



European Union Agency for the Cooperation
of Energy Regulators

Regional Coordination Centres' (RCC) reporting obligations in 2022

ACER monitoring report

13 March 2024



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EXECUTIVE SUMMARY

Regional cooperation is essential to guaranteeing secure and efficient supply of electricity across the EU and limiting market distortions, towards the goal of market integration and supporting the increasingly integrated operation of electricity systems across the Union. Regional Coordination Centres (RCCs) play an important role in the strengthening of regional cooperation between transmission system operators, which was made stronger by the enhanced institutional framework put in place by the Clean Energy Package.

Alongside with strengthening the role of RCCs (compared to their predecessors, i.e. Regional Security Coordinators), the Electricity Regulation also introduced new tasks for ACER in their regulatory oversight of RCCs, namely monitoring and analysing their performance.

**5 RCCs established
across the EU**

As of 2023, ACER is monitoring the regular reporting obligations of the RCCs. This first report covers the second half of 2022 as of the RCCs' establishment. In accordance with Article 46(3) of the Electricity Regulation, RCCs provided annual reports to the ENTSO for Electricity (ENTSO-E), ACER, the regulatory authorities in the system operation regions and to the Electricity Coordination Group. The annual reports cover the outcome of their continuous monitoring of their operational performance, the coordinated actions and recommendations issued (including the extent to which the coordinated actions and recommendations have been implemented by the transmission system operators and the outcome achieved), and the effectiveness and efficiency of each of the tasks for which they are responsible (and, where applicable, the rotation of those tasks).

**First ACER report
covering second
half of 2022**

This document, ACER's first RCC Monitoring Report of RCC reporting obligations ('the Report') was drafted in close cooperation with the regulatory authorities and with the input from ENTSO-E and RCCs. ACER plans to deliver such a report based on the individual RCCs' reportings annually. The Report includes an overview and a summary of the RCC

reports, as well as a section presenting the conclusions to this year's monitoring of the performance of the RCCs, identified areas for improvement of the reporting, recommendations to RCCs and good practices for future reports.

The Report identified that, in general, RCCs have submitted to ACER and regulatory authorities comprehensive reports. RCCs reported on the performance of their mandated obligations in great detail, to the extent that the tasks they relate to have been implemented (or partially implemented). RCCs have mainly covered seven tasks in their reports, out of the 16 tasks mandated by the Electricity Regulation; five tasks were pending the development of a methodology as of 2022; two of the mandated tasks were not delegated to RCCs and therefore have not been reported on or monitored.

Due to their more advanced stages of implementation, the tasks mainly reported on by (all or some) RCCs in 2022 were the following:

- Coordinated Capacity Calculation,
- Coordinated Security Assessment,
- Common Grid Model,
- Consistency defence and restoration plans,
- Short term adequacy,
- Outage planning coordination, and
- Post-disturbance analysis.

**7 RCC tasks
reported on**

In future RCC annual reports, it is expected that the performance reporting will cover a wider range of obligations, as soon as the tasks' related methodologies are being approved and the tasks are being gradually implemented by the RCCs across Europe. RCCs should progress with the implementation of their tasks, and particularly develop the full implementation of those tasks only partially implemented to date. This will contribute to the efficient and secure performance of electricity markets across Europe, and in turn enable a more detailed monitoring of the performance of RCCs.

1. Background

This is the first ACER Monitoring Report ('the Report') observing and analysing the performance of regional coordination centres ('RCCs'). It is based on the individual public RCC's reports provided for in accordance with Article 46(3) of Regulation (EU) 2019/943¹ ('Electricity Regulation').

The revised Regulation (EU) 2019/942² ('ACER Regulation') introduces new tasks for ACER concerning regulatory oversight of RCCs. Specifically, in accordance with its Article 7, ACER is responsible for monitoring and analysing the performance of RCCs in close cooperation with the regulatory authorities and the European Network of Transmission System Operators for Electricity ('ENTSO-E').

To this end, ACER has coordinated the assessment of RCCs' reports and the drafting of this Report with the regulatory authorities and has involved ENTSO-E during the drafting phase. Preliminary conclusions of this Report were discussed with ENTSO-E and the RCCs on 5 February 2024.

In accordance with Article 46(1) of the Electricity Regulation, RCCs must establish a process for the continuous monitoring of at least:

- their operational performance,
- the coordinated actions and recommendations issued,
- the extent to which the coordinated actions and recommendations have been implemented by the transmission system operators ('TSOs') and the outcome achieved,
- the effectiveness and efficiency of each of the tasks for which they are responsible and,
- where applicable, the rotation of those tasks (among concerned RCCs).

As per Article 46(3), RCCs shall submit an annual report on the outcome of the monitoring provided for in Article 46(1) and information on their performance to the ENTSO-E, ACER, the regulatory authorities in the system operation regions and the Electricity Coordination Group.

RCC tasks are listed in Article 37 of the Electricity Regulation (and set out in more detail in its Annex I³) as follows:

- a) carrying out the **coordinated capacity calculation** in accordance with the methodologies developed pursuant to the capacity allocation and congestion management guideline – **referred to in the Report as 'CCC'**;
- b) carrying out the **coordinated security analysis** in accordance with the methodologies developed pursuant to the system operation guideline – **referred to in the Report as 'CSA'**;
- c) creating **common grid models** in accordance with the methodologies and procedures developed pursuant to the system operation guideline – **referred to in the Report as 'CGM'**;

¹ [Regulation \(EU\) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity in the version resulting from the amendments laid down in the Regulation \(EU\) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations \(EC\) No 715/2009, \(EU\) 2019/942 and \(EU\) 2019/943 and Directives 2009/73/EC and \(EU\) 2019/944, and repealing Regulation \(EU\) No 347/2013.](#)

² [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 in the version resulting from the amendments laid down in the Regulation \(EU\) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations \(EC\) No 715/2009, \(EU\) 2019/942 and \(EU\) 2019/943 and Directives 2009/73/EC and \(EU\) 2019/944, and repealing Regulation \(EU\) No 347/2013.](#)

³ See ANNEX I to this Report for the complete list of tasks together with the details set out in Annex I of the Electricity Regulation. The obligations of Article 37 and Annex I are presented on the same table, which is included for convenience and has no legal effect. The authentic versions of Article 37 and Annex I are those published in the Official Journal of the European Union and available in EUR-Lex.

- d) supporting the consistency assessment of transmission system operators' defence plans and restoration plans in accordance with the procedure set out in the emergency and restoration network code – **referred to in the Report as 'consistency defence and restoration plans'**;
- e) carrying out regional week ahead to at least day-ahead system adequacy forecasts and preparation of risk reducing actions in accordance with the methodology set out in Article 8 of Regulation (EU) 2019/941 and the procedures set out in the system operation guideline – **referred to in the Report as 'STA'** (standing for short-term adequacy);
- f) carrying out regional outage planning coordination in accordance with the procedures and methodologies set out in the system operation guideline– **referred to in the Report as 'OPC'**;
- g) training and certification of staff working for regional coordination centres – **referred to in the Report as 'training and certification of staff'**;
- h) supporting the coordination and optimisation of regional restoration as requested by transmission system operators – **referred to in the Report as 'supporting restoration'**;
- i) carrying out post-operation and post-disturbances analysis and reporting – **referred to in the Report as 'post disturbance analysis'**;
- j) regional sizing of reserve capacity – **referred to in the Report as 'reserve sizing'**;
- k) facilitating the regional procurement of balancing capacity – **referred to in the Report as 'balancing procurement'**;
- l) supporting transmission system operators, at their request, in the optimisation of inter-transmission system operators settlements– **referred to in the Report as 'optimization inter-TSO settlement'**;
- m) carrying out tasks related to the identification of regional electricity crisis scenarios if and to the extent they are delegated to the regional coordination centres – **referred to in the Report as 'crisis scenarios'**;
- n) carrying out tasks related to the seasonal adequacy assessments if and to the extent that they are delegated to the regional coordination centres – **referred to in the Report as 'seasonal adequacy'**;
- o) calculating the value for the maximum entry capacity available for the participation of foreign capacity in capacity mechanisms for the purposes of issuing a recommendation – **referred to in the Report as 'maximum entry capacity for CMs'**;
- p) carrying out tasks related to supporting transmission system operators in the identification of needs for new transmission capacity, for upgrade of existing transmission capacity or their alternatives, to be submitted to the regional groups and included in the ten-year network development plan– **referred to in the Report as 'needs for new infrastructures'**.

Not all tasks listed above are already implemented by the RCCs. This is due to the different stages of development or implementation of the underlying methodologies for the tasks, or due to the fact that some methodologies have not yet been developed for the tasks – this will be identified in the Report, where necessary. Services that RCCs might offer in addition to the tasks listed in Article 37 are not covered in this Report.

In accordance with Article 46(2) of the Electricity Regulation, RCCs must account for their costs in a transparent manner and report them to ACER and to the regulatory authorities in the system operation region ('SOR'). Article 46(4) additionally requires RCCs to report any shortcomings that they identify in the monitoring process under Article 46(1) to ENTSO-E, the regulatory authorities in the SORs, ACER and the other competent authorities of Member States responsible for the prevention and management of crisis situations.

As of 2023, ACER is monitoring and analysing the regular reporting obligations of the RCCs under Article 46 and plans to continue delivering an annual report on the submissions made by the RCCs in accordance with their reporting obligations under the Electricity Regulation.

The present Report covers the reporting period from the establishment of RCCs, 1 July 2022, to the end of the same year. It covers the reports produced by the RCCs in the course of 2023 with respect to that same period (1 July to 31 December 2022). This Report focuses only on the RCC reporting obligations under Article 46.

The primary purpose of the Report is to fulfil the above-mentioned ACER legal obligation to monitor and analyse the performance of RCCs and to check whether legal reporting obligations are formally fulfilled.

The Report further aims at:

- identifying implementation timelines,
- identifying potential challenges,
- recommending changes in future RCC reports, and
- highlighting good practices that can provide guidance to RCCs for their annual reporting in the future.

In the remainder of this Report, all the legal references to articles are to be understood as referring to the Electricity Regulation, unless specified otherwise.

2. Summary and assessment of RCC reports

2.1 RCCs overview and RCC Reports submissions

Five RCCs have been established in the EU⁴; these have registered seats in different Member States and cover different regions, as can be seen in the table below. A list of participating TSOs has also been included therein.

Table 1. Overview of RCCs in the EU

RCC	Registered Seat	SOR	CCR	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	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	Statnett, Energinet, Fingrid, SVENSKA KRAFTNÄT
SEleNe CC	Thessaloniki, Greece	SEE	SEE GRIT	ESO, IPTO, Terna

In accordance with Article 45(5), the RCC annual reports have been published on the respective pages of the RCCs.

In line with Article 46(3), these reports were also submitted to ACER and regulatory authorities.

⁴ SCC Ltd. Belgrade (SCC) is a Regional Security Coordinator (RSC) which may be covered in future editions of this report following its establishment as RCC in accordance with Regulation (EU) 2019/943 of 5 June 2019 on the internal market for electricity as incorporated and adapted by the Ministerial Council Decision D/2022/03/MC-EnC of 15 December 2022.

Table 2. Article 46 (RCC Annual Reports – 2022 – received in 2023)

RCC and link to published report	Submission
Coreso ⁵	<ul style="list-style-type: none"> Annual report (containing financial statements) received on 3 July 2023 Coreso further provided two reports regarding Article 46 obligations: Report on Central Europe SOR jointly with TSCNET and report on SWE SOR received on 31 October 2023⁶. Costs report formally submitted on 18 September 2023.
TSCNET ⁷	<ul style="list-style-type: none"> Report on Central Europe SOR jointly with Coreso received on 31 October 2023⁸. Extract of the financial statements received as a separate TSCNET report on costs on 29 June 2023.
Baltic RCC ⁹	Full annual report received on 9 May 2023.
Nordic RCC ¹⁰	Full annual report received on 28 April 2023.
SEleNe CC ¹¹	Full annual report received along with clarifications on 30 November 2023.

As Coreso and TSCNET submitted a joint report with for the Central Europe SOR, the Report looks at their obligations jointly in section 1.3.1. Coreso’s report on SWE SOR is covered separately in section 1.3.2.

The remaining submitted reports by the Baltic RCC, Nordic RCC and SEleNe CC have all been looked at individually in sections 1.3.3, 1.3.4 and 1.3.5.

RCC tasks, as provided in the Electricity Regulation, are listed in ANNEX I to this Report for ease of reference.

⁵ <https://www.coreso.eu/media/documents/>

⁶ An amended version of the report was submitted on 8 January 2024, containing corrections to two figures.

⁷ https://www.tscnet.eu/wp-content/uploads/Coreso_TSCNET.pdf

⁸ An amended version of the report was submitted on 8 January 2024, containing corrections to two figures.

⁹ <https://www.baltic-rsc.eu/news/baltic-rccs-first-annual-report-is-now-published>

¹⁰ <https://nordic-rcc.net/about/annual-reports/>

¹¹ https://www.selene-cc.eu/sites/default/files/2023/09/Annual%20Report%20SEleNe_CC_2022_web.pdf

2.2 Reporting and implementation overview of RCC tasks

This section presents a general overview across all the RCC tasks across the EU, providing an outline of which tasks have been reported on by the RCCs in 2022, which tasks have been implemented in all RCCs and whether all the related methodologies are approved. In the future, this section will aim to provide a comparison of the reported tasks and their status over the years.

The table below provides a summary of the implementation status of the tasks across all RCCs as described in the 2022 RCC reports by the RCCs. It also indicates whether the task has been reported on in 2022 and whether the underlying methodology has been approved.





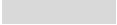
Table 3. Reporting and implementation status of the tasks across all RCCs

Task as per Article 37(1)	Reported on in 2022	Approved TCM as of 2022	Implementation status in 2022
a) CCC	✓	✓	<p>Coreso and TSCNET: Operational for DA CORE, DA IN, and ID IN (partial development); under development ID CORE;</p> <p>Coreso: Fully operational excluding CGM/OPDE for DA and ID SWE</p> <p>Nordic RCC: Forward of NTC operational; Flow-Based under development;</p> <p>Baltic RCC: Initial implementation deadline set for Q1 2025;</p> <p>SEleNe CC: Operational for DA and ID in SEE and GRIT CCR (using NTC);</p>
b) CSA	✓	✓	<p>Coreso and TSCNET: Under development for inter-CCR, CORE and IN;</p> <p>Nordic RCC: Preliminary version operational; ongoing development;</p> <p>Baltic RCC: Initial implementation deadline set for Q1 2024;</p> <p>SEleNe CC: Implemented regional N-x process;</p>
c) CGM	✓	✓	<p>Coreso and TSCNET: Operational (partial development);</p> <p>Nordic RCC: Operational D-1 and D-2; preparing to join pan-European CGM and future timeframes;</p> <p>Baltic RCC: Implemented;</p> <p>SEleNe CC: Operational (using IGMs of CE SA in UCTE format for DA and ID);</p>
d) Consistency defence and restoration plans	✓ ¹²	✓	<p>Coreso and TSCNET: Fully operational;</p> <p>Nordic RCC: Prepared to perform;</p> <p>Baltic RCC: Implemented;</p> <p>SEleNe CC: It will be implemented after the finalisation of methodologies;</p>
e) STA	✓	✓	<p>Coreso and TSCNET: Operational (partial development);</p> <p>Nordic RCC: Operational (ongoing development);</p> <p>Baltic RCC: Implemented;</p> <p>SEleNe CC: Operational STA 1.A phase; STA 1.B phase under development;</p>
f) OPC	✓	✓	<p>Coreso and TSCNET: Fully operational excluding CGM/OPDE;</p> <p>Nordic RCC: Operational (ongoing development);</p>

¹² Task not performed in 2022.

			Baltic RCC: Implemented; SEleNe CC: Operational in WA and YA;
g) Training and certification of staff	X ¹³	✓	Coreso and TSCNET: Under development; Nordic RCC: Implementation started; Baltic RCC: Initial implementation deadline set for Q2 2024; SEleNe CC: Methodology approved by ACER;
h) Supporting restoration	X	X	Not implemented – pending development of methodology
i) Post-disturbance analysis	✓	✓	Coreso and TSCNET: Fully operational excluding CGM/OPDE; Nordic RCC: Prepared to perform; Baltic RCC: Initial implementation deadline set for 1.10.2022; SEleNe CC: Under development;
j) Reserve sizing	X	X	Not implemented – pending development of methodology
k) Balancing procurement	X	X	Not implemented – pending development of methodology
l) Optimisation Inter TSO settlement	X	X	Not implemented – pending development of methodology
m) Crisis scenarios			Task not delegated
n) Seasonal adequacy			Task not delegated
o) Maximum entry capacity for CMs	X ¹⁴	✓	Coreso and TSCNET: Under development; Nordic RCC: Not relevant in the Nordics; Baltic RCC: Initial implementation deadline set for Q1 2024; SEleNe CC: It will be implemented after the finalisation of methodologies; ¹⁵
p) Needs for new infrastructures	X	X	Not implemented – pending development of methodology

Colour codes:

	Task reported on and fully implemented
	Task reported on and partially implemented, under development or pending implementation
	Task not reported on with ongoing implementation
	Task not implemented / pending methodology
	Task not delegated to RCCs

The colours used in the table indicate the implementation status across all RCCs; if, e.g., all but one RCC have reported to have implemented a task, the colour used will still indicate partial implementation. Green would indicate full implementation of the task across all RCCs in the EU, which for the reported period of 2022 was not indicated for any of the tasks.

¹³ The reports refer only to the implementation status of this task.

¹⁴ The reports refer only to the implementation status of this task.

¹⁵ In this case, “methodologies” refers to internal processes of the RCC. The relevant TCM for this task was approved in 2020 with ACER Decision 36-2020 (Methodology for calculating the maximum entry capacity for cross-border participation in accordance with Article 26(11) of Regulation 2019/943, available at <https://www.acer.europa.eu/document/acer-decision-36-2020-cross-border-participation-capacity-mechanisms>).

2.3 TSCNET & Coreso (Central Europe SOR)

2.3.1 Fulfilment of reporting obligations

Table 4. Overview of fulfilment of reporting obligations for implemented 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) e (STA) f (OPC) i (post disturbance analysis)
Coordinated actions and recommendations issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	a (CCC for Core & IT North CCRs) c (CGM) e (STA) f (OPC) i (post disturbance analysis)
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) e (STA) f (OPC) i (post disturbance analysis)
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

The remaining Article 37 tasks are not yet fully developed, implemented and/or operational in these RCCs, and could therefore not be reported on. RCCs indicated that “monitoring is only possible for those tasks (partially) live”.

All tasks are applicable in the Central Europe SOR (once developed and implemented), except for the following tasks:

- l) (Settlements) - Not required;
- m) (Crisis Scenarios) - Under discussion at ENTSO-E;
- n) (Seasonal Adequacy Assessments) - ENTSO-E does not delegate this task.

2.3.2 Summary of the report

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 (DA CC for CORE CCR)	<p>Merging success rate: 99.78% (9 timestamps for 3 days where merging results were not delivered due to failures)</p> <p>NRAO success rate: 96.14%</p>	<p>None issued / coordinated validation methodology not yet approved nor implemented. Reporting of coordinated actions and recommendations will be done once the coordinated validation method is approved and Article 13(2) of the RCC establishment provisions according to Article 35(1) is implemented.</p>		<p>Merging success rate: 99.93% (3 timestamps on 3 days where merging results were not delivered due to failures)</p> <p>Fallback success rate: 99.72%</p>	<p>NRAO success rate (timestamps without local reductions applied): 70.19%</p>
a) CCC (DA & IDCC for IT North CCR)	<p>Successful delivery of NTC in ID CC: 100%</p> <p>Successful delivery of NTC in DA CC: 96.40% (meaning that for 3.60% of timestamps additional fallback procedures had to be applied by Terna)</p>	<p>None issued (as not yet required, but may be implemented, once CCRs IN and Core are merged)</p>		<p>DA CC robustness (effective process delivery): 91,24% (i.e. no results delivered due to invalid TSO input in 4,76% of the cases and due to IT issues in RCC tool in 4% of the cases)</p> <p>ID CC robustness: 50.41%</p>	<p>DA CC efficiency rate (i.e. initial computed TTC without reduction divided by total timestamps): 55.03%</p> <p>ID CC efficiency rate: 67.03% (i.e. in 32.97% at least one TSO requested a capacity reduction due to security issues)</p>
b) CSA	CSA for inter-CCR, Core & Italy-North under development				

c) CGM	<p>Successful CGMs building compared to expected number of CGMs by TSCNET for D-2, D-1 & ID at least 99.92% and by Coreso at least 98.71%</p> <p>Successful CGMs validation/publication compared to number of submitted CGMs by TSCNET for D-2, D-1 & ID at least 98.83% and by Coreso at least 83.17%</p> <ul style="list-style-type: none"> - CGMs delivered have <u>not</u> been used in operational processes during 2022 - Manual data quality interventions are needed resulting in exclusion of IGMs blocking the merge process - The low 83.17% for Coreso's ID CGMs is caused by data quality issues, merging function (MF) tool readiness and mainly due to manual data quality intervention after CGM publication Gate Closure Time. 	The RCCs do not issue recommendations for the CGM task.	2 planned (and still to be implemented) effectiveness KPIs: Percentage of OPDE validated / EMF tool validated IGMs included in merged CGM	4 planned (and still to be implemented) efficiency KPIs: ratios of desired vs. actual CGM delivery time (incl. / excl. validation, considering all / only the published CGM)
d) Consistency defence and restoration plans	The task is not recurrent. Ready to perform the task when needed.			
e) STA	<p>Pan-EU STA: 196 calculations triggered, only 1 failed (99.49% success rate)</p> <p>No regional STA (RAA) was triggered.</p>	Proposals for remedial actions only relevant to RAA; no recommendations given to TSOs, since no RAA was triggered.	<p>N/A reported, as no RAA was triggered.</p> <p>Effectiveness KPI is defined by the process' capability to provide a resolution to an adequacy issue identified at regional level.</p> <p>8 data items are planned to be delivered in future reports per each RAA trigger (date of event and assessment, RCC leader, number of concerned TSOs, inadequacy duration, ENS</p>	Efficiency (number of days w/o the need of additional STA, which is generally triggered in case of an input data issue at pan-EU level divided by monitored period divided by days in monitored period): 172/184 = 93.48%

			[MWh], proposed mitigation action, resolution status).	
f) OPC	Pan-EU OPC operation performance (processes triggered / processes expected to be triggered): 100%	No recommendations issued for pan-EU OPC process	OPC result delivery within defined deadlines: WA: 97.16%; YA: 100%	
			Tie-line outage consistency: 95.07% for WA, 93% for YA	
			Correctly mapped assets between OPC & CGM: 90.28% (for WA; 92,89% for YA)	
			3 out of 104 merges failed during WA OPC process due to tool issues, but the failures have no significant impact on final regional coordination (since weekly + yearly coordination calls and manual backup procedures are available in case of failure of automated processes).	
g) Training and certification of staff	Under development			
h) Supporting restoration	Drafting methodology or proposal			
i) Post-disturbance analysis	Process interacts with the existing ENTSO-E ICS process to be established for scale 2 and 3 incidents (according to the ICS Methodology). No incident investigation was triggered by the ICS Working Group since the go-live of the task on 01.10.2022, therefore no investigations were reported for 2022.	No recommendations were made during 2022, since no incidents triggered the RCC threshold. All recommendations are stored in a database maintained by the RCC ICS SPOCs.	Effectiveness defined as: - Nomination and communication of the RCC members within one week of the start of a scale 2 or 3 incident; - Publication of final report including the RCC chapter by end of September in the year after the incident.	Efficiency defined as: - Number of hours spent on this task (process implementation, training and certification, recommendation follow-up); - Number of hours spent per incident triggering the ICS or RCC threshold.
j) Reserve sizing	Under development			
k) Balancing procurement	Under development			
l) Optimisation Inter TSO settlement	No requirement			

m) Crisis scenarios	Under discussion at ENTSO-E
n) Seasonal adequacy	ENTSO-E does not delegate this task to RCCs
o) Maximum entry capacity for CMs	Under development
p) Needs for new infrastructures	Drafting methodology or proposal

2.3.3 Specific comments and recommendations

With regard to **task a), CCC**, it is unclear what the target for the efficiency of NRAO is, and how it should be measured. Furthermore, the short- and mid-term KPI targets and their measurements should be clarified. ACER and the regulatory authorities question how the absence of local reductions (IVAs) can be linked one-on-one to the application of the NRAO, and would wish to see clarified whether there is a counterfactual (i.e. what would have been the overload / local reduction in the absence of the NRAO). It could also be possible that the absence of local reductions was not the result of NRAO application if there was no need to apply IVAs in the first place. These situations should not count towards increasing the efficiency of NRAO.

RCCs/ENTSO-E should progress on **task c), CGM**, and to regularly provide updates to the regulatory authorities on any obstacles (e.g. the identified shortcomings) in the System Operation Coordination Group.

As for **task i), post-disturbance analysis**, efficiency (number of hours) may be difficult to be evaluated by RCCs, since each incident case could be unique and difficult to compare with the other cases.

2.4 Coreso (SWE SOR)

2.4.1 Fulfilment of reporting obligations

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

Reporting obligations	Article 37 tasks reported on
RCC's operational performance Article 46(1)(a)	a) (CCC) c) (CGM) e) (STA) f) (OPC) i) (post disturbance analysis)
Coordinated actions and recommendations issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	a) (CCC) c) (CGM) e) (STA) i) (post disturbance analysis)
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) e) (STA) f) (OPC) i) (post disturbance analysis)
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

The remaining Article 37 tasks are not yet fully developed, implemented and/or operational in Coreso, and could therefore not be reported on. The RCC indicated that “monitoring is only possible for those tasks (partially) live”.

All tasks are applicable in the SWE SOR (once developed and implemented), except for the following tasks:

- l) (Settlements) - Not required;
- m) (Crisis Scenarios) - Under discussion at ENTSO-E;
- n) (Seasonal Adequacy Assessments) - ENTSO-E does not delegate this task.

2.4.2 Summary of the report

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	<p>Successful delivery of NTC in IDCC: 100%</p> <p>Successful delivery of NTC in DACC: 100%</p>	<p>None issued / coordinated validation methodology not yet approved nor implemented.</p> <p>Reporting of coordinated actions and recommendations will be done once the coordinated validation method is approved and Article 13 (2) of the RCC establishment provisions is implemented.</p>		<p>DACC robustness (process successful delivery): 97.19%</p> <p>ID CC robustness: 74.32%</p>	<p>DA CC robustness (process successful delivery): 99.59%</p> <p>ID CC robustness: 99.32%</p>
b) CSA	Under development				
c) CGM	<p>Percentage of submitted CGMs/due CGMs (as main or backup RCC): D-2: 99.95%; D-1: 99.31%; ID: 98.71%;</p> <p>Percentage of published CGMs/submitted CGMs (as main or backup RCC): 97.62%; D-1: 96.4%; ID: 83.17%;</p>	The RCCs do not issue recommendations for the CGM task.		<p>‘(...) the inclusion of IGMs available in the CGM and the timely delivery of the CGMs are the key topics and the metrics to monitor effectiveness and efficiency.’</p> <p>Monitoring processes planned to be implemented are listed.</p>	
d) Consistency defence and restoration plans	The task is not recurrent. Coreso is ready to perform the task when needed. [No further detailed reporting for 2022.]				
e) STA	Pan-EU STA – Percentage of process successes: WA: 99.49%	For the monitored period, no regional adequacy assessment was triggered for the TSOs of the SWE SOR region. Therefore, no recommendation was given to the TSOs.		N/A Information planned to be delivered in the next reports is listed.	Pan-EU STA – Percentage of days without the need of additional run: 93.48%.
f) OPC	Percentage of process successes SWE SOR: WA: 100.00%; YA: 100.00%	<i>This section in the report is missing (only a statement about shortcomings is included by error in its place).</i>		Percentage of result delivery within defined deadlines SWE SOR: WA: 100.00%; YA: 100.00%; Percentage of consistent tie-line outages: WA: 100.00%; YA: 98.08%;	

			Percentage of correctly mapped assets between OPC and CGM: WA: 98.55%; YA: 92.89%.
g)	Training and certification of staff	Under development	
h)	Supporting restoration	Drafting methodology or proposal	
i)	Post-disturbance analysis	No incidents took place; no investigations to be reported.	No recommendations made. Recommendations issued by the RCC subgroup will be tracked in a dedicated database and updated by each RCC for their respective SOR (Article 46(3)). For the SWE region, this will be detailed in this report.
j)	Reserve sizing	Under development	
k)	Balancing procurement	Under development	
l)	Optimisation Inter TSO settlement	No requirement	
m)	Crisis scenarios	Under discussion at ENTSO-E	
n)	Seasonal adequacy	ENTSO-E does not delegate this task to RCCs	
o)	Maximum entry capacity for CMs	Under development	
p)	Needs for new infrastructures	Drafting methodology or proposal	

2.4.3 Specific comments and recommendations

Please see section 3.1 with regard to KPIs.

2.5 Baltic RCC

2.5.1 Fulfilment 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) e) (STA) f) (OPC) i) (post disturbance analysis)
Coordinated actions and recommendations issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	c) (CGM) e) (STA) f) (OPC) i) (post disturbance analysis)
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)	c) (CGM) e) (STA) f) (OPC) i) (post disturbance analysis)
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

The remaining tasks are not yet fully implemented; task d) (consistency defence and restoration plans) was reported to become implemented in 2023. The tasks below are applicable and will be implemented as planned:

- a) (CCC);
- b) (CSA);
- g) (training and certification of staff),
- j) (Reserve sizing);
- k) (Balancing procurement);
- o) (maximum entry capacity for CMs); and
- p) (Needs for new infrastructures).

The tasks below will be applicable on demand:

- l) (Optimisation inter TSO settlement)
- m) (Crisis scenarios) and
- n) (Seasonal adequacy).

2.5.2 Summary of the report

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) CCC (DA)	planned for Q1/2025 (with new CCM triggered with synchronisation)				
b) CSA	CSA M1 daily runs triggered and operated manually or automatically. CSA M2 % of regional operational security assessment performed within process deadline. CSA R1 % of failures to fulfil the function of RCCs (independent from remedial actions) and reasons for failures (1. Data delivery issue, 2. Data Quality issue, 3. Tool issue, 4. Absence of Solution for solving operational security violations)	Q2/2024	Q2/2024	CSA R5 (Q1/2024) RA costs in EUR (should be available from mapping process)	CSA R2 Average duration in minutes of process
c) CGM	Pan-European Process based on a rotational principle. • Planning Pre-processing Data alignment for D-2 and Y-1 IGM creation by TSOs and RCCs; • Schedule alignment for D-1 and ID IGM creations by TSOs and RCCs; • IGM model creation and provision to OPDE by TSO; • IGM model validation by RCC; • CGM model merging and provision to OPDE by RCC.	None	None	CGM merged and provided to OPDE platform in timeframe defined by the methodology (in case of all IGMs of Baltic TSOs was provided): 78%	Improved RMM merging algorithm. Merging time is decreased from ~2 hour to 40-55 minutes
d) Consistency defence and restoration plans	Implemented in 2023. In line with SAFA2 policy 5 new review is ongoing with involvement of RCCs				
e) STA	Pan-EU STA: 100% Regional adequacy assessment not triggered	None (as not RAA was triggered)	None (as not RAA was triggered)	100%	100%
f) OPC	No observed incidents in Baltic TSOs outage coordination procedures and schedules. No investigation in 2022	Baltic RCC monitors outage schedule of generation units	None	Improved the coordination of tie-line outage schedules	Baltic RCC has participated in all RSC-RCC weekly and yearly calls.

		>50MW under and tie-lines over 330 kV		among Baltic TSOs	Annual regional OPI report has been finalised
g) Training and certification of staff	Methodology confirmed and to be implemented in Q2/2024				
h) Supporting restoration	planned for Q1/2025. Methodology currently in coordination with ACER				
i) Post-disturbance analysis	No incidents in 2022; in operation (the service agreement is being drafted in ENTSO-E as part of MLA)				
j) Reserve sizing	Methodology confirmed and to be implemented in Q1/2026				
k) Balancing procurement	Methodology confirmed and to be implemented in Q1/2025				
l) Optimisation inter TSO settlement	On demand				
m) Crisis scenarios	On demand				
n) Seasonal adequacy	On demand				
o) Maximum entry capacity for CMs	Methodology confirmed and to be implemented in Q1/2024. Common pan-EU tool is under development				
p) Needs for new infrastructures	planned for Q1/2025. Methodology currently in development in ENTSO-E				

2.6 Nordic RCC

2.6.1 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)	d) (consistency defence and restoration plans) e) (STA) f) (OPC) i) (post disturbance analysis)
Coordinated actions and recommendations issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	d) (consistency defence and restoration plans) f) (OPC) i) (post disturbance analysis)
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)	f) (OPC) For d) and i) there has been no activities in 2022 and the report does not go into detail.
Costs Article 46(2)	✓
Shortcomings Article 46(4)	✓

The report includes details on tasks a) (CCC), b) (CSA), c) (CGM), d) (Consistency defence and restoration plans), e) (STA), f) (OPC) and i) (post-disturbance analysis).

The report does not cover tasks not being requested by the TSOs or tasks that still await proposal for a methodology from ENTSO-E:

- g) (training and certification of staff);
- h) (supporting restoration);
- i) (post-disturbance analysis);
- j) (Reserve sizing);
- k) (Balancing procurement);
- l) (Optimisation inter TSO settlement);
- m) (Crisis scenarios);
- n) (Seasonal adequacy);
- o) (maximum entry capacity for CMs); and
- p) (Needs for new infrastructures).

2.6.2 Summary of the report

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	Not yet in operation. Forwarding of NTC in operation, flow-based being developed.				
b) CSA	Preliminary version in operation. Ongoing development.				
c) CGM	Nordic D-2 and D-1 CGM in operation. Preparing to join the Pan-European CGM and future timeframes.	The CGM and its results do not lead to any recommendations for TSOs.		'Insights of effectiveness and efficiency are to be expected when more experience is gained.'	
d) Consistency defence and restoration plans	Prepared to perform. No activity in 2022.				
e) STA	In operation. Ongoing development.	The role of the Nordic RCC is here to support the TSOs and coordinate the best possible solutions. When an adequacy issue is found remedial actions are taken. The TSOs suggest and agree upon the remedial action.	No recommendations	No measurements	
f) OPC	In operation. Ongoing development.		16 recommendations were given and followed, or better solutions were found.	Effectiveness is measured by TSO participation, the transparency of the process and access to the tools used, how complicated it is to update the outage plan and the overview of the results of the security analysis. Depends on	The efficiency of OPC is to have as little impact as possible on the security of supply and the market.

				regional processes and tools and Pan-European processes and tools.	
g) Training and certification of staff			Implementation started		
h) Supporting restoration			Awaiting proposal from ENTSO-E		
i) Post-disturbance analysis			Prepared to perform. No activity in 2022.		
j) Reserve sizing			Awaiting proposal from ENTSO-E		
k) Balancing procurement			Awaiting proposal from ENTSO-E		
l) Optimisation inter TSO settlement			Not being requested by TSOs		
m) Crisis scenarios			Not being requested by TSOs		
n) Seasonal adequacy			Not being requested by TSOs		
o) Maximum entry capacity for CMs			Not being requested by TSOs		
p) Needs for new infrastructures			Awaiting proposal from ENTSO-E		

2.6.3 Specific comments and recommendations

There were no incidents in 2022.

Task a), CCC, and task b), CSA, are still in development; the expected go-live date for CCC is October 2024. With regard to **task c), CGM,** there are still timeframes not in operation and it has still not joined the pan-European CGM. There is no reporting on effectiveness and efficiency.

2.7 SEleNe CC

2.7.1 Fulfilment 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) e) (STA) f) (OPC)
Coordinated actions and recommendations issued, the extent to which those have been implemented by the TSOs and the outcome achieved Article 46(1)(b)	b) (CSA) e) (STA) 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) b) (CSA) c) (CGM) e) (STA) f) (OPC)
Costs Article46(2)	✓
Shortcomings Article46(4)	✗ ¹⁶

The report includes details on tasks a) (CCC), b) (CSA), c) (CGM), e) (STA) and f) (OPC).

SEleNe CC has established a subsidiary, Esperia CC, in Rome, dealing with six bidding zones within Italy. Esperia CC performs day-ahead and intraday capacity calculation and long-term timeframe capacity calculation for the GRIT CCR.

¹⁶ 'For 2022, Selene CC and Esperia CC do not report any shortcomings identified in the monitoring process under paragraphs 1 and 4 of Article 46 of Regulation (EU) 2019/943'.

2.7.2 Summary of the report

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	The percentage is equal to 100% for each month of the reporting period as everyday SEleNe CC provided validated NTC values to the TSOs and for all time horizons and for both NGR and SRO.	<p>The NTC values for NGR and SRO borders are calculated by the developed tool and the TSOs validate them reducing or increasing the NTC which afterwards will be submitted to the market.</p> <p>None issued by the RCC.</p>		The percentage is equal to 100% for each month of the reporting period as everyday SEleNe CC provided validated NTC values to the TSOs and for all time horizons and for both NGR and SRO.	<p>The effectiveness of the process in the SEE CCR is equal to 100% for the entire reporting period.</p> <p>The percentage of successful computations of the CCC process for the DA, 1st ID and 2nd ID TH of the SEE CCR is presented for the GRIT CCR. For DA CC, an overall efficiency level was registered equal to 98% of the total timestamps to be delivered.</p> <p>For ID CC2 an overall efficiency level was registered equal to 97% of the total timestamps to be delivered. The reported cases with failed calculations were due to exceptional cases with unresolved nonconverging power flow calculations.</p> <p>All the yearly and monthly long-term timeframe capacity calculations, inclusive of the splitting of long-term cross-zonal capacity, were delivered for internal bidding zones and the border SUD-GRE. Reported at 100% efficiency.</p>
b) CSA	CSA for SEE was under development during 2022. During this period, extensive testing was performed, while the necessary processes for the training of the SEE RCC and TSOs personnel were performed. The go-live of the CSA was on 09/2022.	<p>No data quality issues or tool failures were observed.</p> <p>The existing version of the CSA does not include RA optimisation. Additionally, the RCC tool does not automatically provide/propose RAs to TSOs. On the contrary TSOs, based on their experience, propose RAs, which are evaluated using the RCC tool. Therefore, no coordinated actions have been issued yet.</p>		For the time being, RAs for SEE regions are not defined via an optimisation routine. Therefore, their effectiveness and efficiency cannot be evaluated and quantified.	

c) CGM	Performed using the UCTE format.	The RCCs do not issue recommendations for the CGM task.	A success rate higher than 99% was observed for the whole monitoring period, for all time horizons.		
d) Consistency defence and restoration plans	It will be implemented after the finalisation of methodologies.				
e) STA	<p>Participating in Cross-Regional Adequacy Assessment process since September 2022. Providing Regional Adequacy assessment to Greece (IPTO) and Bulgaria (ESO) since the beginning of 2022. Experimentation sessions have been offered for SEE TSOs to familiarise them with the procedure and the tools usage. No adequacy issues encountered so far.</p> <p>During 2022, and since the go-live in SEE region, no RAA process was triggered. Therefore, there were no investigations to be reported on for the year 2022. Therefore, no reporting concerning the effectiveness and efficiency can be provided.</p>				
f) OPC	<p>The OPI process for W-1 timeframe was initiated in September 2022 and the first OPI assessment was performed for target week 38. W-1 OPI was carried during 2022 for 16 weeks in total. Among the calculated TSs (42 TSs per week, thus 672 in total), only 1 TS was unsuccessful due to IT related issues, which were resolved without affecting subsequent OPI calculations.</p> <p>Subsequently, the relevant KPIs for the OPI operational performance (% of process successes) are equal to 99.85% for W-1 and 100% for Y-1.</p> <p>Regarding the pan-European OPC, the OPC merges performed both for the W-1 and the Y-1</p>		<p>The main focus of the SEE Regional OPC process is the optimisation of grid elements unavailability plans.</p> <p>To this end the RCC assists SEE TSOs in the RA coordination process during W-1 and Y-1 OPI assessment.</p> <p>During the reporting period, no adaptation of such proposal was necessary in any of the timeframes that the OPI assessment was performed.</p>	<p>100% of result delivery within defined deadlines</p>	<p>The efficiency of the pan-European OPC process is captured via monitoring of the resolved tie-line inconsistencies during coordination cycles and the achieved mapping ratio between reference models and the element list. (95.07 for W-1 and 93.00% for Y-1).</p> <p>Another objective to evaluate the efficiency of the pan-European OPC process is also related to data quality and is the percentage of correctly mapped network elements between reference CGM and definition of elements within the element list. Both are used as inputs for the OPI assessment, with element list being the mean serving as the map for the outages' application to the reference CGM prior to the security analysis. Thus, high mapping ratio indicates reliable OPI results. (90.28% for W-1 and 92.89% for Y-1)</p>

	timeframes, after 1 July 2022, were successful and no blocking issues were encountered. While the relevant KPIs for both timeframes are equal to 100%.				
g) Training and certification of staff	Methodology approved by ACER				
h) Supporting restoration	Awaiting proposal from ENTSO-E				
i) Post-disturbance analysis	Under development				
j) Reserve sizing	Under ENTSO-E development				
k) Balancing procurement	Under ENTSO-E development				
l) Optimisation inter TSO settlement	It will be implemented after finalisation of methodologies				
m) Crisis scenarios	It will be implemented after finalisation of methodologies				
n) Seasonal adequacy	It will be implemented after finalisation of methodologies				
o) Maximum entry capacity for CMs	It will be implemented after finalisation of methodologies ¹⁷				
p) Needs for new infrastructures	Under ENTSO-E development				

¹⁷ Presumably referring to the internal processes of the RCC for the implementation of the methodology.

2.7.3 Specific comments and recommendations

The report includes useful implementation status for CGM and CCC (not for other tasks). A dedicated subsection on the outcome of the monitoring (Article 46(3)) is included for CSA and OPC only.

With regard to **task a), CCC**, this is in operation using cNTC in SEE and GRIT CCR – DA and ID time horizons.

A new methodology for SEE CCR started to be developed in order to incorporate the minimum capacity target, known as the 70% capacity rule, and a new CC tool will be developed during 2024. Moreover, the new tool will support the CGMES model. The operational performance of the CC process corresponds to the effectiveness of the process in the SEE CCR.

With regard to **task b), CSA**, Regional N-x process is implemented. Selene CC aims to replace CSA with SEE ROSC methodology. ROSC will be executed on D-1 and ID time horizon. Both costly and non-costly RAs will be considered. All RAs will be defined via an optimiser; grid constraints, such as intertemporal constraints, thermal limits, etc., will be taken into account for the optimisation procedure. ROSC will be implemented in two phases. During the first phase, day-ahead CROSA will be implemented. The second phase will also include ID CROSA. The first phase is expected to be delivered at Q4/2025, while the second phase in Q3/2027.

With regard to **task c), CGM**, this is in operation using the IGMS of CE SA in UCTE format - DA and ID time horizons.

With regard to **task e), STA**, this is in operation STA 1.A. phase. STA 1.B phase is under development.

With regard to **task f), OPC**, it is reported to be in operation in WA and YA TH.

Currently, in the regional OPC, UCTE format is used. Taking into account that the pan-European OPC tool will be able to support CGMES format from Q3 2023, the transition of all OPC activities to this format is anticipated to be performed in the near future.

In line with this evolution within OPC framework, SEleNe CC is planning to migrate all regional OPC processes to CGMES format, aiming for optimisation of the overall service. To achieve smooth transition, high quality CGMES input data shall be available prior to the development of the adapted OPI tool. Furthermore, the enhancement of collaboration between SEE TSOs and SEleNe CC is of high importance in order to increase the value of the regional OPC in the region.

2.8 Reported shortcomings

RCCs have identified shortcomings in relation to two of the tasks: CCC and CGM.

Coreso and TSCNET have included a paragraph in their reports on whether shortcomings have been identified for each of the tasks performed. A description of shortcomings for some tasks has been included in the Baltic RCC report. The Nordic RCC report included a section on the shortcomings identified, stating that it “has not observed any significant shortcomings for operational performance, implementation of recommendations or coordinated actions from TSOs, nor for the effectiveness and efficiency of its tasks”. SEleNe CC stated in its report that “Selene and Esperia do not report any shortcomings identified in the monitoring process”.

The sub-section below lists the shortcomings identified by the RCCs in their reports.

2.8.1 Task a) – CCC

Coreso & TSCNET: For ID CC in Italy North in 30.95% fallback procedures were necessary due to missing/invalid TSO input. In 18.64% fallback procedures were triggered due to RCC tool IT issues and cases where no secure Total Transmissible Capacity (TTC) was found due to grid constraints. Investigations on how to improve the KPIs are ongoing. In 05/2023 the CC tool was replaced to improve computation performance (avoid failures due to computation times).

SWE SOR: For ID CC in 19.64% fallback procedures were necessary due to missing/invalid TSO input. Adaptation of the current tool ongoing to improve the performance of the process and its metrics, expected go-live end of 2024.

2.8.2 Task c) – CGM

Coreso & TSCNET: CGM building failures without manual data quality interventions (i.e. IGMs exclusion from the CGM) observed. Improving the CGM quality and number of IGMs included is highest priority for TSOs/RCCs.

Further harmonisation of technical details is needed.

Performance (timely CGM delivery and quality requirements (IGM inclusion) is hard to meet during CGM building process. Seemingly, successfully validated IGMs cannot be used in the merged CGMs for a number of reasons, which still need to be investigated case by case by the established “Modelling Group” at ENTSO-E to align technical details and propose updated validations rules, where needed.

Baltic RCC: Main shortcomings are related to the availability of the IGM and the robustness of the used IT systems. The availability of the IGMs in 2023 was up to 73% in the Baltic region. Additionally, the availability of the common IT systems used have been lower on specific time periods. Both issues are kept in focus during 2023.

Nordic RCC: The RCC reported challenges regarding the implementation process of creation of IGMs and a CGM based on the new CGMES standard, related to the requirements for information security, IGM quality (results have still to be improved), and the delay of the external parallel run for flow-based capacity calculation.

2.9 Reported costs

In accordance with Article 46(2), RCCs shall account for their costs in a transparent manner and report them to ACER and to the regulatory authorities in the SOR.

With regard to 2022, all RCCs have submitted their financial statements to ACER and the relevant regulatory authorities.

Table 14. Overview of the cost report submissions

RCC	Submitted cost reports in 2022
Coreso	Financial reports are included in the annual report. Separate report on costs (statutory accounts) received on 18 September 2023.
TSCNET	Separate TSCNET report on costs received on 29 June 2023 (extract of financial statements).
Baltic RCC	Financial statements are included in the annual report. No separate report on costs.
Nordic RCC	Financial statements are included in the annual report. No separate report on costs.
SEleNe CC	Financial statements are included in the annual report. Separate report on costs (annual standalone and consolidated financial statements) received on 30 November 2023.

3. Conclusions

This section of the Report presents, as conclusions to this year's monitoring of the performance of the RCCs, identified areas for improvement of the reporting, as well as recommendations to RCCs and good practices for future reports.

In future ACER reports, we will verify the improvements made by RCCs in their reporting with regard to the recommendations made below.

3.1 Identified areas for improvement of the reporting

With regard to the KPIs used by RCCs in their respective reports, it could be clarified whether the same are being used across all RCCs or could be harmonised in the future. ACER and regulatory authorities consider that it is important to have clarity on which KPIs are used in order to allow for comparison of the reported performance of the same RCC over the years. This is important to ensure the correct understanding of the reported performance for each task and would assist the reading of the reports.

For example, in the joint report for Coreso and TSCNET, it is not clear to the reader in the sentence referring to the KPIs in the ENTSO-E Article 17 Annual Report (p. 6)¹⁸ whether the KPIs described in the ENTSO-E report are the same as the ones used for the present RCC report or if other or only some of these KPIs are followed. This could be stated in the report more clearly for transparency, and also to allow for a consistent overview.

In addition to the KPIs, the terminology of the different implementation stages should be harmonised across the RCC reporting to enable a consistent comparison, e.g. definition of "prepared to be performed", "under development", "operational", etc. (cf. page 9 of the Coreso and TSCNET report).

Similarly, a more detailed description of the monitoring process (or a link to where this is explained in other reports or on the RCCs' websites) could be included to understand how operational performance is monitored by the RCCs.

3.2 Recommendations and good practices

- Clearly using the notion of "task" instead of "service" in the reports when referring to obligations under Article 37. Services are voluntary and out of scope of the Electricity Regulation;
- Including relevant detail on the status of implementation of the tasks not yet performed and a timeline and/or plan for their implementation;
- Explaining and clarifying the rotation of tasks among RCCs. To improve the understanding and clarity of the report, RCCs should also consider assessing the effectiveness and efficiency of the rotation principle where relevant;
- If Article 46 related reporting is included in the company's annual report and accounts, indicating the precise sections and pages that are relevant for the reporting under Article 46, and including references in the report to the precise articles of the Electricity Regulation, to ensure that all aspects of the mandatory reported are included in the report and correctly identified;
- Submitting the reports to ACER and the regulatory authorities via email to the functional mailboxes and to the relevant contact person(s) indicated during previous exchanges. Similarly,

¹⁸ In this regard, consistency and overlaps between the RCC reporting and ENTSO-E's regional coordination assessment annual report (Article 17 of Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation) could be considered.

ensuring that all the reports are published and accessible on the respective websites of the RCCs;

- Regarding tasks for which the relevant TCM is approved, but implementation by the RCC is still under development (e.g. Task o – Maximum entry capacity for CMs), the relevant reports could further specify the internal constraints or reasons impeding the implementation of the task;
- With regard to TSCNET and Coreso, including in the next RCC reports for each task the historic or expected / planned dates of full operation (go-live) (e.g. in table 1 "Status overview of the RCC tasks in Central Europe SOR").

4. ANNEX I - RCC tasks

Table 15. List of RCC tasks according to Article 37(1) and Annex I of the Electricity Regulation

	Task (Art 37 (1))	Annex I #s	Annex I tasks
Coordinated Actions	a) carrying out the coordinated capacity calculation in accordance with the methodologies developed pursuant to the capacity allocation and congestion management guideline adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009;	1	1.1 Regional coordination centres shall carry out the coordinated calculation of cross-zonal capacities.
			1.2 Coordinated capacity calculation shall be performed for the day-ahead and intraday timeframes.
			1.3 Coordinated capacity calculation shall be performed on the basis of the methodologies developed pursuant to the guideline on capacity allocation and congestion management adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009.
			1.4 Coordinated capacity calculation shall be performed based on a common grid model in accordance with point 3.
			1.5 Coordinated capacity calculation shall ensure an efficient congestion management in accordance with the principles of congestion management defined in this Regulation.
	b) carrying out the coordinated security analysis in accordance with the methodologies developed pursuant to the system operation guideline adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009;	2	2.1 Regional coordination centres shall carry out a coordinated security analysis aiming to ensure secure system operation.
			2.2 Security analysis shall be performed for all operational planning timeframes, between the year-ahead and intraday timeframes, using the common grid models.
			2.3 Coordinated security analysis shall be performed on the basis of the methodologies developed pursuant to the system operation guideline adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009.
			2.4 Regional coordination centres shall share the results of the coordinated security analysis with at least the transmission system operators in the system operation region.

				2.5 When as a result of the coordinated security analysis a regional coordination centre detects a possible constraint, it shall design remedial actions maximising effectiveness and economic efficiency.
Recommendations	c)	creating common grid models in accordance with the methodologies and procedures developed pursuant to the system operation guideline adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009;	3	3.1 Regional coordination centres shall set up efficient processes for the creation of a common grid model for each operational planning timeframe between the year-ahead and intraday timeframes.
				3.2 Transmission system operators shall appoint one regional coordination centre to build the Union-wide common grid models.
				3.3 Common grid models shall be performed in accordance with the methodologies developed pursuant to the system operation guideline and the capacity allocation and congestion management guideline adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009.
				3.4 Common grid models shall include relevant data for efficient operational planning and capacity calculation in all operational planning timeframes between the year-ahead and intraday timeframes.
				3.5 Common grid models shall be made available to all regional coordination centres, transmission system operators, ENTSO for Electricity and, upon request, to ACER.
	d)	supporting the consistency assessment of transmission system operators' defence plans and restoration plans in accordance with the procedure set out in the emergency and restoration network code adopted on the basis of Article 6(11) of Regulation (EC) No 714/2009;	4	4.1 Regional coordination centres shall support the transmission system operators in the system operation region in carrying out the consistency assessment of transmission system operators' defence plans and restoration plans pursuant to the procedures set out in the network code on electricity emergency and restoration adopted on the basis of Article 6(11) of Regulation (EC) No 714/2009.
				4.2 All transmission system operators shall agree on a threshold above which the impact of actions of one or more transmission system operators in the emergency, blackout or restoration states is considered significant for other transmission system operators synchronously or non-synchronously interconnected.

			<p>4.3 In providing support to the transmission system operators, the regional coordination centre shall:</p> <p>(a) identify potential incompatibilities;</p> <p>(b) propose mitigation actions.</p> <p>4.4 Transmission system operators shall assess and take into account the proposed mitigation actions.</p>
e)	<p>carrying out regional week ahead to at least day-ahead system adequacy forecasts and preparation of risk reducing actions in accordance with the methodology set out in Article 8 of Regulation (EU) 2019/941 and the procedures set out in the system operation guideline adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009;</p>	9	<p>9.1 Regional coordination centres shall carry out week-ahead to at least day-ahead regional adequacy assessments in accordance with the procedures set out in Regulation (EU) 2017/1485 and on the basis of the methodology developed pursuant Article 8 of Regulation (EU) 2019/941.</p> <p>9.2 Regional coordination centres shall base the short-term regional adequacy assessments on the information provided by the transmission system operators of system operation region with the aim of detecting situations where a lack of adequacy is expected in any of the control areas or at regional level. Regional coordination centres shall take into account possible cross-zonal exchanges and operational security limits in all relevant operational planning timeframes.</p> <p>9.3 When performing a regional system adequacy assessment, each regional coordination centre shall coordinate with other regional coordination centres to:</p> <p>(a) verify the underlying assumptions and forecasts;</p> <p>(b) detect possible cross-regional lack of adequacy situations.</p> <p>9.4 Each regional coordination centre shall deliver the results of the regional system adequacy assessments together with the actions it proposes to reduce risks of lack of adequacy to the transmission system operators in the system operation region and to other regional coordination centres.</p>
f)	<p>carrying out regional outage planning coordination in accordance with the procedures and methodologies set out in the system operation guideline adopted on the</p>	10	<p>10.1 Each Regional coordination centre shall carry out regional outage coordination in accordance with the procedures set out in the system operation guideline adopted on the basis of Article 18(5) of Regulation (EC) No 714/2009 in order to monitor the availability status of the relevant assets and coordinate their availability plans to ensure the</p>

	basis of Article 18(5) of Regulation (EC) No 714/2009;		operational security of the transmission system, while maximising the capacity of the interconnectors and the transmission systems affecting cross-zonal flows.
			10.2 Each Regional coordination centre shall maintain a single list of relevant grid elements, power generating modules and demand facilities of the system operation region and make it available on the ENTSO for Electricity operational planning data environment.
			10.3 Each Regional coordination centre shall carry out the following activities related to outage coordination in the system operation region: (a) assess outage planning compatibility using all transmission system operators' year-ahead availability plans; (b) provide the transmission system operators in the system operation region with a list of detected planning incompatibilities and the solutions it proposes to solve the incompatibilities.
g)	training and certification of staff working for regional coordination centres;	12	12.1 Regional coordination centres shall prepare and carry out training and certification programmes focusing on regional system operation for the personnel working for regional coordination centres. 12.2 The training programs shall cover all the relevant components of system operation, where the regional coordination centre performs tasks including scenarios of regional crisis.
i)	carrying out post-operation and post-disturbances analysis and reporting;	6	6.1 Regional coordination centres shall investigate and prepare a report on any incident above the threshold referred to in point 4.2. The regulatory authorities in the system operation region and ACER may be involved in the investigation upon their request. The report shall contain recommendations aiming to prevent similar incidents in future. 6.2 Regional coordination centres shall publish the report. ACER may issue recommendations aiming to prevent similar incidents in future.
o)	calculating the value for the maximum entry capacity available for the	15	15.1 Regional coordination centres shall support transmission system operator in calculating the maximum entry capacity

		<p>participation of foreign capacity in capacity mechanisms for the purposes of issuing a recommendation pursuant to Article 26(7);</p>	<p>available for the participation of foreign capacity in capacity mechanisms taking into account the expected availability of interconnection and the likely concurrence of system stress between the system where the mechanism is applied and the system in which the foreign capacity is located.</p> <p>15.2 The calculation shall be performed in accordance with the methodology set out in point (a) of Article 26(11).</p> <p>15.3 Regional coordination centres shall provide a calculation for each bidding zone border covered by the system operation region.</p>
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5. ANNEX II - List of acronyms

Table 16. List of acronyms used in the Report

Acronym	Meaning
ACER	Agency for the Cooperation of Energy Regulators
CACM	Capacity Allocation and Congestion Management Regulation
CC	Capacity Calculation
CCC	Coordinated Capacity Calculation
CCM	Capacity calculation methodology
CCR	Capacity calculation region
CE SA	Continental Europe Synchronous Area
CGM	Common Grid Model
CGMES	Common Grid Model Exchange Standard
CORE	CORE CCR
CROSA	Cross-regional operational security analysis
CMs	Capacity mechanisms
CSA	Coordinated security analysis
DA	Day-Ahead
ENTSO-E	European Network of Transmission System Operators for Electricity
EMF	European Merging Function
ENS	Energy not served
EU	European Union
GRIT	Greece-Italy
ICS	Incident Classification Scale
ID	Intra-day
IGM	Individual Grid Model
IN	Italy North CCR
IT	Information technology
IVA	Individual Validation Adjustment
KPI(s)	Key performance indicator(s)
MACZT	Margin Available for Cross-Zonal Trade
MLA	Multilateral Agreement
NGR	North Greece
NRAO	Non-costly Remedial Action Optimiser
NTC	Net Transfer Capacity
OPC	Outage Planning Coordination
OPDE	Operation Planning Data Environment
OPI	Outage planning incompatibility

RA	Remedial action
RAA	Regional Adequacy Assessment
ROSC	Regional Operation Security Coordination
SEE	Southeast Europe
SEleNe CC	Southeast Electricity Network Coordination Centre
SOR	System Operation Region
SPOC	Single Point of Contact
SRO	South Romania
STA	Short-term adequacy
SUD-GRE	GRIT HVDC link between the Italian (IT SUD) and Greek HV grids
SWE	Southwest Europe
TCM	Terms and conditions or methodologies
TS	Time stamp
TSO	Transmission system operator
TTC	Total Transmissible Capacity
UCTE	Union for the Co-ordination of Transmission of Electricity
WA	Week-ahead
YA	Year-ahead