ACER

European Union Agency for the Cooperation of Energy Regulators

Regional Coordination Centres' (RCC) reporting obligations in 2024

ACER monitoring report

December 2025

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Executive Summary

Regional coordination centres (RCCs) perform essential tasks including carrying out coordinated capacity calculation, coordinated security analysis and creating common grid models. The role of RCCs is increasingly important given recent developments relating to power disruption incidents, fluctuating electricity prices, rising shares of renewable energy sources and emerging demand patterns.

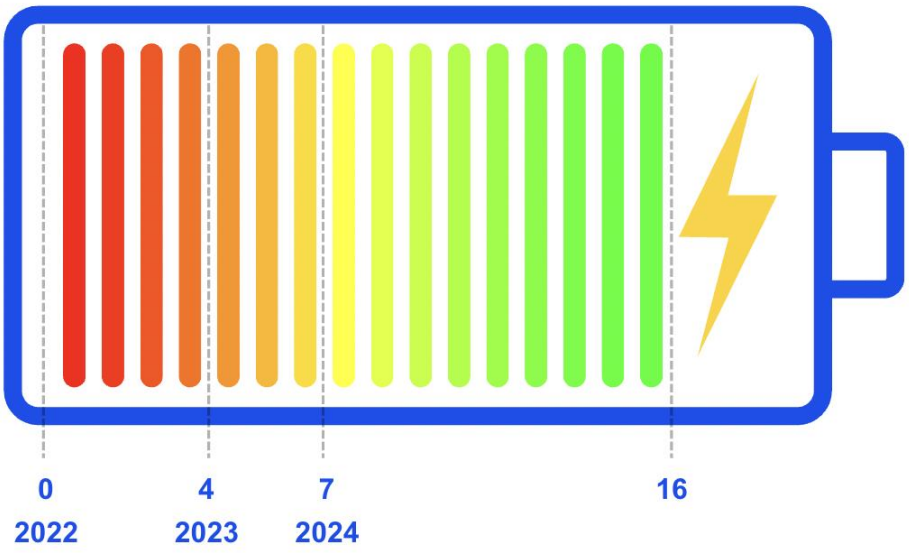
This report is the European Union Agency for Cooperation of Energy Regulators (ACER)'s third Monitoring Report on RCCs' reporting obligations. It presents key findings from the second full year of operation of RCCs since their establishment in 2022. The report covers RCCs' performances of the tasks outlined in Article 37 of Regulation (EU) 2019/943 (Electricity Regulation)[1] for the 2024 reporting period.

2024 saw significant progress in advancing RCC activities

In 2024, RCCs reported continued progress in expanding their activities and in developing new tools and processes aimed at improving data quality and enhancing overall system operation.

Of the sixteen pan-EU RCC tasks, seven were reported in operation across all RCCs[2]: the common grid model (CGM), consistency defence and restoration plans, short-term adequacy (STA), outage planning coordination (OPC), training and certification of staff, post-disturbance analysis and crisis scenarios (Figures 1 and 2). Previously, in 2023, ACER had identified only four tasks as operational[3], while none had been reported as being in operation across all RCCs in 2022[4].

Figure 1: Progression of pan-EU RCC tasks in operation in all RCCs.



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

[2] In line with the implementation scale used in this report (Figure 2), ACER considers the RCCs' tasks as "in operation" or "operational" when they reach either level 4 ("in operation and under further development") or 5 ("in operation").

[3] ACER Monitoring Report on Regional Coordination Centres' (RCC) reporting obligations in 2023.

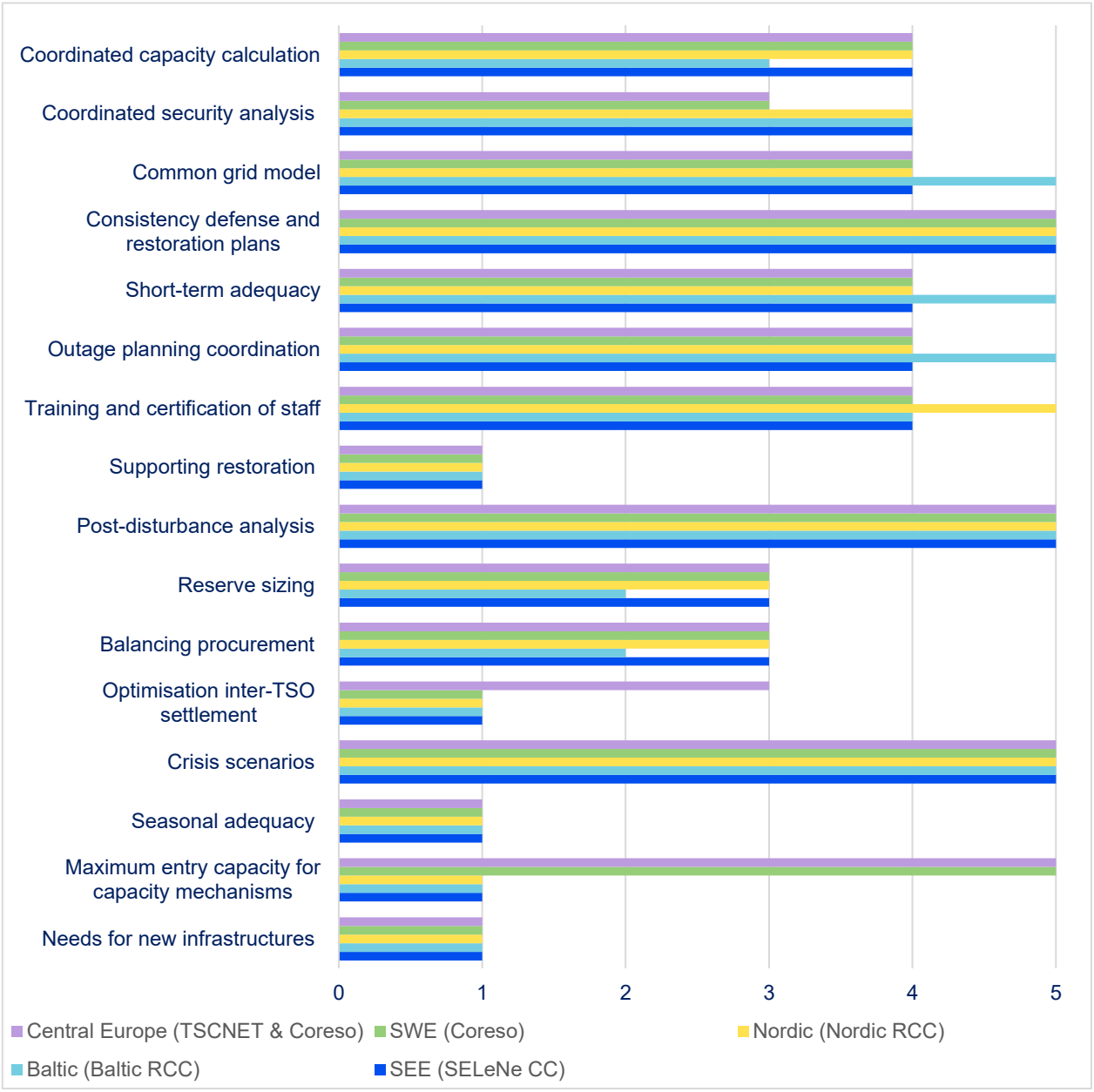
[4] ACER Monitoring Report on Regional Coordination Centres' (RCC) reporting obligations in 2022.

Compared with 2023, three additional tasks became operational:

- task d) consistency defence and restoration plans (SEleNe CC);
- task g) training and certification of staff (SEleNe CC, Baltic RCC, Nordic RCC); and
- task m) crisis scenarios (TSCNET and Coreso for both Central Europe and South-West Europe system operation regions, SEleNe CC).

RCCs also reported that important developments took place concerning the implementation of flow-based day-ahead capacity calculation in the Nordic system operation region (SOR), the launch of training and certification of RCC operators, as well as the advancement of crisis scenarios and consistency defence and restoration tasks across RCCs (Figure 2).

Figure 2: Implementation status of RCC tasks in 2024 in all SORs (as reported by RCCs).



5 – in operation; 4 – in operation and under further development; 3 – under development; 2 – task pending implementation; 1 – not requested by TSOs or pending methodology; 0 - not reported

Source/Note: ACER based on RCC reports.

Challenges in implementing certain RCC tasks remain

Despite incremental improvements in the common grid model (CGM) building process, such as the delivery of more stable results in the Nordic SOR and the introduction of the European Merging Function (EMF) tool in the Baltic region, its overall robustness remains limited. Across all RCCs, low availability of individual grid models (IGMs), delayed deliveries and data requirements of IGMs remain major challenges that lasted throughout 2024.

CGMs as produced according to the Common Grid Model Exchange Standard (CGMES) were not widely used across the EU, with RCCs still relying predominantly on CGMs based on the UCTE data exchange format for most of their processes. TSCNET and Coreso reported that the CGMES-based CGMs were not used in regional operational processes in the Central Europe and South-West Europe system operation regions due to their insufficient quality. These shortcomings continue to undermine the usability of CGMES-based merged models in RCCs' operational processes as well as to affect the efficiency of the market.

ACER conclusions and areas for improvement

The implementation of RCCs' tasks is key to ensure reliable, efficient and secure power system operation

While welcoming the RCCs' progress made in 2024, ACER notes the ongoing need to achieve full and timely completion of all RCC tasks, including the readiness of regional processes. To achieve fully integrated electricity markets, ACER considers that RCCs need to step up efforts to:

- Focus on extending coordinated capacity calculation, coordinated security analysis and the merging processes for the common grid model creation to missing timeframes, ensuring that RCCs deliver on both regional and pan-European processes.
- Continue expanding the implementation of flow-based capacity calculation to meshed areas of the system and improve the flow-based process to achieve better results.
- Fully implement and improve the common grid model building process to enable RCCs to perform short-term and long-term capacity calculation, coordinated security analysis and outage planning coordination.

Enhancing CGM results facilitates its long-term readiness for performing critical system operations

Improving the CGM process, especially focusing on data-quality investigations, is paramount to demonstrating its efficiency in critical RCC operations and to the adoption and implementation of dependent methodologies. ACER considers that RCCs need to:

- Ensure high-quality performance of the common grid model task by using individual RCCs' merging tools that produce consistent and interchangeable results.
- Monitor and support TSOs in improving IGM quality and alignment to achieve better convergence.
- Prioritise the provision of common grid models with the Common Grid Model Exchange Standard to reduce uncertainty, offer more cross-border capacity for trading and deliver improved market efficiency and welfare outcomes.

Better performances of short-term adequacy, outage planning coordination and training and certification tasks still show areas for improvement

RCCs are making progress in implementing short-term adequacy analysis, outage planning coordination and training and certification of operators. ACER identifies the following areas where further improvement is needed for RCCs:

- Enhance short-term adequacy analysis by continuing to integrate battery storage and demand-side response as critical flexibility resources, balancing demand and supply, and by incorporating high voltage alternating current (HVAC) outages to better reflect real-world system conditions.

- Create an implementation plan to maximise cross-zonal capacities for outage planning coordination, together with an extended scope considering security limits other than the maximum current flow and assessment of generation and demand facilities.

- Continue to improve on training and certification activities, including joint trainings with other RCCs and TSOs where relevant. Additionally, specify the tasks for which RCCs have delivered training modules in line with the training and certification of staff methodology[5].

Strengthening quality of reporting helps to better understand RCCs' performances, enhance consistency and track progress over time

To strengthen the quality of reporting and support consistent monitoring of RCCs' performances and progress year-on-year, ACER encourages RCCs to undertake the following actions:

- Align metrics to support comparability of reported performances for the same RCC and across RCCs over the years. Strive to align KPIs for regional processes where feasible, while accounting for regional operational differences.

- When reporting on a task, clearly differentiate between activities carried out at regional level and those conducted as part of pan-European processes. For the latter, specify in each annual report which RCC was in turn of performing the task and whether the metrics refer to the pan-European process as performed by that RCC.

- Continue to issue recommendations and related metrics, including follow-up questions to TSOs on whether they have implemented them. This was the case for the recommendations on the maximum entry capacity task provided by TSCNET and Coreso, and on the outage planning coordination task indicated by Nordic RCC and SEleNe CC.

[5] Methodology for regional coordination centres' training and certification of staff (Annex I of ACER Decision 05-2022).

1. Background

This report is ACER's third Monitoring Report covering the performances of RCCs for the year 2024. It builds on the assessments presented in the 2022 and 2023 reports, providing a continuous evaluation of RCC activities.

Figure 3: Overview of ACER Monitoring Reports of RCC reporting obligations.

The initial part of this report introduces, for the first time, the results of ACER's implementation monitoring of some of the sixteen RCC tasks outlined in Article 37 of Regulation (EU) 2019/943 (Electricity Regulation). In line with its responsibilities under Article 7 of Regulation (EU) 2019/942 (ACER Regulation)[6], ACER is progressively carrying out dedicated monitoring to assess RCC performances for selected tasks.

Since February 2025, ACER launched implementation monitoring requests concerning four RCC tasks:

- task e) short-term adequacy (STA);
- task f) outage planning coordination (OPC);
- task g) training and certification of staff; and
- task n) seasonal adequacy.

The results provide an updated assessment of operational practices and process effectiveness in 2025, complementing the RCCs' own reporting for 2024. ACER intends to expand its monitoring activities to other RCC tasks in the future.

The second part of the report draws on the information contained in the individual RCC reports, submitted in accordance with Article 46(3) of Electricity Regulation. These reports present RCC self-assessments across all sixteen RCC tasks, including the status of methodology approval by 2024 and applicability per capacity calculation region (CCR). Notably, two tasks – h) coordination and optimisation of regional restoration and p) needs for new infrastructures – were still pending a methodology approval in 2024.

This document provides a comprehensive view of RCC performances in 2024 based on RCC reports and an in-depth look into some tasks as of 2025. The report's conclusions draw on both the RCC self-assessments and ACER's dedicated monitoring activities, highlighting areas of progress and ongoing challenges.

[6] Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators (recast).

2. Results of ACER's implementation monitoring of RCC tasks

The results of ACER's implementation monitoring of regional coordination centre (RCCs) tasks are published and regularly updated on ACER's website[7].

In 2025, ACER monitored the RCC tasks of short-term and seasonal adequacy assessments, outage planning coordination and training and certification of staff. The findings are provided below.

2.1 Short-term adequacy (STA) – task e)

RCCs perform short-term adequacy assessment (STA) on a daily, rotational basis to identify adequacy concerns in the EU for the upcoming week. Using the STA tool, the RCCs perform a probabilistic and a deterministic computation to detect potential adequacy issues. If an adequacy concern is flagged in the pan-European STA process, it may trigger a regional adequacy assessment.

The task is performed following the methodology for short-term and seasonal adequacy assessments (STSAA)[8], which defines the scope and requirements for the different types of assessments (seasonal, month-ahead and week- to at least day-ahead). It also outlines data collection needs, result analysis and implementation processes. According to the STSAA methodology, RCCs shall lead the week-ahead to at least day-ahead assessments, while seasonal and month-ahead assessments fall under the responsibility of the European Network of Transmission System Operators for Electricity (ENTSO-E), with possible delegation to RCCs.

The current monitoring covers the relevant provisions of the STSAA methodology, including its Annex I[9]; and Annex I, paragraph 9 of Regulation (EU) 2019/943 (Electricity Regulation), which requires RCCs to perform week-ahead to at least day-ahead adequacy assessments[10].

2.1.1. Results

ACER's monitoring shows that the implementation status for all provisions is consistent across the RCCs, as the task is performed on a rotational schedule using a common STA tool. Figure 4 illustrates that **RCCs fully implemented the provisions of Annex I, paragraph 9 of the Electricity Regulation (100%).** For the STSAA methodology itself, the RCCs reported that they implemented **59% of the relevant provisions**.

The level of implementation relates to the below observations:

- The provisions marked as "non applicable" (7%) concern tasks related to the seasonal and month-ahead adequacy assessments, which could be, but have not yet been, delegated to the RCCs by ENTSO-E.
- For the share marked with implementation status "other" (33 %) and "not started" (2%), the STA currently deviates from the STSAA methodology. However, ACER notes that the

[7] New Electricity Regulation | www.acer.europa.eu.

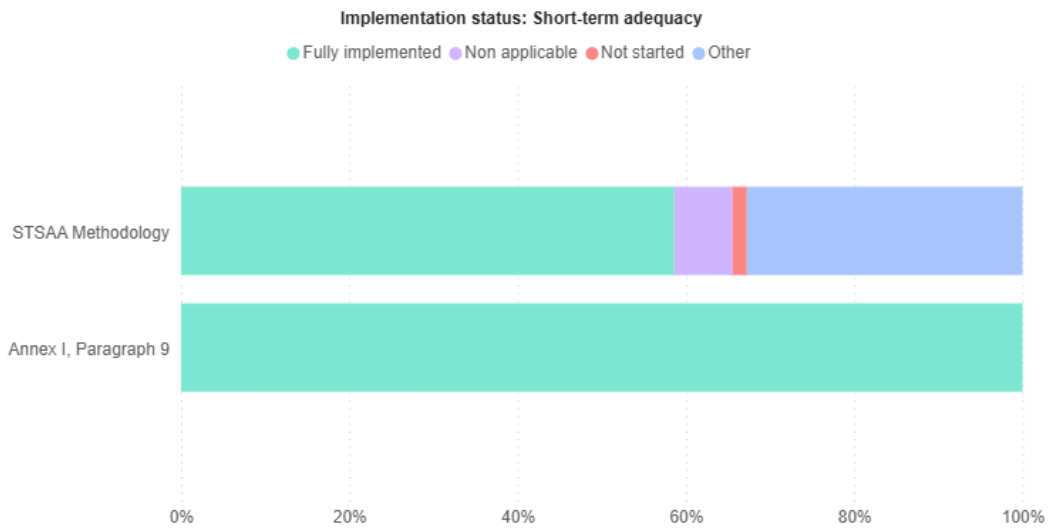
[8] Methodology for Short-term and Seasonal Adequacy Assessments (Annex I of ACER Decision 03-2020).

[9] The following articles were monitored, including the full Annex I: Article 3(3), Article 4(1) and (2), Article 5(1) and (3), Article 6(1), (2), (3) and (4), Article 7(1), (2) and (3), Article 8(1), (2) and (3), Article 9(1) and (5), and Article 10(2).

[10] Annex I, paragraph 9 of Regulation (EU) 2019/943 (Electricity Regulation), requires that the short-term adequacy assessments shall be based on information provided by transmission system operators, RCCs shall coordinate to verify assumptions, forecasts and detect adequacy concerns. Lastly the RCCs shall deliver the results together with proposed actions to reduce the adequacy risk.

implementation status “other” may include provisions that are close to full implementation in line with the STSAA methodology.

Figure 4: Implementation status of short-term adequacy assessment.



Source: ACER RCCs Monitoring Dashboard.

2.1.2. Areas for improvements

ACER further analysed the provisions reported as “other” to offer guidance to RCCs on completing implementation.

- Flexibility solutions, including **battery storage and demand-side response**, are critical for resolving supply and demand imbalances in the near future. ACER therefore considers the full and consistent representation of battery storage and demand-side response (implicit and explicit) to be a priority improvement. Accounting for HVAC outages, a recurring simplification in the STA which will bring the simulation closer to reality, is similarly regarded as a priority improvement.
- ACER further identifies additional areas of improvement which could enhance transparency and modelling accuracy related to the methodology implementation:
    - report on implementation status at least periodically, particularly when changes occur;
    - consider explicit sensitivity scenarios in case a specific question pertinent to short-term adequacy arises; and
    - consider evaluating the convergence of the probabilistic assessment at least periodically to track robustness of results.

2.1.3. Focus: seasonal adequacy assessments – task n)

Although **task n) seasonal adequacy assessments** was not the primary focus of this monitoring, its interconnection with task e) is noted, as both fall under the same methodology and share common implementation requirements.

Overall, task n) continues to be led by **ENTSO-E**, in accordance with Article 3 of the STSAA methodology, and RCCs reported that no delegation of seasonal adequacy assessment occurred during the 2022–2024 period.

2.2. Outage planning coordination (OPC) – task f)

RCCs perform tasks related to outage planning coordination (OPC) on a week-ahead and year-ahead basis to ensure that planned outages (i.e. maintenance works) of transmission, generation and demand assets are coordinated across the interconnected electricity system. This ensures a safe and efficient system operation.

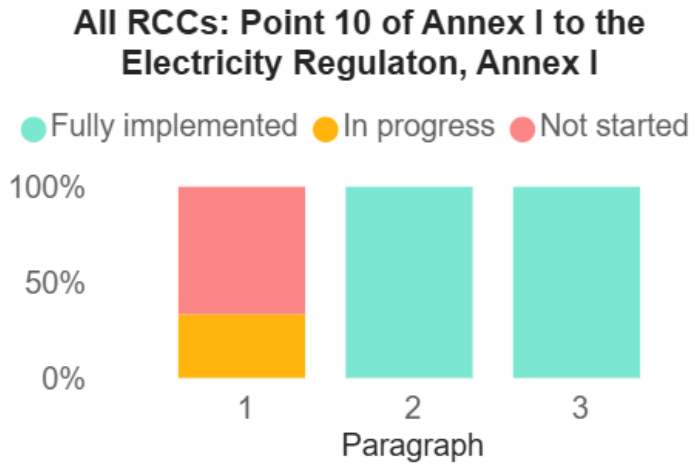
This task is performed according to point 10 of Annex I of the Electricity Regulation. Provisions related to the task are also included in the System Operation Guideline (SOGL)[11], the Regional Adequacy and Outage Coordination Methodology (RAOC)[12], and the methodology for coordinated security analysis (CSA)[13].

2.2.1. Results

ACER's monitoring conducted in summer 2025 shows that all RCCs perform the task, but the approach and level of implementation of provisions vary. The detailed context provided by RCCs enabled ACER to develop a more comprehensive understanding of the current implementation.

Figure 5 shows the combined implementation status of provisions of Annex I to the Electricity Regulation (the status at each of the five RCCs represents 20% in the stacked columns). The "in progress" status applies to Nordic RCC and TSCNET, while Baltic RCC, SEleNe CC and Coreso fall under "not started".

Figure 5: Implementation status, Annex I to the Electricity Regulation.



Source: ACER RCCs Monitoring Dashboard.

Notably, the full implementation is hindered by the fact that the capacity of the interconnectors is not maximised (paragraph 1 of point 10 of Annex I of the Electricity Regulation) in the OPC assessment. ACER understands that there is currently no significant milestone or plan outlining how RCCs will apply the provision. A methodological approach for its application is likewise not yet available.

RCCs indicated that the scope of the outage coordination region generally corresponds to the capacity calculation region (CCR). Coreso and TSCNET still performed the regional OPC process on a "shareholder basis" and the timeline for transitioning to a CCR-like-scope is not clear.

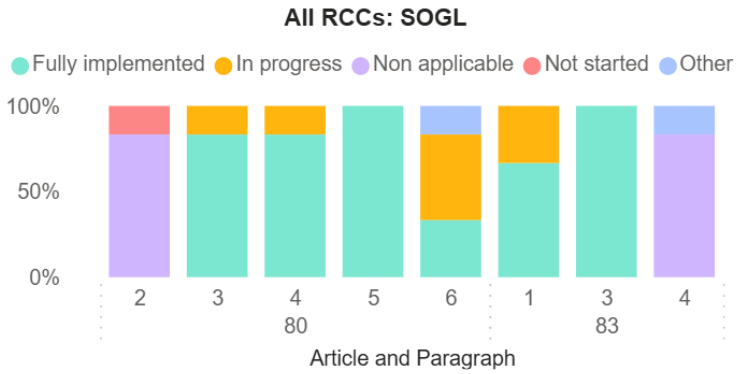
When it comes to provisions relating to the OPC task that are outlined in the SOGL, the implementation picture varies (Figure 6).

[11] Commission Regulation (EU) 2017/1485 establishing a guideline on transmission system operation.

[12] Methodology for assessing the relevance of assets for outage coordination (Annex I of ACER Decision 08-2019).

[13] Methodology for coordinating operational security analysis (Annex I of ACER Decision 07-2024).

Figure 6: Implementation status, SOGL.



Source: ACER RCCs Monitoring Dashboard.

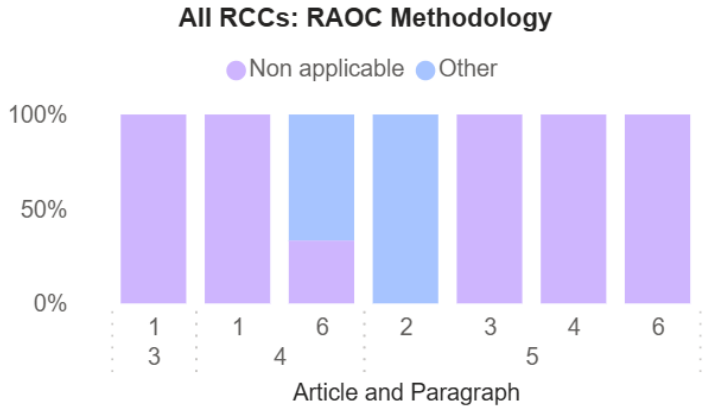
In assessing the incompatibility of assets, the RCCs verified the fulfilment of the maximum electrical current limits on transmission assets. Other operational security limits were not assessed. The solutions proposed in cases of identified incompatibilities are tap changes, topological changes and outage cancellations; in the case of some RCCs also countertrading.

The OPC task is performed for transmission assets only. This means that RCCs only propose solutions for incompatibilities in planned maintenance of transmission assets and that the impact of incompatible generation or load outages is not comprehensively evaluated. RCCs reported that generation and load outages are considered “to a limited degree”, which could be linked to different transmission system operator’s (TSO) approaches in determining the relevance of such assets (see the paragraphs below on the RAOC Methodology).

The proposed solutions to identified outage planning incompatibilities are submitted to TSOs. Some RCCs track whether the TSOs implement the proposed solutions, and some RCCs do not collect this information.

Regarding the level of implementation of the RAOC Methodology[14] (Figure 7), several provisions govern the inputs for the OPC tasks that TSOs submit to RCCs. The methodology does not explicitly require RCCs to validate these inputs or monitor their consistency and comprehensiveness. The RCCs hence generally do not do so, and the provisions governing the inputs to the OPC task are accordingly marked as “non-applicable to RCCs”.

Figure 7: Implementation status, RAOC Methodology.



Source: ACER RCCs Monitoring Dashboard.

[14] See footnote 12.

Lastly, the triannual inquiry on the appropriateness and efficiency of the processes and rules regarding, among others, the task of outage coordination, was not yet taking place. A supplementary satisfaction survey was performed instead.

2.2.2. Areas for improvement

Based on the level of the task's implementation and the associated context, ACER suggests that the following areas are considered for future improvements:

1. ACER suggests that RCCs develop an implementation plan regarding the introduction of the **requirement to maximize cross-zonal capacities** in OPC processes, and that the methodological approach through which the requirement will be introduced be drafted and agreed on.
2. Furthermore, considering the system incidents that occurred in 2025, ACER puts particular emphasis on the need to extend the technical scope of the OPC assessment to **security limits other than maximum current flow** – in particular, to assess potential violations of **voltage limits** and the outage planning solutions to mitigate them.
3. As a related recommendation, ACER suggests further expanding the scope of the exercise to comprehensively assess also **generation and load assets** as envisaged in RAOC Methodology. ACER acknowledges that some issues (for example, related to the thresholds that different TSOs use to identify relevant assets) might need to be addressed in the process.
4. Indeed, for RCCs to competently determine the effectiveness and efficiency of the OPC task (in accordance with Article 46(1) of the Electricity Regulation), ACER suggests that RCCs get a more **detailed understanding on the inputs** to the OPC task that are provided by TSOs (with requirements laid down in the RAOC Methodology).
5. ACER also suggests that RCCs consider **giving recommendations to TSOs, including relevant metrics** such as the number of proposed recommendations provided and the number of proposed recommendations that were implemented by TSOs.

2.3. Training and certification of staff - task g)

The aim of this task is to implement training and certification programmes for RCC staff engaged in operating other tasks covered by Article 37(1) and Annex I to the Electricity Regulation.

The Regional Coordination Centre Training and Certification of Staff Methodology[15] establishes two regulatory milestones: the setup of the training and certification framework by May 2024, and full completion of training and certification of RCC operators by May 2026.

All RCCs reported that task g) training and certification of staff has been fully implemented, with the sole exception concerning Article 7 of the methodology, which addresses cross-RCC coordination of training modules. The Baltic RCC indicated that this provision is not applicable in their case, as there are currently no additional processes beyond the already established Joint Training Modules that would necessitate alignment between multiple RCCs. As a result, the harmonization requirements outlined in Article 7, including ensuring consistent training content and assessments across RCCs, are not relevant for the Baltic RCC at this time.

Overall, ACER monitoring shows that the RCCs have effectively implemented the training and certification methodology, achieving a high level of compliance.

Preliminary results are available on ACER's website[16].

[15] Regional Coordination Centre Training and Certification of Staff Methodology (Annex I of ACER Decision 05-2022).

[16] See footnote 7.

3. Summary and assessment of RCC reports

3.1. General observations based on RCC reports

In 2024, RCCs made progress in the implementation of their tasks, increasingly reporting on their performances and corresponding metrics as they gained more operational efficiency. Of the sixteen tasks outlined in Article 37 of the Regulation (EU) 2019/943 (Electricity Regulation), seven are now operational across all RCCs.

ACER acknowledges the reported milestones achieved across RCCs, including the synchronization of the Baltic states with the Continental Europe electricity system, the go-live of day-ahead flow-based capacity calculation in the Nordic capacity calculation region (CCR), or the launch of the training and certification of staff task.

The evolution of tasks shows KPI alignment over time within each RCC, …

In both 2023 and 2024, the RCCs progressively reported on an increasing number of key performance indicators (KPIs) covering operational performance, effectiveness and efficiency, as well as on issued recommendations, reflecting the establishment of more stable monitoring processes. In 2024, as new tasks were performed, such as crisis scenarios and training and certification, the RCCs defined new indicators to assess performance levels in these newly activated tasks.

…but metrics differ across RCCs

ACER observes that KPIs remain largely non-comparable across RCCs for identical tasks, except for some pan-European processes in rotation – such as short-term adequacy (STA) and outage planning coordination (OPC) that are common across all RCCs. Moreover, Nordic RCC revised the definition of operational performance metrics for the coordinated capacity calculation task to ensure alignment with the results from TSCNET and Coreso. Regional processes on STA assessments or OPC have different performance metrics. An additional example is the difference in KPIs for monitoring the performance of the common grid model (CGM) across RCCs as some RCCs discontinued manual data quality interventions (TSCNET, Coreso, SEleNe CC).

TSCNET and Coreso noted that for certain tasks, such as post-disturbance analysis or maximum entry capacity (MEC), is it challenging to have quantitative metrics in the form of numbers or percentages. However, the use of qualitative criteria may not allow for full comparability across RCCs. The overview of the performance, effectiveness and efficiency metrics as reported by the RCCs for their tasks is presented in Annex I.

Implementing new tasks for regional system operations

In 2024, the following three tasks became operational across all RCCs as compared to the previous years (Table 1):

- task d) consistency defence and restoration plans (SEleNe CC);
- task g) training and certification of staff (SEleNe CC, Baltic RCC, Nordic RCC); and
- task m) crisis scenarios (TSCNET and Coreso for both Central Europe and South-West Europe system operation regions (SORs), SEleNe CC).

Additionally, ACER notes the progress in further advancing, reporting or activating the following tasks:

- While task b) coordinated security analysis (CSA) went live in the Baltic (an extended scope) and the Nordic (a preliminary version) regions in 2024, TSCNET and Coreso reported for the first time on this task while noting the legal security assessments ongoing in Central Europe and South-West Europe SORs.
- RCCs performed consistency assessments of task d) defence and restoration plans for the first time, a recurrent process which takes place every five years.
- Nordic RCC advanced task e) short-term adequacy (STA) by transitioning from using its regional tool to pan-European results, improving the accuracy of grid situation forecasts.

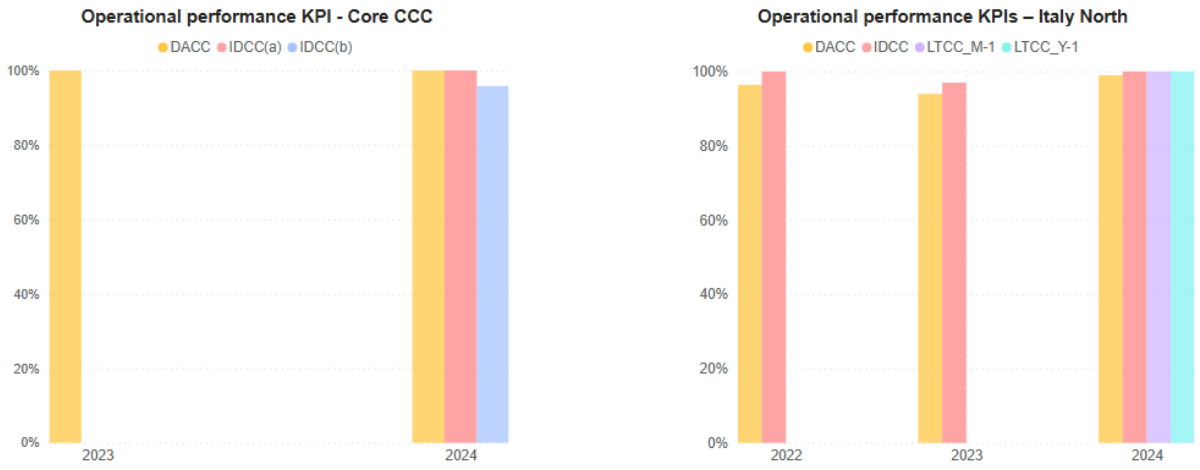
Similarly, the Baltic RCC enhanced the task by upgrading its regional monitoring and alerting system for the TSOs.

- Task g) training and certification is now operational in all RCCs that have launched training programs and began certifying their operators, progressing towards the May 2026 target for full RCC operators' certification.
- TSCNET & Coreso published recommendations for each TSOs concerning task o) maximum entry capacity in the Central Europe region, available in dedicated reports on their respective websites. ACER welcomes this progress, as it marks the first task for which RCCs are issuing recommendations and tracks their implementation status. Baltic RCC advanced further by concluding the testing phase of the pan-European MEC IT tool.

Progress on coordinated capacity calculation – including extension to different timeframes

TSCNET and Coreso progressed on coordinated capacity calculation (CCC). In the Core region, the CCC process was extended to the intraday timeframe; in the Italy North region, it was extended to the long-term timeframe (Figure 8). ACER also notes the progress of other RCCs in advancing this task. Nordic CCR shifted to flow-based capacity calculation since October 2024 for the day-ahead timeframe. Baltic RCC carried out a dry-run of the capacity calculation tool in 2024, targeting operation in January 2025.

Figure 8: Evolution of Operational Performance KPIs for Core CCC (left) and Italy North CCC (right).



Source: Coreso and TSCNET monitoring report Central Europe SOR.

CGM building process needs further development

With regards to improving the quality of task c) common grid model task, RCCs reported the following progress in 2024:

- The Central Europe and the South-West Europe SORs transitioned to automated processes using the common European Merging Function (EMF) tool of TSCNET and Coreso – the CorNet EMF tool in December 2024.
- The Nordic SOR achieved more stable CGM results for day-ahead and year-ahead horizons, with its two-day-ahead CGM delivering high-quality outputs that have served as the basis for the Nordic day-ahead flow-based capacity calculation since October 2024.
- The Baltic SOR introduced the EMF tool and improved its merging algorithm, strengthening process stability.

Despite the progress reported, ACER notes that the CGM process overall continues to be hindered by missing or poor-quality grid models in some areas which do not meet the expected data quality level:

- Most of the RCCs' tasks continued to rely on CGMs based on the UCTE format instead of the more advanced Common Grid Model Exchange Standard (CGMES) due to data quality issues[17].
- All RCCs reported persistent challenges including limited availability of CGMs (Baltic RCC, SEleNe CC), data quality concerns (TSCNET/Coreso, Nordic RCC) and TSOs' heterogeneous reference programs (Nordic RCC). In addition, TSCNET and Coreso stated that the performance metrics declined after the removal of manual data quality interventions, indicating that the CGM process until then was not yet fully mature.
- Similarly, SEleNe CC's process effectiveness decreased after it stopped excluding low-quality individual grid models (IGMs), with several IGMs falling below the required standards for integration into the CGM. SEleNe CC also reported inadequate CGM validation performance as the validation time required further improvements.

While automation improved consistency, data quality issues or incomplete CGMs continued to affect the technical quality and robustness of the CGMES-based common grid models.

CGM recent updates

Further exchanges with RCCs revealed that, in 2025, RCCs are progressing in using the CGMES format when delivering CGMs. RCCs continued to improve the technical quality of the CGMES CGM through interoperability tests and quality control based on common quality of CGMES datasets and calculations rules (QoCDC). Moreover, all RCCs stopped using manual data quality interventions to pre-emptively exclude low-quality IGMs. This approach reflects the actual readiness of the CGMES CGM process for subsequent tasks. However, challenges persist such as data misalignment across CGMs, inconsistent IGM data quality, unavailability and delays, the use of different merging tools across TSOs and RCCs and a limited pool of specialists.

Delays in ROSC implementation hinder the development of coordinated security analysis

ACER identified that significant delays in the implementation of the Regional Operational Security Coordination (ROSC) methodologies[18] across several capacity calculation regions, pose a major challenge for the effective execution of task b) coordinated security analysis. These delays—extending in some CCRs well beyond the initial regulatory timelines[19]—constitute a constraint on RCCs' ability to deliver coordinated security assessments in accordance with Regulation (EU) 2017/1485 (System Operation Regulation)' requirements.

Since coordinated security assessments are intended to operate within the framework established by Article 76 of the System Operation Regulation, regions in which ROSC has not yet been implemented continue to rely on interim or legacy arrangements that do not incorporate the automation, optimisation capabilities and harmonised coordination principles envisaged in the target solution. Thus, issues such as reliance on manual TSO inputs, limited optimisation of remedial actions, variability in CGM quality and solvability, insufficient cross-regional alignment, and dependence on

[17] CGMES-based CGMs were used for some processes in some regions (e.g. capacity calculation for SWE capacity calculation region).

[18] In accordance with Article 76 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (see footnote 10).

[19] For instance, the Core ROSC decision from 2020 scheduled the full ROSC implementation for mid-2025, however the current expectation is 2029-2030 at the earliest.

transitional tools or non-SOGL-compliant processes are inherently linked to the absence of a fully deployed ROSC process.

A few tasks are still pending development across all RCCs

The status of the remaining tasks remains predominantly unchanged since 2023, as their implementation has either not yet started, is still under development, or the tasks have not yet been requested by TSOs. These include:

- task j) regional sizing of reserve capacity;
- task k) balancing procurement;
- task l) optimisation inter-TSO settlement; and
- task n) seasonal adequacy.

In addition, tasks h) supporting regional restoration and p) needs for new infrastructure, are pending the approval of their respective methodologies. As no capacity mechanisms have been introduced in the Baltic, South-East Europe or in the Nordic regions, task o) maximum entry capacity was not performed by the respective RCCs. However, the pan-EU maximum entry capacity (MEC) tool has been available to be used by all the RCCs in regions with capacity mechanisms implemented.

3.2. Status of task implementation

Table 1 gives an overview of the current implementation status of RCC tasks across all RCCs, including a comparison with the previous reporting years.

Table 1: Reporting and implementation status of the tasks across all RCCs (as reported by the RCCs).

Task as per Article 37(1)	Implementation status in 2024	2023	2022
a) CCC	**Coreso and TSCNET** CCC D-1 Core (In operation and under further development); CCC D-1 Italy North (IN) (In operation and under further development); CCC ID CORE (In operation and under further development / Go-live: 28.05.2024); CCC ID IN (In operation and under further development); CCC LT CORE (Under development / Go-live: Q4 2026); CCC LT IN (In operation). **Coreso:** CCC D-1 SWE (In operation and under further development); CCC ID SWE first run (In operation and under further development); CCC ID SWE second run (Under development / Go-live: Q3 2025); CCC LT SWE (Under development / Go-live: Q4 2025). **Nordic RCC:** In operation and under further development (D-1 flow-based (FB) calculation in operation since October 2024; ID ATCE calculation in operation as transitional solution; LT FB calculation under development). **Baltic RCC 4:** Dry-run test of the common CCC tool completed in 2024. Go-live envisaged for January 2025. FB capacity calculations aim to be developed as of 2026. **SEleNe CC:** In operation and under further development.		
b) CSA	**Coreso and TSCNET:** CSA CORE[20] (Under development / Go-live CROSA D-1: Q4 2028 Go-live CROSA ID: Q2 2029); CSA IN[21] (Under development / Go-live CROSA DA: Q4 2028 Go-live CROSA ID: Q2 2029). **Coreso:** CSA SWE[22] (Under development / Go-live CROSA D-1: Q1 2027 Go-live CROSA ID: 2027). **Nordic RCC:** In operation and under further development (Base case and contingency analysis for D-1 in operation. ID analysis under development. RAO not yet started).[23] **Baltic RCC:** Initial scope went live from 1 April 2024 for D-1 and ID timeframes. It successfully delivered CROSA (but does not include CCROSA). CSA additional developments due in 2025 and 2026.[24] **SEleNe CC:** In operation and under further development (SEE TSOs are in the process of amending the methodology to define a new time plan for the implementation of the task).		
c) CGM	**Coreso and TSCNET:** In operation and under further development. **Coreso:** In operation and under further development. **Nordic RCC:** In operation and under further development. (Regional CGM for D-2, D-1 and Y-1 timeframes in operation. Further timeframes are under development.) **Baltic RCC:** Implemented and in operation (it introduced the advanced EMF tool and improved the RMM merging algorithm). **SEleNe CC:** In operation and under further development.		
d) Consistency defence and restoration plans	**Coreso and TSCNET:** In operation / Exercise every 5 years – task performed in 2024-2025. Next exercise in 2029-2030. **Coreso:** In operation / Go-live: Exercise every 5 years - task performed in 2024-2025. Next exercise in 2029-2030. **Nordic RCC:** In operation (Consistency Assessment done in 2024). **Baltic RCC:** Implemented and in operation. **SEleNe CC:** In operation (first assessment carried out in 2024).		
e) STA	**Coreso and TSCNET:** STA Pan-EU and STA Regional (In operation and under further development).		

[20] Legacy Security Assessment is currently in operation at Coreso and TSCNET for their shareholders. The expected go-live dates are referring to the future ROSC.

[21] Legacy Security Assessment is currently in operation at Coreso and TSCNET for their shareholders. The expected go-live dates are referring to the future ROSC.

[22] Legacy Security Assessment is currently in operation at Coreso for its shareholders. The expected go-live dates are referring to the future ROSC.

[23] Task became operational using regional merged models.

[24] Task became operational using regional merged models.

		Coreso: STA Pan-EU and STA Regional (In operation and under further development). **Nordic RCC:** In operation and under further development. **Baltic RCC:** Implemented and in operation. **SEleNe CC:** In operation and under further development both at regional and Pan-EU level.		
f)	**OPC**	**Coreso and TSCNET:** OPC Pan-EU and OPC Regional (In operation[25] and under further development). **Coreso:** OPC Pan-EU and OPC Regional (In operation and under further development[26]). **Nordic RCC:** In operation and under further development (Pan-EU and regional OPC in operation. Regional OPI calculation under development). **Baltic RCC:** Implemented and in operation (it developed a fully implemented W-1 OPI process). **SEleNe CC:** In operation and under further development both at regional and Pan-EU level.		
g)	**Training and certification of staff**	**Coreso and TSCNET:** In operation and under further development /Go-live process: 18.05.2024 Go-live certification: Q2 2026. **Coreso:** In operation and under further development / Go-live process: 18.05.2024 - Go-live certification: Q2 2026. **Nordic RCC:** In operation (Training programme implemented and certification process ongoing). **Baltic RCC:** In operation and under further development. **SEleNe CC:** In operation and under further development.		
h)	**Supporting restoration**	**Coreso and TSCNET:** Not yet started / Go-live: Awaiting methodology approval. **Coreso:** Not yet started / Go-live: Awaiting methodology approval. **Nordic RCC:** Not yet started (Task proposal under development by ENTSO-E; no methodology). **Baltic RCC:** Not yet started (no methodology). Deadline for initial implementation set for Q1 2027. **SEleNe CC:** Not yet started.		
i)	**Post-disturbance analysis**	**Coreso and TSCNET:** In operation. **Coreso:** In operation. **Nordic RCC:** In operation. **Baltic RCC:** Implemented. **SEleNe CC:** In operation.		
j)	**Reserve sizing**	**Coreso and TSCNET:** Under development / Go-live: Q3 2026. **Coreso:** Under development / Go-live: Q3 2026. **Nordic RCC:** Under development. **Baltic RCC:** Initial implementation set in Q1 2026. **SEleNe CC:** Under development.		
k)	**Balancing procurement**	**Coreso and TSCNET :** Under development / Go-live: Q3 2025. **Coreso:** Under development / Go-live: Q3 2025. **Nordic RCC:** Under development. **Baltic RCC:** Initial implementation set for Q1 2025. **SEleNe CC:** Under development.		
l)	**Optimisation Inter TSO settlement**	**Coreso and TSCNET:** Cost sharing calculation: Under development / Go-live: latest 1 year after CROSA go-live. **Coreso:** Not requested by TSOs. **Nordic RCC:** Not requested by Nordic TSOs. **Baltic RCC:** Task available on demand. **SEleNe CC:** Not requested by SEE TSOs.		
m)	**Crisis scenarios**	**Coreso and TSCNET:** In operation / Exercise every 4 years – task performed in 2024-2025 Next exercise in 2028-2029. **Coreso:** In operation Go-live: Exercise every 4 years – task performed in 2024-2025 Next exercise in 2028-2029. **Nordic RCC:** In operation (RCCs supported the process of identifying regional crisis scenarios in 2024). **Baltic RCC:** Task available on demand. **SEleNe CC:** In operation.		
n)	**Seasonal adequacy**	**Coreso and TSCNET:** Not requested by the TSOs / Go-live: - **Coreso:** Not requested by the TSOs / Go-live: - **Nordic RCC:** Task not requested by TSOs/ENTSO-E. No task proposal developed. **Baltic RCC:** Task available on demand. **SEleNe CC:** Not requested by SEE TSOs.		
o)	**Maximum entry capacity**	**Coreso and TSCNET:** In operation.		

[25] This refers to the legacy process. Regional Coordination Operational Procedure for OPC task is currently being developed.

[26] This refers to the legacy process. Regional Coordination Operational Procedure for OPC task is currently being developed.

	for capacity mechanisms[27]	**Coreso (2024):** In operation. **Nordic RCC:** Not requested for Nordic RCC. **Baltic RCC:** Under development (Concluded the testing phase of the MEC IT tool). The task has not been operational because there were no cross-border CMs. **SEleNe CC:** Not requested by SEE TSOs. Not applicable to SEE region.		
p)	Needs for new infrastructures	**Coreso and TSCNET:** Not yet started / Go-live: Awaiting methodology approval. **Coreso (2024):** Not yet started / Go-live: Awaiting methodology approval. **Nordic RCC:** Proposal under development by ENTSO-E (No methodology). **Baltic RCC:** Initial implementation deadline set for Q1 2027. **SEleNe CC:** Not yet started (Proposal under development by ENTSO-E).		

Colour codes:

Task reported as implemented by all RCCs

Task reported on as partially implemented, under development or pending implementation

Task not reported on with ongoing implementation

Task not implemented / pending the approval of the relevant methodology

Task not delegated to RCCs

Source: ACER based on RCCs' annual reports.

[27] The pan-European maximum entry capacity (MEC) tool is available to all RCCs and TSOs, meaning that the task is ready to perform in all RCCs. However, Nordic RCC, Baltic RCC and SEleNe CC reported that they did not perform the MEC task because there were no capacity mechanisms in their regions and it was not requested by the TSOs.

3.3. Reported shortcomings

This section summarises the shortcomings reported by the RCCs in 2024 in accordance with Article 46(4) of the Electricity Regulation. Where relevant, it highlights similar challenges already identified in previous years, allowing for easier comparison on both progress and remaining shortcomings.

In 2024, RCCs reported a mixed evolution of operational performance across key tasks. Task i) post-disturbance analysis improved with more timely communication to RCC Incident Classification Scale (ICS) single point of contacts (SPOCs). Persistent issues remain in task a) coordinated capacity calculation, with discrepancies between optimized CGMs and TSO processes, and in task c) common grid model. IT limitations affecting task f) outage planning coordination also impacted operations.

- **Task a) – Coordinated Capacity Calculation**

TSCNET and Coreso: TSCNET and Coreso identified several shortcomings for day-ahead, intraday and long-term capacity calculations. The efficiency of the Core capacity calculation tool still required further improvement, as confirmed by previous performance assessments, although this marks some progress compared to the higher fallback rates reported in 2022–2023.

Discrepancies continued to exist between optimized CGMs and TSO processes. Moreover, the implementation of CGM scaled to Net Position Forecast (NPF) introduced additional sources of inaccuracy, as not all IGMs were fully adapted to the target, leading to more frequent load-flow divergences.

Closer collaboration with TSOs is expected to improve the quality of input data and increase the reliability of optimized capacity calculations. The regional review of long-term transmission rights (LTTC) values currently under way, may also lead to revised, potentially lower, capacity targets.

Nordic RCC: During the 2024 day-ahead flow-based capacity calculation External Parallel Run, shortcomings were identified in the available transfer capacity (ATC) extraction process, specifically related to the representation of implicit loss factors on high voltage direct currents (HVDCs), which could cause non-convergence and result in zero cross-border capacity for the intraday market.

A temporary workaround was applied, but capacities remained limited. Consequently, Nordic RCC and TSO experts implemented a permanent stand-alone tool for ATC extraction, operational since February 2025. This development addresses a shortcoming initially identified in 2023 and represents a tangible improvement in both methodology and system reliability, expected to eliminate non-convergence issues and enhance responsiveness for future day-ahead and intraday market operations.

- **Task b) – Coordinated security assessment**

Baltic RCC: Reported shortcomings related to external IT tools robustness, quality and accuracy of input data, frequent updates to tools and standards, as well as insufficient alignment between stakeholders and other regions.

Nordic RCC: Shortcomings reported under task c) common grid model also affect this task, limiting CSA's ability to fully support day-ahead operational planning. No significant improvements were observed since 2023, underscoring the interconnectedness of CGM quality and security assessment performance.

SEIeNe CC: Reported that the CSA process lacked automated optimization of remedial actions, relied on manual TSO input and only considered non-costly remedy actions (RAs). Limited monitoring of RA activation and implementation hinders evaluation of overall effectiveness. Transition to ROSC, which will bring enhanced capabilities and greater automation, is expected to improve these aspects significantly.

- **Task c) – Common grid model**

TSCNET and Coreso: The RCCs reported that the timely delivery and quality compliance of the CGMES-based common grid model, particularly regarding the inclusion of individual grid models (IGMs), remained challenging during the CGM building process. Even successfully validated IGMs were not always incorporated into the merged CGM (an issue already observed in 2022–2023). Consequently, no regional operational process relied on the CGMES CGM, pending the completion of ongoing investigations, alignments, and updates to tools and procedures.

To address these challenges, the RCCs mentioned that a CGMES CGM Action Plan had been in place since April 2024 to enhance CGM creation and data quality, building on earlier efforts to resolve persistent issues with IGM validation and inclusion. ACER understands that UCTE-format CGMs continue to be used in most regional operational processes within the Core region.

Baltic RCC: Reported that limited IGM availability (up to 60%) and lower robustness of IT systems, particularly operational planning data management, during specific periods remained key issues. While availability had improved slightly compared to 2023/2022 53% levels, IT system stability continues to affect service reliability**.**

Nordic RCC: Operational performance and data quality of the day-ahead CGM and the CSA 'light' process[28], based on it, required further improvement. While the control area net position generally aligned with market results, individual bidding zones for some TSOs show systematic biases that reduced representativeness of security analysis results.

Additionally, inconsistent adoption of day-ahead IGM reference programs across TSOs led to invalid or substituted CGMs for more than 10% of MTUs per month, showing that several challenges flagged in 2022–2023 remain unresolved. These shortcomings need to be addressed for the CSA service to fully support Nordic TSOs in day-ahead operational planning.

SEIeNe CC: The RCC identified discrepancies between reported and actual absent CGMs. Missing IGMs continued to impact CGM scaling, power flow convergence, and CGM accuracy. Interoperability Tests (IOPs) indicated that higher IGM availability improved convergence while, insufficient scalability or large net position deviations, often caused non-solvable power flows. The quality of the input pan-European validation function (PEVF) file also had a significant impact, with imbalances occasionally causing scaling failures and reducing the accuracy of the resulting CGMs.

These findings confirm that while some incremental improvements in IGM availability have been achieved since 2022, core challenges in CGM completeness, reliability, and validation remain largely unresolved.

- **Task d) (Consistency defence and restoration plans)**

TSCNET and Coreso: reported that Article 6 of the Network Code on Emergency and Restoration (NC ER) only specifies timelines for the 2019 consistency assessment cycle and does not mandate a recurring five-year cycle, leaving room for interpretation.

SEIeNe CC: indicated that clear guidance from regulators is required due to the flexible degree of interpretation of the timelines in the Article 6 of the NC ER.

- **Task e) Short-term adequacy**

Baltic RCC: Reported the absence of proper fallback procedure in case of unavailability of the STA tool. No procedure had yet been implemented to verify the quality of input data despite the strong dependence of STA results on data accuracy. A solution was planned to be discussed in 2025.

[28] In September 2024, Nordic RCC formally launched the first version of its coordinated security analysis (CSA "light") for use in the daily operational planning of the Nordic TSOs. The CSA "light" process represents a streamlined implementation of the full coordinated security analysis, providing preliminary cross-border security assessments based on the day-ahead common grid model.

- **Task f) – Outage planning coordination**

TSCNET and Coreso: Development of the regional coordination operational procedure (RCOP) and associated reporting from RCCs to TSOs as part of the regional OPC process, remains under review, and therefore it's considered a shortcoming.

This continues a trend observed in 2023, where pending procedures and governance clarifications limited the operational use of the OPC framework. Efforts to align RCC and delegated outage coordination region (OCR) responsibilities are ongoing within the Central Europe SOR Joint Management Board.

Baltic RCC: Absence of a fallback procedure in case of OPC pan-EU tool failure. During the year-ahead OPC process, the OPC PE tool was unavailable for about two weeks, leading to coordination difficulties and delays in uploading outage plans. Issue tickets were not addressed promptly, and TSO data provision delays further slowed the OPC process, requiring additional manual coordination efforts during weekly TSO-RCC calls. While similar IT and coordination shortcomings were reported in 2022–2023, the 2024 period shows that improvements in responsiveness remain limited, particularly regarding fallback measures and timely data provision.

SEIeNe CC: During 2024 there were no shortcomings identified in the monitoring of year-ahead and week-ahead regional OPC processes, under paragraph 1 of Article 46 of Electricity Regulation.

However, drawbacks persisted in the pan-European OPC week-ahead process due to IT infrastructure and tool issues, reflecting similar IT-related limitations as reported in 2023. The pan-European OPC year-ahead was completed without issues.

- **Task g) Training and certification of staff**

SEIeNe CC: SEIeNe CC training program currently includes only online self-paced learning. More interactive and practice-oriented training methods should be developed in the future.

- **Task i) Post-disturbance analysis**

TSCNET and Coreso: Using post-operational data for quality management remained challenging, but communication with RCC ICS SPOCs had significantly improved compared to 2023.

SEIeNe CC: Regarding the incident on 21 June 2024, all deadlines were met and the TSOs provided the necessary data for the investigation, with no shortcomings identified in this respect. However, communication in the SEE region during such incidents continues to require improvement.

- **Task o) (Maximum entry capacity for CMs)**

TSCNET and Coreso: None of the issued recommendations were implemented by National Energy Ministries at their respective borders.[29]

[29] Reasons: PSE:# different border configuration between MEC method and implemented CM border according to Polish law; Elia/RTE: ERAA2023 scenario differs from CRM dimensioning and does not ensure that LOLE criteria are met, ERAA's limited target years do not fully align with CM needs and insufficient quality of ERAA 2023.

4. Conclusions

This section of the report presents conclusions to the monitoring of the RCCs' reporting obligations in 2024. ACER identified the following areas for enhancing RCCs' operations and for reaching their tasks' objectives. ACER considers that these aspects could help RCCs in improving their performances and monitoring in future reports.

ACER will ensure that timely feedback is provided to the RCCs via continued cooperation.

ACER conclusions and suggestions for improvement

Ensure timely implementation and monitoring for all RCC tasks

1. **Focus on the full and timely implementation of all the RCC tasks**, including regional processes, and ensure their correct performance. Prioritise the adequate development of the common grid model (CGM) creation which serves as basis for other tasks, coordinated capacity calculation (CCC), coordinated security analysis (CSA), short-term adequacy (STA) and outage planning coordination (OPC), where ACER identified that further improvements were needed. Ensure that Regional Operational Security Coordination (ROSC) delays are addressed promptly as the CSA task cannot be provided with full functionality until the ROSC framework is in place.

Advance capacity calculation to different timeframes and regions, where possible.

2. While welcoming the RCCs' progress in 2024, ACER concludes that more efforts are needed to continue the **extension of coordinated capacity calculation and the merging processes for common grid model creation to missing timeframes** over the coming years for all RCCs. Similarly, continue the implementation of the CSA task by extending processes to different timeframes to perform the fully coordinated regional operational security analysis (CROSA). Further, faster ROSC progress will directly improve CSA performance.

3. Focus on **improving flow-based (FB) processes to achieve better results where applicable.** ACER takes note of efforts to enhance, for example, the available transmission capacity (ATC) extraction process in the Nordic region. Where applicable, continue expanding the **overall implementation of flow-based capacity calculation and developments to meshed areas of the system** where flow-based processes are missing. Applying FB allocation is essential to fully realize the advantages of FB capacity calculation. These are expected to enable a more efficient use of transmission capacity, benefiting wholesale and balancing markets.

Focusing on improving CGM results to facilitate its long-term readiness.

4. While acknowledging efforts in improving tools and processes (such as improvements to or the usage of the European Merging Function tool), ACER finds that considerable efforts are needed to **enhance the technical quality and robustness of the CGMES-based common grid models**. In most regional operational processes, CGMs continue to be based on the UCTE format. This is needed to ensure that more CGMES-based tasks will be implemented in the coming years. An improved CGM process would help RCCs to support operations performed for outage planning coordination, coordinated security analysis or coordinated capacity calculation tasks.

5. RCCs should monitor and actively support TSOs in improving **data quality of individual grid models (IGMs)** and achieve their full inclusion in the CGM merging process. They should also coordinate and ensure that IGMs submitted by the TSOs are aligned with each other to better achieve convergence. RCCs should clearly specify in their reports for which tasks and timeframes they use CGMs based on the two standards: either the CGMES or UTCE data exchange formats.

Enhance the scope of short-term adequacy, outage planning and training and certification of staff.

6. **Continue to include battery storage and demand-side response as critical flexible resources for short-term adequacy assessments** (such as done in the South-West Europe SOR) and account for HVAC outages to bring the simulation closer to reality. In addition, using sensitivity and

probabilistic convergence would help increase the accuracy of short-term adequacy assessments and the detection of near-term adequacy risks.

7. RCCs should consider developing an implementation plan, together with a methodological approach to **maximize cross-zonal capacities for outage planning coordination**. ACER suggests expanding the task's scope to security limits beyond the maximum current flow to include voltage limit risks; as well as to assess generation and load facilities addressing any inconsistencies in TSO thresholds for asset relevance. In addition, ACER encourages RCCs to issue recommendations to TSOs on outage planning coordination for operational services, including metrics on their implementation and uptake by TSOs.
8. **Further enhance and report on training and certification activities**, including joint training with other RCCs and TSOs where relevant. In addition, specify the tasks for which RCCs have delivered training modules, in line with the requirements of the training and certification of staff methodology. For example, in its role as RCC training coordinator, SEleNe CC reported leading joint training modules for the pan-European outage planning coordination task. RCCs may also consider including a list of the training modules delivered.

Align KPIs across RCCs and explain missing metrics.

9. **Ensure that the same key performance indicators (KPIs) are used by the same RCC over the years** – both for tasks that have already been implemented as well as for newly implemented tasks (as the case of the launch of the flow-based capacity calculation domain in the Nordic capacity calculation region since the end of October 2024).
10. **Strive to align KPIs for regional processes** (for instance, for regional OPC and regional STA calculations) to make them comparable across system operation regions and RCCs. This should be done to the extent possible while accounting for regional differences.
11. **Clearly explain why there were no KPIs performed for a certain task:** either because the task was not yet in operation or because that certain task was not performed or triggered that specific year (for example task d) defense and restoration plans or task m) crisis scenarios).

Continue efforts to issue recommendations and monitor their implementation where applicable.

12. **Adopt coordinated actions and issue recommendations for implemented tasks.** Compared to 2023, ACER notes that several RCCs have made efforts to introduce recommendations on maximum entry capacity (MEC), providing details on the number of recommendations issued and whether these were submitted by the TSOs (TSCNET, Coreso, Nordic RCC). Similarly, ACER observes that some RCCs reported issuing recommendations - such as on the CGM (SELeNe CC, Baltic RCC), although no further details were provided.
13. ACER encourages RCCs to **include details of their recommendations in their annual reports** - such as those related to the CGM (SELeNe CC, Baltic RCC) or to the OPC task (TSCNET, Coreso, SELeNe CC). In addition, RCCs should monitor whether TSOs have implemented these recommendations and, where applicable, provide explanations when recommendations have not been followed (for example, regarding the MEC task proposed by TSCNET and Coreso).

To improve the quality of the reporting, thereby facilitating the monitoring of the performance and the progress made by each RCC every year, ACER encourages RCCs to take the following actions:

14. **Better separate reporting on performances for regional tasks from pan-European processes**, including a clear status on the task's implementation. For instance, separate the processes for regional and pan-European STA and OPC performance and clearly state if the KPIs reported refer to either the regional or the pan-European process. On the testing of tools, explain whether it was the RCC testing their own tool, or whether the RCCs have tested it altogether (for example the pan-European MEC IT tool). To ease clarity, consider including a section describing the stage of implementation of each task – such as in the Nordic RCC annual report and a differentiation of pan-European processes versus regional processes – such as in the TSCNET, Coreso and SEleNe CC reports. Further, clarify how a certain task's implementation interacts with already existing processes (e.g. run previously by the RCC(s) or by ENTSO-E with TSOs and RCCs). For instance,

in the case of post-disturbance analysis, specify if the indicators refer to the RCC's own investigation or as part of its interaction with existing processes managed by ENTSO-E. Similarly, for the crisis scenario task, specify if the KPIs on operational performance, effectiveness and efficiency refer to the RCC's own performance of the task or common findings of the Working Group Risk Preparedness[30] comprising ENTSO-E, RCCs and TSOs. ACER welcomes the **inclusion by all RCCs of overview tables showing the implementation status** of each task, together with the use of common criteria for describing the stage of a task's development – in line with ACER's observations on RCCs' reports for 2023. This summarized information helps keep track of progress over the years and provides a clear overview of developments.

15. **When explaining the rotation principle for fulfilling tasks** carried out at a pan-European level (CGM processes, STA, OPC), specify: first, which RCC(s) was in turn for performing the task throughout all the RCCs' reports (including in reports where a certain RCC was not in rotation of performing the task); and second, if the metrics reported relate to the pan-European process performed by that RCC.

[30] When referring to the Working Group Risk Preparedness in the annual reports, please specify who organised and who is leading this group (e.g. ENTSO-E).

5. Annex I – RCC Overview and Summary of RCC Reports

5.1. RCCs overview and report submissions

RCCs have registered seats in different Member States and cover different system operation regions (SOR) and capacity calculation regions (CCR) and TSOs, as outlined in Table 2.

Table 2: Overview of RCCs in Europe.

RCC	Registered Seat	SOR[31]	CCR[32]	Participating TSOs
Coreso	Brussels, Belgium	Central Europe and SWE	Core Italy North SWE	50Hertz, EirGrid, Elia, National Grid ESO, REE, REN, RTE, SONI, Terna
TSCNET	Munich, Germany	Central Europe	Core Italy North Hansa	50Hertz, Amprion, APG, Creos, ČEPS, ELES, HOPS, MAVIR, PSE, SEPS, Swissgrid, TenneT (DE), TenneT (NL), Transelectrica, TransnetBW, VUEN
Baltic RCC	Tallinn, Estonia	Baltic	Baltic	Elering, AST, Litgrid
Nordic RCC	Copenhagen, Denmark	Nordic	Nordic Hansa	Statnett, Energinet, Fingrid, Svenska Kraftnet
SEleNe CC	Thessaloniki, Greece	SEE	SEE Greece-Italy	ESO, IPTO, Terna, Transelectrica

[31] SOR in accordance with Article 36 of the EU Regulation 2019/943 and ACER Decision No 05/2022.

[32] See ACER Decision No 04/2024 on the amendment to the determination of capacity calculation regions.

RCCs have fulfilled their reporting obligations in accordance with Article 46, as shown in Table 3.

Table 3: Article 46 of the Electricity Regulation (RCC Annual Reports – 2024 – received in 2025).

RCC and link to published report	Submission
Coreso[33]	Annual report for the performance in the SWE SOR published and received on 25 July 2025. Annual report on Central Europe SOR jointly with TSCNET published and received on 25 July 2025.
TSCNET[34]	Annual report on Central Europe SOR jointly with Coreso published and received on 25 July 2025.
Baltic RCC[35]	Annual report published and received on 4 April 2025.
Nordic RCC[36]	Annual report published and received on 8 May 2025.
SEleNe CC[37]	Annual report published and received on 3 October 2025.

[33] Coreso monitoring report SWE SOR and Coreso and TSCNET monitoring report Central Europe SOR.

[34] Coreso and TSCNET monitoring report Central Europe SOR.

[35] Baltic RCC Annual Report 2024.

[36] Nordic RCC Annual Report 2024.

[37] SEleNe CC Annual Report 2024.

5.2. TSCNET & Coreso (Central Europe SOR)

5.2.1. Fulfillment of reporting obligations

Table 4: Overview of fulfilment of reporting obligations for implementation tasks (TSCNET & Coreso).

Reporting obligations	Article 37 tasks reported on
RCC's operational performance Article 46(1)(a)	a) (CCC for Core & IT North CCRs) c) (CGM) d) (Consistency defence and restoration plans) e) (STA) f) (OPC) g) (Training and certification of staff) i) (Post-disturbance analysis) m) (Crisis scenarios) o) (Maximum entry capacity for capacity mechanisms)
Coordinated actions and **recommendations** issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	Reported that none were issued for: a) (CCC for Core & IT North CCRs) c) (CGM) (No formal recommendation but RCCs advise TSOs on the improvement of IGMs data) d) (Consistency defence and restoration plans) e) (STA) g) (Training and certification of staff) i) (Post-disturbance analysis) m) (Crisis scenarios) Reported issuing recommendations for: f) (OPC) (The issued recommendations are not in the report) o) (Maximum entry capacity for capacity mechanisms)
Effectiveness and **efficiency** of each of the tasks for which they are responsible and, where applicable, the rotation of those tasks Article 46(1)(c)	a) (CCC for Core & IT North CCRs) c) (CGM) d) (Consistency defence and restoration plans) e) (STA) f) (OPC) g) (Training and certification of staff) i) (Post-disturbance analysis) m) (Crisis scenarios) o) (Maximum entry capacity for capacity mechanisms)
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

5.2.2. Summary of the report

This subsection presents a high-level summary of the performance of the RCCs, based solely on the information provided in the reports as published by the RCCs.

Table 5: High-level summary of the report (TSCNET & Coreso).

Article 37 tasks	Article 46(1)(a)	Article 46(1)(b)		Article 46(1)(c)	
	Operational performance	Coordinated actions	Recommendations	Effectiveness	Efficiency
a) (CCC (Flow-Based)) – D-1 CC & ID CC for CORE CCR	- Successful execution of **D-1 CC** process (KPI: total number of timestamps successfully delivered (even if fallback procedures were applied) divided by total number of possible timestamps): **100%.** - **ID CC(a):** 100%, but **95.83%** sent to CB ID platform in ID CC(b) process (due to communication & file delivery issues (mostly resolved already).	None issued. Reporting of coordinated actions and recommendations will be done once the confirmation procedure as per Art. 13 (2) of the RCC establishment provisions is implemented.		- **D-1 CC**: Total computation rate (total number of timestamps where final cross-border capacities were delivered without any fallback procedures applied, neither default flow-based parameters nor spanning: **99.63%.** - 32 incidents led to fallback procedures for DACC. - KPI for **ID CC(a):** 100%, but **93.05%** for ID CC(b). - 145 incidents for **ID CC(b).**	- Percentage of business days for which the capacity results were delivered before target end time: **D-1 CC**: **95.05%.** **ID CC(a):** 98.50%; **ID CC(b): 90.18%** due to delays in earkier stages of the CC process.
a) (CCC (NTC)) – D-1 CC & ID CC & LTCC for Italy North CCR	- Successful execution of D-1 and ID CC processes (KPI: total number of timestamps successfully delivered (even if fallback procedures were applied) divided by total number of possible timestamps): - **D-1 CC** (by Coreso): **98.5%** i.e. 1.5% of timestamps fallback had to be applied by Terna. - **ID CC** (by Coreso & TSCNET): 99.73% i.e. for 0.27% backup NTC values were used by TSOs due to tool failure. - **LT CC** (by Coreso for odd months & TSCNET for even months (monthly rotation) and Y-1 for 2025 (yearly rotation): **100% LTCC_M-1, 100% LTCC_Y-1.**	None issued (as not yet required, but may be implemented, once CCR IN is merged with Core).	None issued.	- Total computation rate (total number of timestamps where final cross-border capacities were delivered without any fallback procedures): - **D-1 CC 86.40%** i.e. for 13.6% Coreso was not able to provide any computed results due to missing or invalid TSO input (1.6%) or IT issues (7.3%). - **ID CC 86.28% (combined)** i.e. for 13.72% fallback or backup procedures were needed due to missing or invalid TSO input (7.47%) or IT issues (6.25%). - **LT CC: 84.7%.**	- **D-1 CC** efficiency rate (i.e. initial computed TTC without reduction divided by total timestamps): **57.00%.** - **ID CC** efficiency rate: **60.37%.** - **LT CC M-1: 75,50%.** - **LT CC Y-1: 84,70%.**
b) (CSA)	Under development. Legacy Security Assessment in operation for CORESO & TSCNET shareholders.				

	Go-live ROSC / CROSA for CORE DA: Q4/2028 and for CORE ID: Q2/2029; for Italy North DA: Q4/2028 and for Italy North ID: Q2/2029.				
c)	(CGM)	- **CGM building** process: Published CGMs divided by due CGMs for D-2, D-1 & ID by **TSCNET (62.25%, / 77.33% / 78.11%) and by Coreso (53.96% / 56.04% / 86.24%).** Y-1 still in test phase (neither Coreso nor TSCNET in rotation). Notes: - substantially reduced performance compared to 2023, due to the stop of manual data quality interventions to increase probability for successful CGM creation in 9/24 and also the respect of the process gate closure time. - CGMs delivered have NOT been used in regional operational processes during 2024, as the quality of CGMs is insufficient and regional process not ready. - common CorNet EMF tool as of 1 December 2024. - lower share of Coreso compared to TSCNET mainly caused by IT issues and no manual data quality intervention after GCT for CGM submission.	The RCCs do not issue recommendations formally for the CGM task yet. RCCs provide proposals to TSOs concerning IGM data quality.	Percentage of total published IGMs included in the corresponding CGMs ("M09"): **- TSCNET: 39.77% (D-2); 47.37% (D-1); 41.78% (ID).** **- Coreso: 37.33% (D-2); 39.59% (D-1); 37.71% (ID).** Significant drop in effectiveness (due to the stop of manual data quality interventions): **- TSCNET**: 23.47% (D-2); 40.02% (D-1); 27,32% (ID). - **Coreso**: 19.13% (D-2); 16.25% (D-1); 31.43% (ID).	Four planned (and still to be implemented) efficiency KPIs: - ratio of desired vs. actual CGM delivery time (excluding validation, considering all CGMs). - ratio of desired vs. actual CGM delivery time (excl. validation but considering only the published CGM).
d)	(Consistency defence and restoration plans)	In operation. Go-live: Exercise every 5 years - task performed in 2024-2025, next in 2029-2030. Consistency Asssesment Report on Defence & Restoration plans delivered within agreed timeframe and standard. One border identified as inconsistent within the Central Europe SOR. TSOs were informed, coordination took place and mitigation actions were agreed.	RCCs do not issue recommendations for this task.	Regional assessment reports successfully submitted by RCCs to their TSOs and to ENTSO-E by end of October 2024. ENTSOE compiled final report on consistency checks, approved by SOC on 12 February 2025.	- Number of communications: between TSOs & RCCs (7 Coreso, 5 TSCNET) and between RCCs (7). - number of data submissions required to achieve consistency on all borders: 9 (for each RCC).
e)	(STA)	- **Pan-EU STA** (by Coreso): 393 calculations triggered, only 6 failed: **98.47% success rate.** - no regional STA (RAA) was triggered.	Proposals for remedial actions only relevant to RAA; no recommendations given to TSOs, since no RAA was triggered.	N/A reported, as no RAA was triggered. Effectiveness KPI is defined by the process' capability to provide a resolution to an adequacy issue identified at regional level. 8 data items are planned to be delivered in future reports per each RAA trigger (date	Efficiency (% of days w/o the need for additional STA run, which is generally triggered in case of an input data issue at pan-EU level): **92.62%.**

			of event & assessment, RCC leader, number of concerned TSOs, inadequacy duration, ENS [MWh], proposed mitigation action, resolution status).	
f) (OPC)	**Pan-EU OPC** operation performance (processes triggered / processes expected to be triggered): **99.52%** for W-1 (only 1/208 W-1 processes failed due to IT Tool issue; **100%** for CA (2023: 100% (for W-1 & Y-1).	Issued recommendations in the OPC process are not covered, since the Regional Coordination Operational Procedure is not available and not implemented.	- Pan-EU: OPC Result delivery within defined deadlines: **99.52% (W-1); 100% (Y-1).** - Pan-EU: Tie-line outage consistency: **95.07% (WA); 94.85% (Y-1).** - Pan-EU: Correctly mapped assets between OPC & CGM: **96.65% (WA); 92.26% (Y-1).** Note: 31 out of 208 merges were delayed during W-1 OPC process due to tool issues, but the failures have no significant impact on final regional coordination (since weekly and yearly coordination calls and manual backup procedures are available in case of failure of automated processes).	
g) (Training and certification of staff)	In operation and under further development (step wise implementation). Go-live process: 18 May 2024; go-live certification: Q2/2026. Proportion of completed certifications out of total required tasks: -before go-live of this method: **100% (TSCNET), 67% (Coreso)**. - for new tasks after go-live: shall always be **100%.**	RCCs do not issue recommendations for this task.	First attempt succes srate in certification process: **87.50% (TSCNET), 82.58% (Coreso).**	
h) (Supporting restoration)	Not yet started. Go-live: Awaiting methodology approval.			
i) (Post-disturbance analysis)	Regional Incidents Analysis and Reporting (RIAR) process interacts with ICS Expert Panel for each scale 2 and 3 incident. **4 incidents were notified in 2024, 3 on time, 1 was 42 days delayed** **21 June 2024: blackout in SEE (scale 3 which triggered an RIAR process / investigation); other 3 incidents of scale 1.**	No recommendations were made during 2024, since investigation were not completed in 2024 (final report by 30 September 2025).	Effectiveness defined as: - nomination & communication of the RCC members within one week of the start of a scale 2 or 3 incident: **within 1 week in 3/4 cases (one was delayed, but RCC reaction prompt).** - Publication of final report including the RCC chapter by end of September in the year after the incident: **no final reports published in 2024.**	Efficiency can be assessed based on: - Published reports in case of investigation threshold is met: **reducing KPI to one number not possible, since each incident was unique and difficult to compare.** - Number of hours spent on this task (process implementation, training & certification, recommendation follow-up): **TSCNET spent 160 hours, Coreso 125 hours on improving methods, training material and certifying additional investigators. Additional 340 hours (TSCNET) and**

				150 hours (Coreso) spent on incident investigations (mostly on the SEE blackout).
j) (Reserve sizing)	Under development. Go-live: Q3/2026.			
k) (Balancing procurement)	Under development. Go-live: Q3/2025.			
l) (Optimisation inter-TSO settlement)	Cost sharing calculation: Under development. Go-live: latest 1 year after CROSA go-live.			
m) (Crisis scenario)	In operation. Exercise every 4 years - task performed in 2024-2025, next exercise in 2028-2029. 23 regional crisis scenarios compiled for evaluation plus 2 scenarios simulated: severe winter and summer to enhance risk preparedness, but further refinements on process & timeline needed for greater robustness and accuracy.	Close collaboration among all parties (ENTSO-E, stakeholders, ECG, RCCs, NRAs, competent authorities) and coordination for cross-border dependencies. No recommendations issued from the RCCs' perspective, but the WG RP issued (non-public) recommendations.		KPI: completed report's submission within the process' deadline in line with the method (publication of report on 5 September 2024).
n) (Seasonal adequacy)	Not requested by TSOs / Go-live.			
o) (Maximum entry capacity for CMs)	In operation. Number of successfully completed calculations / number of requested calculations by each relevant TSO per delivery period: (4 conditions apply) **Coreso_Elia: 2/3; Coreso_RTE: 2/7; TSCNET_PSE: 5/5.**	- number of recommendations provided for each TSO is contained in the respective RCC maximum entry capacity (MEC) recommendation for the given business year computation. MEC recommendation is provided for each requested by TSO delivery period (see RCC's websites). -Annual implementation monitoring of whether RCCs recommended entry capacities were submitted to NRAs: For 2023 all 3 TSOs did not adopt the RCC MEC recommendations.	No quantitative metric available, but MEC service delibery with prototype tool for 2024 and ENTSOE MEC production tool for computation to be effective in terms of compliance with MEC method, publications on RCC website, implementation monitoring, archieving in accordance with RIAR.	Number of delivered final recommendation reports by agreed deadline / total number of delivered finral recommendation reports: For 2023 (MEC performed in 2024) Coreso delivered 2/2 per TSO recommendations, TSCNET: 5/5 (late or non-delivery of ERAA/NRAA from ENTSOE/TSO shall not impact the RCC KPI negatively).
p) (Needs for new infrastructures)	Not yet started. Go-live: Awaiting methodology approval.			

5.3. Coreso (SWE SOR)

5.3.1. Fulfillment of reporting obligations

Table 6: Overview of fulfilment of reporting obligations for implemented tasks (Coreso SWE SOR).

Reporting obligations	Article 37 tasks reported on
RCC's operational performance Article 46(1)(a)	a) (CCC SWE) c) (CGM) d) (Consistency defense and restoration plans) e) (STA) f) (OPC) g) (Training and certification of staff) i (Post-disturbance analysis) m) (Crisis scenarios) o) (Maximum entry capacity for capacity mechanisms)
Coordinated actions and **recommendations** issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	Reported that none were issued for: a) (CCC) c) (CGM) (No formal recommendation but RCCs advise TSOs on the imporovement of IGMs data) d) (Consistency defence and restoration plans) e) (STA) g) (Training and certification of staff) i) (Post-disturbance analysis) m) (Crisis scenarios) (the RCC did not direcly issue recommendations) Reported issuing recommendations for: f) (OPC) (The issued recommendations are not in the report) o) (Maximum entry capacity for capacity mechanisms)
Effectiveness and **efficiency** of each of the tasks for which they are responsible and, where applicable, the rotation of those tasks Article 46(1)(c)	a) (CCC) c) (CGM) d) (Consistency defence and restoration plans) e) (STA) f) (OPC) g) (Training and certification of staff) i (Post-disturbance analysis) m) (Crisis scenarios) o) (Maximum entry capacity for capacity mechanisms)
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

5.3.2. Summary of the report

This subsection presents a high-level summary of the performance of the RCCs, based solely on the information provided in the reports as published by the RCCs.

Table 7: High-level summary of the report (Coreso).

Article 37 tasks	Article 46(1)(a)	Article 46(1)(b)		Article 46(1)(c)	
	Operational performance	Coordinated actions	Recommendations	Effectiveness	Efficiency
a) (CCC)	Successful delivery: **99.73%** in **D-1 CC** and **100%** in **ID CC**. (KPI: total number of timestamps successfully computed and delivered to the participating TSOs divided by the total number of possible timestamps (even if fallback procedures had to be applied). For 0.27% of the timestamps, NTC values couldn't be provided to the TSOs, due to failure of the tool to deliver these capacities. In 2023, the KPIs were the successful delivery of net transfer capacity (NTC) in ID CC 100% and the successful delivery of NTC in D-1 CC 100%.	The final objective of coordinated actions is already fulfilled in the SWE CCR region. However, there are currently no explicit coordinated actions issued by the RCC as there is no requirement in the existing operational process and methodology. No recommendations were issued.		The effectiveness KPI rate in the **ID CC** is **65.65%.** For 34.35% of the cases, fallback or backup procedures were necessary due to issues with the tool that computes the capacities, issues with the tool used for the quality checks and validation processes and missing or invalid inputs from the TSOs. The effectiveness KPI rate in the **D-1 CC** is **97.20%.** For 2.8% of the cases fallback or backup procedures were necessary due to issues with the tool that computes the capacities, issues with the tool used for the quality checks and validation processes and missing or invalid inputs from the TSOs. In 2023, the KPIs were for ID CC robustness 75.01% and for D-1 CC robustness 98.29%.	The efficiency KPI rate in the **ID CC** is **90.94%.** For 9.06% of the cases at least one TSO requested a capacity reduction due to security issue. The efficiency KPI rate in the **D-1 CC** is **91.35%.** For 8.65% of the cases at least one TSO requested a capacity reduction due to security issue. In 2023, the KPIs were for ID CC robustness 94.34% and for D-1 CC robustness 94.29%.
b) (CSA)	The implementation of the methodology in accordance with SOGL is under development. Currently, Coreso performs security analysis for SWE CCR outside the scope defined in SOGL.				
c) (CGM)	**CGM building** process (based on the number of published CGMs divided by due CGMs) for: - In 2024 for the year-ahead time-horizon, Coreso was not in rotation to create the year-ahead CGM for the calendar year 2025. - **D-2**: **53.9%; D-1 56.04%; ID 86.24%** of IGMs.	The RCCs have not yet issued recommendations formally for the CGM task. However, RCCs currently provide proposals to TSOs concerning data quality. The issued are tracked by an ENTSO-E Working Group.		Percentage of total published IGMs included in the corresponding CGMs (metric M09 from ENTSO-E CGM Building dashboard): **D-2: 31.33%; D-1: 39.59%; ID: 34.71%.** In 2023 it was: D-2: 19.13%; D-1: 16.25%; ID: 31.43%.	The efficiency process of the merging process is planned to be implemented based on: - ratio of desired vs. actual CGM delivery time (excluding validation, considering all CGM). - ratio of desired vs. actual CGM delivery time (excluding validation,

	In 2023, the KPIs (based on the number of published CGMs divided by due CGMs) were : - Y-1 (Winter I peak): 35% of IGMs included in the first merge; 52.50% of IGMs included in the last merge. - D-2 95.66%; D-1 95.74%; ID 89.15% of IGMs.			but considering only the published CGM).
d) (Consistency defence and restoration plans)	The report and analysis were delivered within the agreed timeframe to the agreed standard. Ultimately, all borders were identified as consistent within the SWE region.	The RCCs have not yet issued recommendations.	Submission of regional reports: Coreso have successfully submitted their regional assessment reports to their respective TSOs and to ENTSO-E in accordance with the agreed timeline, by the end of October 2024. SOC Approval of the Final Report, Including RCC Chapters: ENTSO-E has compiled the final report addressing the consistency checks for system defence and restoration. This report integrates the individual submissions from all participating RCCs and has been submitted for review and approval by the SOC. Notably, the submitted report received approval on 12 February.	The RCCs had a total of seven pan-EU meetings between February and October 2024 to ensure close alignment on analysis boundaries, analysis standards, timelines, sharing of data and synchronisation of reports. The efficiency is measured by the number of data submissions required to achieve concistency on all borders. The number of required data submissions range between 2 and 9 with 52 % of the borders that required 3 or 4 submissions.
e) (STA)	Based upon the successfully completed executions of the STA calculations. - **Pan-EU STA**: 393 calculations triggered, only 6 failed (**98.47%** success rate) (↓ from the percentage of process successes in 2023, W-1: 98.97%).	Proposals for remedial actions (RAs) are only relevant to the RAAs. No regional adequacy assessment was triggered for the TSOs of the SWE SOR region. There were no recommendations given to TSOs.	KPI: capability of the process to provide a resolution to the adequacy issue identified at the regional level. - N/A reported, as no RAA was triggered. - 8 data items are planned to be delivered in future reports per each RAA trigger (date of event & assessment, RCC leader, number of concerned TSOs, inadequacy duration, energy not served [MWh], proposed mitigation action, resolution status).	Efficiency (% of days without the need of additional STA run which is generally triggered in case of an input data issues at the pan-EU level): **92.62%** for **W-1** (In 2023, 92.60%). Reasons for the second run are either data quality inconsistency or an application issue.
f) (OPC)	Percentage of processes triggered compared to the processes expected to be triggered:	The issued recommendations in the OPC process are not included in this report because the RCOP is not available and is not implemented.	- Pan-EU: OPC Result delivery within defined deadlines: **99.52% (W-1); 100% (Y-1).** (In 2023, W-1: 98.56%; Y-1: 100%;). - Pan-EU: Tie-line outage consistency: **95.07% (W-1); 94.85 % (Y-1)** (In	

	- all **pan-European OPC** processes were **99.52%** successfully performed for **W-1** and **100%** for **Y-1** (but not always within the defined deadlines). In 2023, they were 100% for both W-1 and Y-1.		2023, W-1: 95.4%; Y-1: 95.31 %). - Pan-EU: Correctly mapped assets between OPC & CGM: **96.65% (W-1); 9.26% (Y-1)** (In 2023, W-1: 94.94%; Y-1: 97.23%). Note: 1 out of 208 merges was delayed during W-1 OPC process due to tool issues, but the failure have no significant impact on final regional coordination (since weekly and yearly coordination calls and manual backup procedures are available in case of failure of automated processes).	
g) (Training and certification of staff)	Progress of issued certifications for tasks already operational before the go-live of the RCC Training and Certification Methodology : **67%.** Success rate of certifications for new tasks implemented after RCC Training & Certification of Staff Task live : **100%.**	RCCs do not issue recommendations for this task.	Success rate of the first attempt in the certification process measures the percentage of certifications that RCC Operators successfully pass on their initial attempt : **82.58%.**	
h) (Supporting restoration)	Methodology under drafting / Go-live: Awaiting methodology approval.			
i) (Post-disturbance analysis)	In 2024, the ICS SPOCs from Coreso were informed about **4 incidents which had the potential to be classified as level 2 or 3**. An ICS Expert Panel and an RCC investigation subgroup were established following the incident in South-East Europe on June 21, 2024. Nordic RCC was jointly selected as leading RCC since they were not affected by the incident.	No recommendations were made during the year 2024, since the investigation of the only incident above the incident investigation threshold was not completed in 2024. Regulatory deadline for the publication of the final report is due on 30 September 2025 together with the annual ICS report.	Nomination and communication of the RCC members within one week after the incident occurred: ok for 3 out of 4 cases. One case was delayed, but RCCs reacted promptly once they were informed. Publication of the final report, including the RCC chapter by the end of September in the year after the incident: **No final reports were published in 2024.**	The efficiency of this task can be assessed based on published reports in case of the RCC investigation threshold being met. Reducing this down to a single KPI is not possible since each incident case is unique and difficult to compare with the other cases. In 2024, **Coreso** spent **125 hours** on the regular activities connected with the task such as improvement of methodologies and training material and certifying additional investigators. Additionally, Coreso spent **150 hours** on incident investigations. Most of these were linked with the incident on 21 June 2024.
j) (Reserve sizing)	Under development / Go-live: Q3 2026.			
k) (Balancing procurement)	Under development / Go-live: Q3 2025.			
l) (Optimisation inter-TSO settlement)	Not requested by TSOs.			

m) (Crisis scenarios)	A list of 23 regional electricity crisis scenarios was compiled for evaluation by the Working Group Risk Preparedness (WG RP). Additionally, the WG RP simulated 2 scenarios: The Severe Winter Scenario and the Severe Summer Scenario.	The identification of electricity crisis scenarios at a regional level required close cooperation and coordination between ENTSO-E and stakeholders with consultation of ECG, RCCs, competent authorities and regulatory authorities is therefore included at various stages in the process of identifying regional electricity crisis scenarios. Additionally, coordination was necessary for assessing Cross-Border dependencies and their impact on system operations within the regions where RCCs perform their tasks.	No recommendations were issued from the RCCs. However, the WG RP issued recommendations in the final report, which is not publicly available.	To assess this aspect of efficiency, a KPI is established to monitor whether a report is completed and submitted within the process duration. The «Identification of the Most Relevant Regional Electricity Crisis Scenarios» report was issued on 5 September by the WG RP after the SOC review on 22 August, in line with the methodology of 2024.	
n) (Seasonal adequacy)	Not requested by TSOs or not delegated by ENTSO-E.				
o) (Maximum entry capacity for CMs)	Ratio of performed calculations to requested calculations (%) : **Coreso_Elia : 100% / Coreso_RTE : 100%.** For Elia Coreso performed 2 calculations out of the 3 requested calculations due to missing matching target year from ERAA 2023. Moreover, the TSO did not indicate the use the replacement strategy, so this did not affect negatively the KPI. For RTE, Coreso performed 2 calculations out of the 7 requested calculations due to missing matching target year from ERAA 2023. Moreover, the TSO did not indicate the use the replacement strategy, so this did not affect negatively the KPI.	The number of recommendations provided for each TSO is contained in the respective RCC MEC recommendation for the given business year computation. Entry capacity recommendation is provided for each requested by TSO target year delivery period.	ENTSO-E MEC production tool for future computation to be effective based on the following criteria: 1. Compliance with MEC methodology requirements in both design and implementation. 2. Publication of final MEC recommendations and metadata on the RCC website. 3. Ongoing follow-ups with TSOs to monitor implementation in compliance with the Article 46 of Electricity Regulation. 4. Proper storage and archiving of all MEC input and	Ration of the number of delivered final recommendation reports on or before deadline agreed to the total number of delivered final recommendation reports : **Coreso_Elia : 100% / Coreso_RTE : 100%.**	

			result data in accordance with the RIAR methodology.	
p) (Needs for new infrastructures)	Methodology under drafting / Go-live: Awaiting methodology approval.			

5.4. Baltic RCC

5.4.1. Fulfillment of reporting obligations

Table 8: Overview of fulfilment of reporting obligations for implemented tasks (Baltic RCC).

Reporting obligations	Article 37 tasks reported on
RCC's operational performance Article 46(1)(a)	b) CSA c) (CGM) d) (Consistency defence and restoration plans) e) (STA) f) (OPC) g) (Training and certification of staff) i) (Post disturbance analysis) o) (Maximum entry capacity for capacity mechanisms)
Coordinated actions and **recommendations** issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	Reported that none were issued regarding: d) (Consistency defence and restoration plans) e) (STA) i) (Post disturbance analysis) Reported issuing recommendations for: c) (CGM) f) (OPC)
Effectiveness and **efficiency** of each of the tasks for which they are responsible and, where applicable, the rotation of those tasks Article 46(1)(c)	b) CSA c) (CGM) d) (Consistency defence and restoration plans) e) (STA) f) (OPC) g) (Training and certification of staff) i) (Post disturbance analysis)
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

5.4.2. Summary of the report

This subsection presents a high-level summary of the performance of the RCCs, based solely on the information provided in the reports as published by the RCCs.

Table 9: High-level summary of the report (Baltic RCC).

Article 37 tasks	Article 46(1)(a)	Article 46(1)(b)		Article 46(1)(c)	
	Operational performance	Coordinated actions	Recommendations	Effectiveness	Efficiency
a) Coordinated capacity calculation	The task has been initiated with the aim of going live in January 2025 in accordance with the synchronization timeline. A dry-run test of the CCC task was performed in 2024.				
b) Coordinated security analysis	The initial scope of Baltic ROSC methodology implementation went live from 1 April 2024 for Day-ahead and Intraday time frames performed on a daily basis. The implemented scope covers the CROSA process from input data provision from TSOs, simulation of N-1 on merged model in CGMES format to remedial action selection and coordination.	None.		From 1 April 2024, Baltic RCC managed to achieve its task by delivering CROSA **99%** of time without considering the failures of the external IT tools.	Due to new, in-house-developed tools for service delivery, and the new open-source EMF tool, the efficiency of N-1 calculations performance decreased from > 2 minutes to around 30 seconds per each timestamp.
c) (Common grid model)	The RCC participates in the pan-European process of CGM creation based on a rotational principle, additionally the RCC provides a boundary service as part of the pan-European task. The regional process covers the regional specifications set out by the Baltic SOR and includes regional merged models (RMM) which is Baltic RCC's CGM merged with Poland's network model.	Monitored and reported information on DA, ID timeframes to TSOs, highlighting instances of missing IGMs in the Operational Planning Data management software (OPDM). The RCC informed and offered recommendations to the TSOs on IGM-related issues, primarily based on ENTSO-E's interoperability tests (IOP) results.		The CGMs are merged and provided to the OPDE platform in timeframes defined by the service methodology (if all IGMs of Baltic TSOs are provided) **- 100% D-1** **- 90% D-2** RMM processes: **- 99%: D-1** **- 99%: 2 D-1** **- 99%: ID** **- 100%: W-1** **- 100%: Y-1** In Q2 2024, the new open-source EMF system was introduced as an advanced tool enhancing the efficiency and merging of IGMs. Q4 2024: the W-1 model was implemented. All Baltic TSOs provided	As the **RMM merging algorithm** was improved, the **merging time** was down to around **10 minutes** (from 20-30 minutes). As the **CGM merging algorithm** improved, the **merging time** was down to **15-20 minutes** (from50-60 minutes).

			their IGMS on a weekly basis.	
d) (Consistency defence and restoration Plans)	Task is limited to a formal consistency check of documentation stated by TSOs in excel templates provided to the RCC. Each TSO delivered their completed templates for each border. Inconsistencies discovered between templates were reported to the pertinent TSOs to allow for inter-TSO coordination and resubmission of updated versions.	The RCC has detected a few inconsistencies regarding the document version numbers in the provided excel templates, which were resolved through good collaboration of the involved TSOs.	Effectiveness of this task has been defined as: Clear focus: The RCC focuses on verifying data consistency (dates, version numbers) in TSO-provided excel templates. Standardisation: using templates ensures uniformity and transparency in documenting agreements.	The RCC provided TSOs and the respective RCCs with text documents with boundary analysis, clearly indicating inconsistencies. The inconsistencies found were solved by the TSOs from the first iteration bilaterally.
e) (Short-term adequacy)	- The duty of the **pan-European STA** task was accomplished **100% of days/weeks** as expected by the agreements. - RAA was not triggered for the task area of the RCC, thus there was nothing to be reported on for 2024.	None (as no RAA was triggered).	**100%:** Ratio of initiated RAA adequacy issues in Baltic SOR compared to the total number of the RAAs triggered for this area.	**100%:** Ratio of finalized RAA adequacy issues compared to the number of triggered RAA issues in Baltic SOR.
f) (OPC)	There were no major incidents in 2024 and no investigations reported. The RCC also developed a fully implemented W-1 OPI process. There were no incidents with the OPC tool merges while the RCC was in the main or back-up role for the OPC pan-European process. TSOs' weekly OPC TLIs resolving performance metric (KPIs) were: **LITGRID: 100%, AST: 100%; ELERING 96.15%** TLIs were not completely solved on weeks 42 and 49.	The RCC monitors outage schedule of generation units > 50MW. The RCC will take remedial actions for OPI loading violations exceeding limits by 105% for lines and 110% for autotransformers - discussed during weekly TSO-RCC OPC call and during weekly operational calls.	W-1:implemented coordination of elements in reserve. Y-1:coordinated overlapping generation and DC links. After one of the OPI calculations, it noticed discrepancies where outages overlapped where they shouldn't have. This led to quick information exchange with TSOs, afterwards successfully updating the outage pla - showing the effectiveness and necessity of OPI calculations.	RCC participated in **98% of all RCC-RCC weekly and yearly calls** (only missed 1 call). It also attended related OPC workgroups. As the **pan-European OPC coordinator in 2024**, the RCC delivered all the OPC PE rulebook updates in time. During the live STA-OPC sub-team meetings, the RCC successfully presented OPC PE rulebook changes to all OPC TSO/RCC colleagues. It finalised the annual regional OPI report, with results being accepted by the TSO OPC single point of contacts.
g) (Training and certification of staff)	RCC organised training modules, including training and assessment materials that were succesfully implemented. It also launched the RCC operator certification process. It certified **80%** of its operators.	No actions or recommendations.	The RCC uses open-source Learning Management System with possibility to adjust its functionality depending on the training programme needs.	In 2024, **64%** of Baltic RCC operators passed the training modules with first attempt.

h) (Supporting restoration)	The draft methodology states that the task should be implemented only at the request of the TSOs at the SOR level.			
i) (Post-disturbance analysis)	On 21 June 2024, a significant incident occurred in SEE leading to substantial loss of load and generation with siginifcant disruptions to the Continental European power system. It culminated in a (partial) blackout in Albania, Bosnia and Herzegovina, Montengro and Croatia.	No actions or recommendations were made for the Baltic TSOs in 2024.	- Nomination and communication of the RCC members within one week after the incident occurred. - Publication of the final report, including the RCC chapter by end September in the year after the incident. No final reports were published as the the development process is still underway in the RCC subgroup.	**120 hours**: spent to process implementation, enhance training materials certifying additional investigators, and take a part in the investigation.
j) (Reserve sizing)	Planned for Q1 2026.			
k) (Balancing procurement)	Planned for Q1 2026.			
l) (Optimisation Inter-TSO settlement)	Not yet requested by any Baltic TSO.			
m) (Crisis scenarios)	Planned for Q1 2025.			
n) (Seasonal adequacy)	Not yet delegated by any Baltic TSO.			
o) (Maximum entry capacity for CMs)	There were no cross-border CMs introduced in the Baltic region. In October 2024 the testing phase of the MEC IT Tool was concluded. The MEC IT Tool is a pan-European application to perform MEC calculation.			
p) (Needs for new infrastructures)	Awaiting methodology approval / Planned for Q1 2027.			

5.5. Nordic RCC

5.5.1. Fulfilment of reporting obligations

Table 10: Overview of fulfilment of reporting obligations for implemented tasks (Nordic RCC).

Reporting obligations	Article 37 tasks reported on
RCC's operational performance Article 46(1)(a)	a) (CCC (Nordic & HANSA)) b) (CSA) c) (CGM) d) (Consistency defence and restoration plans) e) (STA) f) (OPC) g) (Training and certification of staff) (It includes section on 'outcome of monitoring' as the task is not delivered to TSOs) i) (Post-disturbance snalysis) m) (Crisis scenarios)
Coordinated actions and **recommendations** issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	Reported that none were issued regarding: a) (CCC (Hansa CCR)) b) (CSA) c) (CGM) e) (STA) i) (Post-disturbance analysis) m) (Crisis scenarios) Reported issuing recommendations for: a) CCC (Nordic CCR) d) (Consistency defense and restoration plans) f) (OPC)
Effectiveness and **efficiency** of each of the tasks for which they are responsible and, where applicable, the rotation of those tasks Article 46(1)(c)	a) (CCC (Nordic and Hansa CCRs)) b) (CSA) c) (CGM) d) (Consistency defence and restoration plans) e) (STA) f) (OPC) (Efficiency was not monitored) i) (Post-disturbance analysis)
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

5.5.2. Summary of the report

This subsection presents a high-level summary of the performance of the RCCs, based solely on the information provided in the reports as published by the RCCs.

Table 11: High-level summary of the report (Nordic RCC).

Article 37 tasks	Article 46(1)(a)	Article 46(1)(b)		Article 46(1)(c)	
	Operational performance	Coordinated actions	Recommendations	Effectiveness	Efficiency
a) (CCC) NORDIC	- **D-1 FB capacity calculation**: 100% percentage of successfully calculated capacities and delivery[38]. The total number of the flow-based (FB) domains published in 2024 is **384** (>= 366 days in 2024), which is due to the fact that the FB domain was updated and republished for 18 days. Since the go-live of D-1 FB there have been no cases with flow-based publication past the 10:00 deadline. - **ID ATCE Capacity Calculation**: successful **100%** of the time within the agreed deadline (Nordic RCC has to provide ATCE results to TSOs by 13:20). 1 fallback procedure was applied for 1 day and 1 MTU which resulted in considerably lower ID capacities for the respective MTU. -**CCC1c**[39]: **100% target was met for all months in 2024**, apart from 1 incident in October 2024. The CCC1c service was replaced by the D-1 FB task since 30 October.	Since the FB go-live, individual TSOs can manually adjust parameters via individual validation adjustment (IVAs). Total count of applied IVAs per TSO in 2024 since D-1 FB go-live: **2255 (SVK), 348 (Fingrid), 319 (ENERGINET), 137 (STATNETT**).		The Nordic RCC measures the successful computation of the D-1 FB domain and delivered capacities within the agreed deadlines and without any fallback procedures applied. Successful computation of the D-1 FB domain and delivered capacities without any fallback procedures applied: • **between 97% and 100% in 2024**. All cases with fallback procedures applied were before the go-live of the D-1 FB domain. • **100%** for November and December 2024: since the go-live of the D-1 FB domain at the end of October 2024.	
a) (CCC) HANSA	Currently the CCC1c task described for the Nordic CCR also includes relevant Hansa borders and performance is described in the row above: **100% target**.	No coordinated actions have been issued yet.		The current task performance of CCC1c is running efficiently as an integrated part of the same task for the Nordic CCR.	

[38] In 2024, Nordic RCC changed the previous definition of CCC based on 'successful domain calculations' (2023) to a broader category called "successfully calculated capacities and delivery". This is similar to the CCC-reporting category used by CORESO and TSCNET. This way the Nordic RCC's results can be compared to the results of CORESO and TSCNET.

[39] The CCC1c service has been replaced by the D-1 FB task since EDD 30 October 2024.

b) (CSA)	In most MTUs, the CSA task has been successful without issues. The monthly average of successfull outcomes (September - December 2024) was between **~ 85% and 90%.** In some cases, the power flow problem could not be solved by the CSA tool and it applied some relaxed settings. In other cases, IGMs had to be substituted as they did not pass necessary requirements. Unsuccessful events have either been due to a missing CGM (unsuccessful D-1 CGM process) or a CSA tool failure.	The current CSA version delivers results of the base case and contingency analysis for the DA timeframe to TSOs, and results are discussed in the Daily Operational Planning Teleconference (DOPT) if relevant. Currently Nordic RCC does not issue any coordinated actions in the form of remedial actions.	For effectiveness, the focus is on quality of the delivered results. On average **2.53%** of the time load flow settings had to be relaxed - allowing for larger precision tolerances and ignore some physical constraints.	The majority of calculations took between **20-30 minutes**, with the most common runtimes being just below 25 minutes. This is in the acceptable range for the D-1 security assessment and allows enough time for a second calculation before coordination with the TSOs, if required.
c) (CGM)	**Two days ahead (D-2)**: In general, the process is very stable and yielded a result for all MTUs except a single one. It was succesfull from **98% and 100% between January to December 2024.** **Day-ahead (D-1):** The D-1 process is not yet of the same quality as D-2 and further improvements are necessary. The CGM process was successful from **82% and 95% between April to December 2024.** **Year-ahead (Y-1):** 10 scenarios have been successfully merged for 2025 in November 2024.	The CGM task and its results do not lead to any recommendations for TSOs.	Nordic RCC analysed the difference between the forecasted net position and the actual net position for the first three quarters (before the go-live of D-1 FB) and in Q4 2024. Occurrences with larger deviations between expected and actual net position have been reduced since the D-1 FB go-live. This is particularly evident for Denmark, where the occurrences of larger differences have decreased. This shift has influenced the overall trend, resulting in more homogeneous outcomes among the TSOs and significantly improving Danish results. This has reduced operational issues in their IGM creation process. Nordic RCC will strive to develop actual KPIs for effectiveness and efficiency in the future.	
d) (Consistency defence and restoration plans)	Following the RCC's consistency check, there were no inconsistencies remaining. Minor inconsistencies were identified along shared borders between Nordic TSOs and TSOs of adjacent SORs which were solved by the RCC. The system defence and restoration plans of all TSOs are now fully aligned.	Nordic RCC detected minor inconsistencies on six borders between Nordic TSOs and adjacent SORs. After coordinating with relevant TSOs and RCCs of other SORs, the TSOs adjusted their input and all inconsistencies were solved.	There are no quantitative KPIs of efficiency or effectiveness of the consistency check process. From a qualitative angle, the process of the consistency check has worked efficiently and straightforward. Nordic TSOs and Nordic RCC had a clear common understanding of the task, roles and responsibilities. The minor inconsistencies identified have all been solved in an efficient manner. The fact that they have been identified underlines the value of the task.	
e) (STA)	Nordic RCC is reporting the KPI indicator for the **pan-European process** as the percentage of successful STA calculations in 2024: **97.54%.** In addition, Nordic RCC also collects and sends Nordic TSO data to the pan-European STA tool. This process has been successful **100%** for all months.	No recommendations have been issued. In case of an identified issue, Nordic RCC will coordinate the best possible solution with all the involved actors and improve and document the process based on the results.	Percentage of days without the need for an additional run as part of the pan-EU STA process in 2024: **93.72%.** Reasons for a second run are typically data inconsistency e.g., missing TSO input or an application failure in the first run.	

f) (OPC)	Facilitated the Y-1 process for 2025, completed on 2 December 2024. There are no specific quantitative measures. The number of outages coordinated for 2025 was **274** in the Nordic region and between this region and the neighbouring regions. The number of outages is at a similar level to 2023 (261).	For the Y-1 process in 2024 for 2025, **17 recommendations** were agreed on between Nordic RCC and the Nordic TSOs. TSO follow-up on 2024 Y-1 OPC recommendation for 2025. - **53%:** 9 TSOs followed the recommendation and took action. - **29%:** 5 TSOs followed the recommendation and concluded on no action. - **18%:** In 3 cases, the Y-1 process did not allow for follow-up on recommendations – TSOs opted to address them bilaterally (conclusion unknown to Nordic RCC).	Processes have showed to be effective, as outages have been coordinated on time and fitting the grid's needs. Nordic RCC and the Nordic TSOs aim to include the Outage Planning Incompatibility (OPI) assessment for Y-1 and M-1 timeframes, which will be based on the Y-1 and M-1 Nordic CGM respectively.	Efficiency is currently not measured.
g) (Training and certification of staff)	This task is not delivered to TSOs and therefore monitoring is conducted in a different way. To track the implementation of this task, Nordic RCC monitors the certification status of operators, which is to be completed latest by May 2026. Certification status by end of 2024: **100%** of operators have started their certification process; **65% of operators have been certified** according to the training programme.			
h) (Supporting restoration)	The task proposal is still under development within ENTSO-E.			
i) (Post-disturbance analysis)	On 5 July 2024, there was a kick-off for the ICS Investigation Expert Panel, where the RCCs are represented as well. The RCC investigation started on 9 July 2024. There was a factual report published on 4 November 2024 and a final report due out on 26 February 2025.	RCC recommendations, based on the findings in the RCC investigation, will be provided in the ICS Investigation Panel Final Report and followed up on in subsequent monitoring reports.	Effectiveness has been monitored by checking if the deadlines for the RCC Investigation Subgroup (1 week after the incident) and appointing an RCC lead (3 weeks after the incident) have been met. All deadlines were met, and the TSOs provided all required data for the investigation.	Efficiency for the RIAR task could be assessed by the outcomes of the incident analysis. The analysis and report were not finalised in 2024, and the outcome will be described in the Nordic RCC Annual Report 2025.
j) (Reserve sizing)	The task implementation is currently in the prototyping phase, during which initial models are being developed and tested to refine functionality and assess Nordic value. The first step in the implementation of Regional Sizing and Procurement at Nordic RCC has been to perform a detailed comparison of all three methodologies (Sizing, Procurement and FRR dimensioning) to identify synergies and overlaps.			
k) (Balancing procurement)	The implementation of the Regional Procurement methodology has been on hold in 2024. Scope and implementation have to be further defined.			
l) (Optimisation inter-TSO settlement)	The task has not been requested by any relevant CCR TSO. Nordic RCC is at this point not performing the task.			
m) (Crisis scenarios)	Nordic RCC, as well as all other RCCs, participated in the relevant ENTSO-E groups and supported the crisis scenario process at all stages. The report has been	There are no direct RCC recommendations as an outcome of the crisis scenario process. Within the process, RCCs deliver input that is	The process is done every four years. Since the last iteration, RSCs (Regional Security Coordinators) have transitioned to RCCs. Furthermore, the underlying methodology for the identification of	

	finalised and sent to the relevant stakeholders. The report is not public.	taken account for within the relevant ENTSO-E group.	crisis scenarios has been updated. This does not provide any valuable basis for a quantitative comparison.
n) (Seasonal adequacy)	European TSOs have decided not to request this task of RCCs for the time being, and no task proposal has been developed by ENTSO-E.		
o) (Maximum entry capacity for CMs)	As of 2024 no TSO in the Nordic SOR has indicated the use of a capacity mechanism with cross-border participaton, and the task is therefore not performed by Nordic RCC as of now. Nordic RCC monitors developments in the Nordic region through the Nordic TSOs and stands prepared to perform the MEC task if circumstances change.		
p) (Needs for new infrastructures)	The task proposal is still under development within ENTSO-E.		

5.6. SEleNe CC

5.6.1. Fulfillment of reporting obligations

Table 12: Overview of fulfilment of reporting obligations for implemented tasks ((SEleNe CC).

Reporting obligations	Article 37 tasks reported on
RCC's operational performance Article 46(1)(a)	a) (CCC) b) (CSA) c) (CGM) d) (Consistecy defense and restoration plans) e) (STA) f) (OPC) g) (Training and certification of staff) m) (Crisis scenarios)
Coordinated actions and **recommendations** issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	Reported that none were issued for: a) (CCC) b) (CSA) d) (Consistency defense and restoration plans) e) (STA) g) (Training and certification of staff) i) (Post-disturbance analysis) m) (Crisis scenarios) Reported coordinated actions/issuing recommendations for: c) (CGM) (No specific details on the exact recommendations) f) (OPC) (Supported coordinated actions)
Effectiveness and **efficiency** of each of the tasks for which they are responsible and, where applicable, the rotation of those tasks Article 46(1)(c)	a) (CCC) b) (CSA) c) (CGM) e) (STA) d) (Consistency defense and restoration plans) f) (OPC) g) (Training and certification of staff) m) (Crisis scenarios)
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

5.6.2. Summary of the report

This subsection presents a high-level summary of the performance of the RCCs, based solely on the information provided in the reports as published by the RCCs.

Table 13: High-level summary of the report ((SEleNe CC).

Article 37 tasks	Article 46(1)(a)	Article 46(1)(b)		Article 46(1)(c)	
	Operational performance	Coordinated actions	Recommendations	Effectiveness	Efficiency
a) (CCC) SEE CCR	The operational performance index, defined as the ratio of successfully computed and delivered NTC values within deadlines to the total timestamps, reached **100%** for both GR–BG and BG–RO borders across all time horizons (D-2, D-1, ID, M-1, Y-1).	None issued.		**D-2 and D-1:** The effectiveness was around **99–100%** for both borders. For the **GR–BG** border, effectiveness reached **99.44% (D-2)** and **99.04% (D-1)**, while for **BG–RO** it was **98.94%** and **99.03%,** respectively. **ID:** Effectiveness remained high, at **99%** for both borders. **M-1:** In the off-peak scenario, total transmissible capacity was calculated successfully for **98.6%** of timespans for **GR–BG** and **98.6%** for **BG–RO**. In the peak scenario, effectiveness reached **100%** for **GR–BG** and **98%** for **BG–RO**. **Y-1**: Effectiveness was **100%** across both borders. Effectiveness is calculated as the ratio of successfully computed and delivered Total Transfer Capacity (TTC) values within the agreed deadlines to the total number of timestamps in the reporting period.	**D-2 and D-1**: For the **GR–BG** border, efficiency was **80.2%** and **82.3%** respectively, while for BG–RO it was 55.3% and 59.4%.. **ID**: Efficiency reached **83.8%** for **GR–BG** and **62.9%** for **BG–RO**. **M-1**: Efficiency of computed NTC usage was 5.6% (peak) and 3.1% (off-peak) for GR–BG, and 24.6% (peak) and 18.9% (off-peak) for BG–RO. Calculation of efficiency for the long-term timeframe remains constrained by the current splitting methodology and tool implementation. Efficiency is defined as the ratio of timestamps for which the TSOs accepted the NTC values initially computed by SEleNe CC without reduction to the total number of timestamps in the reporting period.
a) (CCC) GRIT CCR	The operational performance index, calculated as the ratio of successfully computed and delivered NTC values within agreed deadlines to total timestamps, was reported as **100%** for **ID**, **M-1**, and **Y-1** horizons, and **99.67**% for **D-1** timeframe.	Esperia CC[40] shall optimize cross-zonal capacity and adjusts maximum power exchange by applying the list of available remedial actions provided by the GRIT CCR TSOs in accordance with the applicable methodology.		The effectiveness was **96.3% for DA, 94.8% for ID1, 96.6% for ID2, and 100% for both M-1 and Y-1 horizons.** Effectiveness is calculated as the ratio of timestamps for which Esperia CC.	Efficiency reached **99.99% for D-1, 99.97% for ID1, 99.84% for ID2, and 100% for M-1.** Efficiency is defined as the ratio of timestamps for which TSOs accepted the NTC values initially computed by the Esperia CC tool

[40] SEleNe CC established a subsidiary, Esperia CC, based in Rome, responsible for coordinated capacity calculation in the GRIT CCR. Esperia performs D-1 and ID capacity calculations, as well as long-term timeframe capacity calculations, covering six bidding zones within Italy.

				successfully computed and delivered TTC values to the TSOs within the agreed deadlines, without resorting to fallback values.	without modification, to the total number of timestamps in the reporting period.
b) (CSA)	The CSA process was successfully executed in 2024 without any data quality issues or tool failures in the SEE CCR, while the GRIT CCR reported a performance level of **95.26%.**	None issued.		As RAs for the SEE region are not currently defined through an optimisation routine, their effectiveness and efficiency cannot be evaluated and quantified.	
c) (CGM)	All SEleNe CC tasks currently rely on UCTE-format CGMs, produced daily for D-2, D-1, and ID time horizons, achieving high creation success rates of **98.8–100%** in 2024. The RCC also acted as the main or backup RCC for the CGMES-based pan-European CGM process, achieving high publication performance until November 2024 for D-2, D-1, and ID. On 3 November 2024, SEleNe CC, in coordination with other RCCs, discontinued the pre-emptive exclusion of IGMs, including all IGMs in the merging process to better reflect operational readiness of the CGMES CGM building process and identify blocking IGM data quality issues. As a result, CGMES publication performance decreased. For the Y-1 horizon, SEleNe CC acted as Backup Merging Entity, achieving the highest inclusion rates for the second consecutive year. .	SEleNe CC coordinated with TSOs to improve CGMES data quality across all merging timeframes (D-2, D-1, ID), reporting technical issues related to the OPDM client and missing IGMs to relevant TSOs.	Timely recommendations were provided to address IGM-related issues, primarily based on QoCDC validation insights.		SEleNe CC placed strong emphasis on efficiency, striving to achieve optimal IGM inclusion rates. Until November, SEleNe CC ensured a high degree of IGM integration into the merged CGM. From November onwards, SEleNe CC ceased the exclusion of low-quality IGMs to align with evolving coordination practices. This shift led to a reduction in effectiveness, as several IGMs did not meet the quality standards required for seamless integration.
d) (Consistency defence and restoration plans)	This task was coordinated for the first time in the reporting period. SEleNe CC took part in this process, acting as the RCC responsible for the TSO borders of ESO, IPTO and TERNA, assessing the plans of 10 TSO borders. Operational performance was measured by the number of residual inconsistencies in the final report. When the task process was completed, the documentation for all TSO borders was considered consistent and as such, operational performance was deemed to be **100%.**	None issued.		All RCC reports were submitted within the prescribed timeframe. The combined RCC report was submitted to SOC and approved in February 2025, confirming full effectiveness. *Effectiveness was assessed based on a) timely submission of regional reports and b) SOC approval of the final report.*	The efficiency of this task was assessed based on the communications required to achieve consistent documentation. This included both cross-RCC meetings and bilateral calls between SEleNe CC and TSOs. During the process, a total of 7 cross-RCC meetings and approximately 5 bilateral calls were held. Efficiency was further measured in terms of the number of data submission versions needed to achieve consistency across the 10 TSO borders. The resulting efficiency for the five versions of data submission **was 10%, 30%, 30%, 10%, and 20%,** respectively.

e) (STA)	In 2024, performance[41] reached **98.72% for calculations** (5 failures out of 393) and **98.47% for reporting** (6 failures out of 393). No STA was performed at SEE regional level during the reporting period.	None issued.	Since no regional STA process was triggered in 2024, there was no effectiveness to be reported.	Efficiency is defined as the proportion of days without additional STA calculations compared to total days with STA calculations triggered for the pan-European process. Reported percentages align with operational performance: **98.72%** for calculations and **98.47%** for reporting.
f) (OPC)	In 2024, SEleNe CC performed W-1 and Y-1 outage planning incompatibility (OPI) assessments for the SEE TSOs over 52 weeks. All W-1 OPI calculations (42 TSs/week, 2,184 in total) and Y-1 OPI assessments were successful, achieving **100%** operational performance. At the **pan-European level**, OPC performance was **99.52% for W-1 and 100% for Y-1.**	None issued.	For **regional W-1 and Y-1** assessments, effectiveness was **100%**, while for the **pan-European OPC** it was **99.52%** (**W-1) and 100% (Y-1).** *Effectiveness is measured as the percentage of results delivered to SEE TSOs within defined deadlines.*	Reported efficiency for the **pan-European OPC process was 95.63% for W-1 and 93.98% for Y-1**. *Efficiency for PE OPC is assessed via monitoring resolved TLIs during coordination cycles and the mapping ratio between reference models and the EL.*
g) (Training and certification of staff)	In 2024, Selen CC finalized the structure of its training and certification program. Operational performance was measured as the share of successful certifications: 9 out of 12 operators **(75%)** completed training and obtained certification.	None issued.	Effectiveness and efficiency were assessed based on the success rate on the first certification attempt**: 8 out of 9** certified operators passed on their first attempt.	
h) (Supporting restoration)	Methology under development by ENTSO-E.			
i) (Post-disturbance analysis)[42]	In 2024, SEleNe CC was informed of **two incidents** (09.05.2024 and 21.06.2024). The first incident, classified as scale 1 per the ICS methodology, did not require an RCC investigation subgroup. The second incident affected a large area of SEE (Albania, Bosnia and Herzegovina, Montenegro, Croatia); the final factual report is expected in 2025.	None issued.	Effectiveness is measured by timely assembly of the RCC investigation group (within 1 week) and nomination of the lead RCC (within 3 weeks). All deadlines were met.	
j) (Reserve sizing)	Task under development.			
k) (Balancing procurement)	Task under development.			

[41] Operational performance is measured as the percentage of successful pan-European STA processes compared to all runs. Further, the pan-European STA process runs daily, with additional runs possible upon TSO request.

[42] Interacts with the investigation of incidents on scale 2 and scale 3 in accordance with the ICS Methodology.

l) (Optimisation inter-TSO settlement)	Task not assigned by EU TSOs.		
m) (Crisis scenarios)	All RCCs actively participated in the relevant ENTSO-E working groups and contributed to the crisis scenario process at every stage.	None issued.	Effectiveness for this task can be assessed by the timely review of documentation. All deadlines were met.
n) (Seasonal adequacy)	Task not assigned by EU TSOs.		
o) (Maximum entry capacity for CMs)	Not carried out by SEleNe CC currently, no SEE TSO has indicated the use of CRM with cross-border participation.		
p) (Needs for new infrastructures)	ENTSO-E proposal under development.		

6. List of acronyms

Acronym	Meaning
ACER	European Union Agency for the Cooperation of Energy Regulators
ATC	Available Transfer Capacity
CC	Capacity calculation
CCC	Coordinated capacity calculation
CCR	Capacity calculation region
CGM	Common grid model
CGMES	Common Grid Model Exchange Standard
CORE	Core capacity calculation region
CROSA	Cross-regional operational security analysis
CMs	Capacity mechanisms
CSA	Coordinated security analysis
D-1	Day-ahead
D-2	Two days ahead
DACC	Day-ahead capacity calculation
EMF	European Merging Function
ENTSO-E	European Network of Transmission System Operators for Electricity
EU	European Union
FB	Flow-base
GRIT	Greece-Italy capacity calculation region

HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
ICS	Incident Classification Scale
ID	Intra-day
IDCC	Intra-day capacity calculation
IGM(s)	Individual grid model(s)
IT	Information technology
IN	Italy North capacity calculation region
KPI(s)	Key performance indicator(s)
LT	Long-term
MEC	Maximum entry capacity
MTU	Market time unit
M-1	Month-Ahead
NPF	Net Position Forecast
NRAO	Non-costly Remedial Action Optimizer
NTC	Net transfer capacity
OPC	Outage planning coordination
OPDE	Operation Planning Data Environment
RA	Remedial action
RAA	Regional adequacy assessment
RAO	Remedial action optimization
RCC	Regional Coordination Centre
RCOP	Regional Coordination Operational Procedure
ROSC	Regional Operational Security Coordination

SEE	Southeast Europe
SOR	System Operation Region
SPOC	Single Point of Contact
STA	Short-term adequacy
SWE	Southwest Europe
TSO	Transmission system operator
TYNDP	10-year network development plan
UCTE	Union for the Co-ordination of Transmission of Electricity
W-1	Week-ahead
Y-1	Year-ahead

7. List of tables and figures