margin levels, for relevant hours (categories a and b in figure 1)

Source: RTE data, CRE analysis

Notes:

(1) In the Italy North region, since June 2025, import capacities from Italy can be calculated at the request of TSOs based on market forecasts. In 2025, RTE never requested the calculation of import capacities from Italy.

Interpretation: At the France-Italy border among the relevant hours, around 48% of the hours have a margin level above 100%, which is mainly due to an initial configuration expected in the opposite direction and which therefore generates more margin than the line's total capacity. The next decile comprises the hours with these margins between 90 and 100%, corresponding to around 13% of the hours. If the four highest categories are considered, around 83% of the relevant hours exceed the 70% margin criterion.

A similar reading can be applied to other borders.

The margins available for cross-border trade are, for most of the hours, very high. In the South-Western Europe and Northern Italy regions, these margins very often far exceed the 70% threshold. Despite lower results in the first quarter of 2025, the margin available for cross-border trade is above 70% in 72% of the relevant timestamps in the Core region. There are only few hours where the capacity available for cross-border exchanges is truly low. This is confirmed by Figure 3, which assesses the average margin offered when the 70% threshold is not reached. In this case, the average level of available capacity is over 40% in all three regions. **Even in cases where 70% threshold has not been reached, the capacity made available by RTE at the French borders remains high, making a significant contribution to cross-border exchanges.**



Figure 3 – Average margin offered for relevant hours not reaching the 70% threshold (category limiting network element $y < 70\%$ of figure 1)

Source: RTE data, CRE analysis

Notes:

(1) In the Italy North region, since June 2025, import capacities from Italy can be calculated at the request of TSOs based on market forecasts. In 2025, RTE never requested the calculation of import capacities from Italy.

Interpretation: In the Core region, among the relevant hours (not covered by the two criteria described above), the average level of margins offered was 57% when it did not reach the 70% threshold.

A similar reading can be applied to other borders.

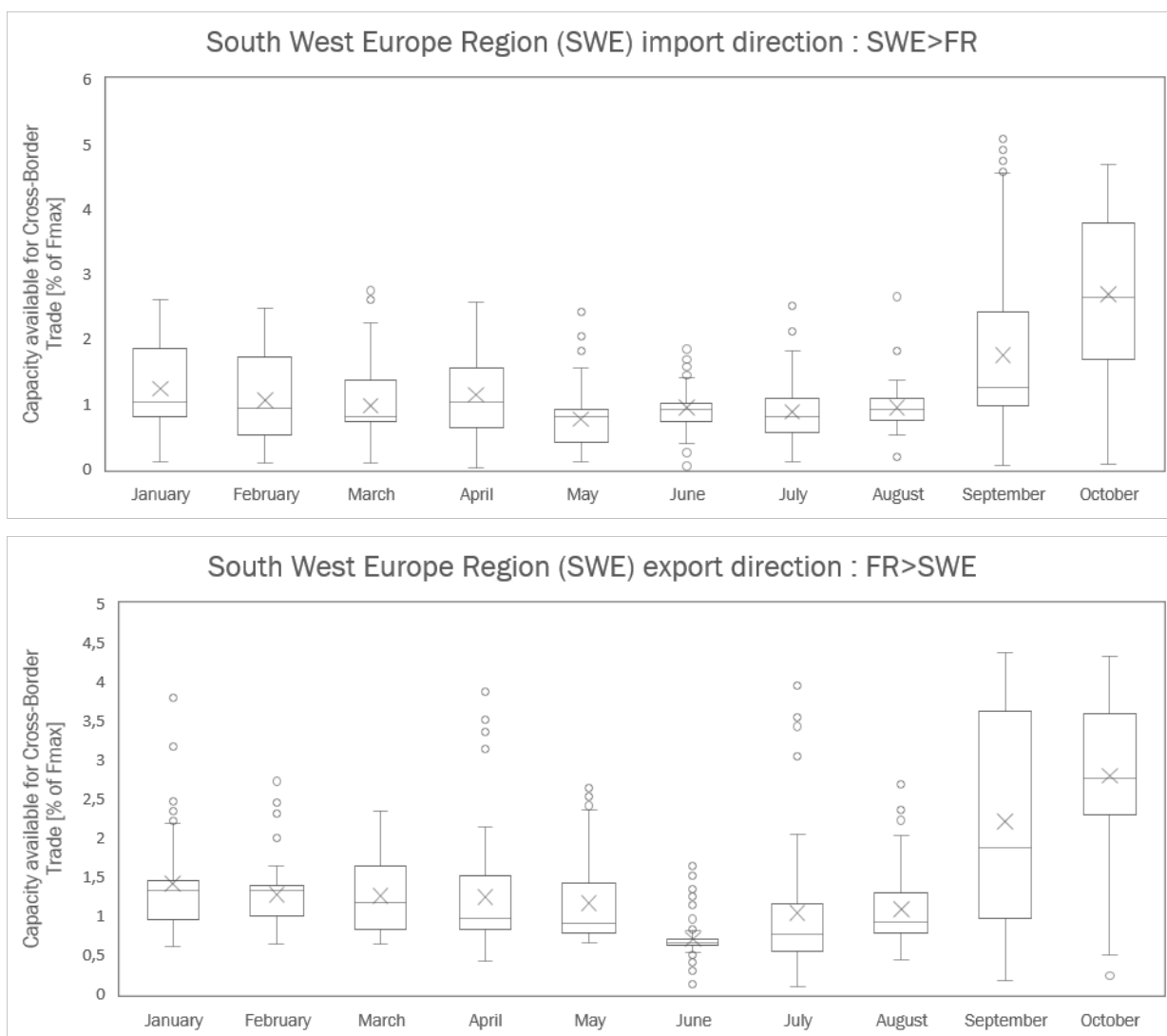
3. Annexes

The graphs below show the distribution of the margin level on the French network lines considered in the coordinated interconnection capacity calculation, for the capacity calculation regions South-Western Europe, Italy North, and Core.

They take the form of "box-and-whisker plots", which read as follows:

- 50% of the values are included in the box, whose low and high ends represent the 25th and 75th percentile of the statistical distribution, respectively.
- The central line corresponds to the median of the values.
- The lower and upper extremities ("the whiskers") correspond to 150% of the difference between the 25th and 75th percentiles starting at respectively the maximum and minimum of the box defined above, for each month. Consequently, data exceeding these whiskers correspond to extreme values.

Values above 100% correspond to situations where network lines are considered to accommodate physical flows in the opposite direction to the market direction and can therefore accommodate market flows at levels exceeding their maximum capacity.



Figures 4 –Distribution of the margin level on the French network lines considered in the calculation of interconnection capacities for the South-West Europe region in the export and import directions.

Source: RTE data, CRE analysis

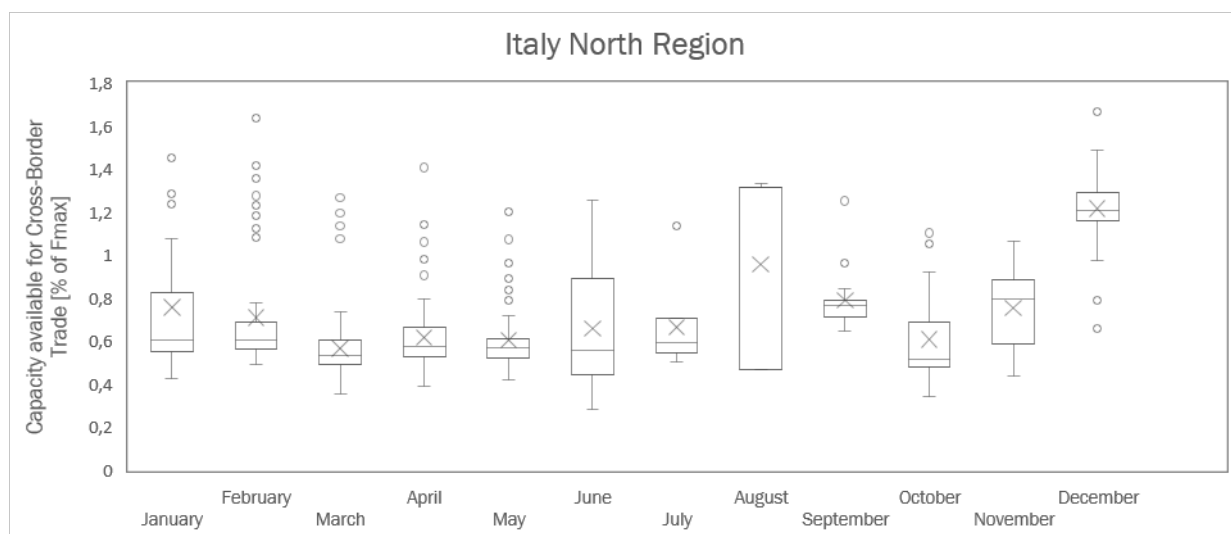


Figure 5 – Distribution of margin levels on the French network lines considered in the calculation of interconnection capacities for the Italy North region

Source: RTE data, CRE analysis

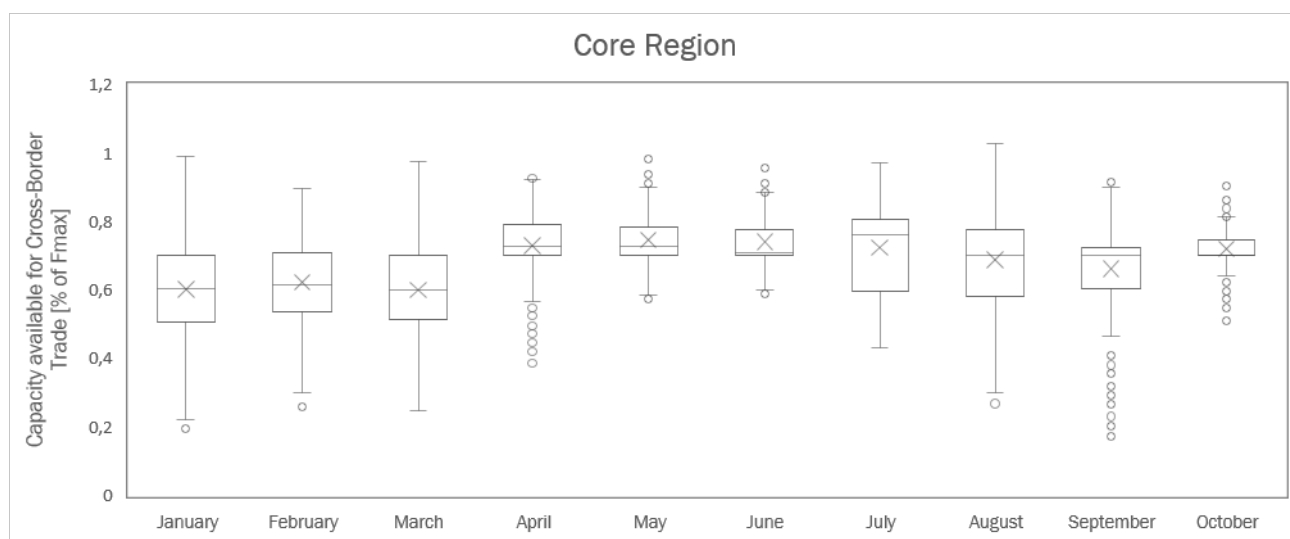


Figure 6 – Distribution of margin levels on French network lines considered in the calculation of interconnection capacities for the Core region

Source: RTE data, CRE analysis