|  |
| --- |
| *Explanatory document*  ENTSO-e proposal for  System Operation Regions  (SOR) |
| For Public Consultation |
|  |
| 24 October 2019 |

Contents

[Contents 2](#_Toc22825557)

[1. Introduction 3](#_Toc22825558)

[2. Criteria for definition of SORs 3](#_Toc22825559)

[2.1. Legal requirements for the SOR definition 3](#_Toc22825560)

[2.2. Operational considerations 4](#_Toc22825561)

[3. Interfaces between SORs 5](#_Toc22825562)

[1. Interface Nordic / Baltic – ensemble of interconnectors, assigned to one SOR 5](#_Toc22825563)

[2. Interface Baltic / Central –interconnector, assigned to one SOR 5](#_Toc22825564)

[3. DK 1 in Nordic region and interface Nordic / Central - coordination between RCCs in line with methodologies and relevant agreements 6](#_Toc22825565)

[DK 1 in Nordic region 6](#_Toc22825566)

[Interface Nordic / Central - not assigned to a SOR 6](#_Toc22825567)

[4. Interface IU / Central – ensemble of interconnectors, assigned to one SOR 7](#_Toc22825568)

[5. Interface GRIT / Central – two sets of bidding zone borders, assigned distinctly to two SORs 8](#_Toc22825569)

[6. Interface GRIT / South East – ensemble of interconnectors, assigned to one SOR 9](#_Toc22825570)

[7. Interface South West / Central – two sets of bidding zone borders, assigned distinctly to two SORs 9](#_Toc22825571)

[8. Interface South East / Central – ensemble of interconnectors, assigned to one SOR and further evolution of regional agreements 10](#_Toc22825572)

[9. Interface Nordic / IU – not defined 10](#_Toc22825573)

[4. Relationship between SORs and CCRs 10](#_Toc22825574)

[5. Coordinated tasks at SOR, pan-Eu or other geographical scope 12](#_Toc22825575)

[6. Inclusion of ENTSO-E Non-EU TSOs in ENTSO-E SOR Proposal 13](#_Toc22825576)

[6.1. Techical and legal considerations. 13](#_Toc22825577)

[6.2. Specific clauses in SOR Proposal 16](#_Toc22825578)

1. Introduction

This paper accompanies the proposal described in the main paper in such a way to further explain the options and main criteria taken by ENTSO-E when defining the System Operation Regions (SORs).

1. Criteria for definition of SORs

Below is the main understanding of what the SOR definition stands for and the criteria followed by SOR PT to develop the proposal.

* 1. Legal requirements for the SOR definition

The following describes the TSOs’ common understanding of the legal requirements associated to Art. 36 of the Regulation on SOR Definition. Once the SOR is defined, the TSOs of the region shall submit another proposal for the establishment of RCCs to their NRAs. While the focus of the current proposal is on SORs definition, there are relevant requirements in terms of coordination which are taken into account:

* As part of the RCC establishment documents, TSOs of the region shall **clarify the cooperative process for the tasks carried out by RCCs in the entire region**. This implies to provide NRAs the basis of the procedure for sharing the analysis and assessing the RCC proposals and if and up to the extend it is appropriate, for consulting with other RCCs or relevant stakeholders.

Cooperative process shall be established by SOR, which does not mean that each SOR requires the establishment of one RCC. The CEP allows for:

* + Large regions be coordinated by more than one RCCs
  + One RCC coordinate more than one region
* When establishing RCCs, TSOs of the SOR shall submit their proposal for cooperative processes to the concerned NRAs, for them to approve. This cooperative processes shall be in line with applicable CCR or other regional relevant methodologies. Additionaly, TSOs shall consult the cooperative processes as applicable.
* NRAs and MS within the region and those concerned (in case a BZ border or a transmission line spans over the control area of a TSO not part of the region) are required to assess and approve evolution of the cooperative processes, notably the evolution of the decision-making procedure (towards potentially higher RCC empowerment and liability).
* TSOs, with specific coordinations needs, are allowed to participate in more than one RCC. The conditions are to be specified for each SOR based on their specificities.
* Most of the coordination tasks are addressed to an ensemble of borders. While **some coordination tasks are addressed as per control-area** / ensemble of bidding zones under a TSO responsibility. This is notably the case for the tasks related to reserve sizing or, where relevant, the facilitation of regional procurement of balancing capacity.
  + Clarifying the scope and the inter-SOR coordination for facilitating regional sizing and eventually regional procurement of balancing capacity is relevant question for those TSO with control areas in several regions. Operational procedures agreed at the several SOR shall allow a consistent process for such a control area.
  1. Operational considerations

SOR PT has defined the proposal having in mind the need to address operation specificities at regional level and the diversity in terms of needs and interdependencies. Therefore a bottom-up solution has been adopted, in which TSOs of the existing CCRs have discussed first at the regional level and then at the ENTSO-E level their proposal for SOR definition.

Besides the legal requirements in CEP (article 36 of CEP), which defines as main criteria for SOR definition the degree of interconnection and the interdependency of the electricity systems in terms of flows as well as the size of the region, which shall cover at least one CCR, ENTSO-E also considers the following criteria relevant for the definition of the SOR:

* Regional specificities related to the physics;
* Ensuring continuity of the CEP implementation with Guidelines or Network Codes under implementation, therefore avoiding unnecessary risks associated to regulatory mismatch;
* Complexity associated to the amount of involved parties shall be manageable, allowing for feasible and effective governance.

The definition of SOR comes from the need for TSOs to regionally define the coordinated operational procedures and manage them with the help of the RCCs. CEP requirements are relevant in the way the jointly decision-making process shall be realised and the performance of the operation assessed. Therefore, TSOs in the SOR shall apply the approved operational procedures which arein line with the applicable CCR methodologies. As a result, consideration is needed for control areas of the TSOs affected by these decisions under the processes regionally coordinated, while respecting the agreed methodologies at CCR level. In this regard, some of the today’s defined CCRs: Hansa and Channel, are considered interfaces between SOR and the capacity calculation methodologies for these CCRs shall be transformed into equivalent operational procedures for the adjacent SORs.

It should be noted that to deal with the different approved timelines of methodology implementation in different CCRs, the possibility to have multiple methodologies is foreseen. This is pertinent and necessary in case of methodologies which have to be harmonized in the long term, and in a SOR which is composed of mulitiple CCRs.

1. Interfaces between SORs

According to article 36 of the CEP, the SOR definition proposal shall specify which TSOs, BZs, BZ borders, CCRs and OCRs are covered by each of the SORs. Besides, for the BZ borders adjacent to SORs, the proposal shall specify how the coordination between RCCs for those borders is to take place. This is clarified in article 3 of the SOR Proposal.

Here below is an explanation on the criteria taken into account when defining the coordination between borders adjacent to SORs. The concept of “interface between SOR” has been introduced to help in the explanation. For instance, SOR can overlap when a bidding zone (BZ) is included in two SOR [eg. Italy-Central Europe or SWE-Central Europe], and in such a case the interface between the two SOR will be the overlapping BZ. In other case the “interface” is defined by borders, which could overlap [IU-Central Europe, SEE-Central Europe] or not [Baltic-Nordic, Baltic-Central EU, Nordic-Central Europe, SEE-GRIT, …].

Description of each specific interface to be consistent with the requirement ‘For the bidding zone borders adjacent to system operation regions, the proposal in paragraph 1 shall specify how the coordination between regional coordination centres for those borders is to take place’.

1. Interface Nordic / Baltic – ensemble of interconnectors, assigned to one SOR

The interface between SOR Baltic and SOR Nordic is in Baltic CCR control area. LT-SE4 and EE-FI bidding zones are interconnected only via HVDC links. RCC established in the Baltic region shall coordinate the tasks of regional relevance for the Baltic SOR pursuant to article 35(1)(e) of El.Regulation with regards to the EE-FI and LT-SE4 bidding zone borders and shall allow SvK and Fingrid to participate in the the coordination of the borders through the Nordic RCC, which will have a contractual relationship with Baltic RCC.

Article 4.1 in Proposal specifies how the coordination between RCCs for the borders in this interface taks place, taking into account that :

1. the two bidding zone borders are physically composed of HVDC links;
2. Baltic states are relatively small region with low generation and quite high consumption of electricity;
3. those HVDC links are considered as having a high impact for ensuring the security of supply and adequacy within Baltics area as well as physical interdependency among operation of Baltic and Nordic borders.
4. Interface Baltic / Central –interconnector, assigned to one SOR

This interface is composed of only one border between PL and LT.

There is low physical interdependency between operation of this border and other PL borders. Contrary to the above there is significant interdependency of this border on the other side, i.e. towards other LT borders. Due to the above this interface (in practice PL-LT border) is proposed to be included in Baltic SOR. Thus Baltic RCC will coordinate all regional processes on this interface in the cooperation with PSE. PSE will do so being a shareholder of Central Europe RCC and having contractual relationship with Baltic RCC.

Such a set up has already been applied to the process of coordinated capacity calculation in the framework of CACM implementation, methodology of which was developed and approved within Baltic CCR by TSOs (including PSE) and NRAs (including URE), respectively. Based on this methodology Baltic CCR TSOs (including PSE) agreed division of roles and responsibilities between themselves and Baltic RSC, who was nominated as Baltic Coordinated Capacity Calculator documented in relevant agreement.

It is assumed that any other RCC tasks on this interface will be handled the same way, i.e. relevant methodologies will be developed by Baltic CCR TSOs (for RCC tasks foreseen already in 3rd package) or all EU TSOs (for RCC tasks added in 4th package) and approved by Baltic CCR NRAs (for RCC tasks foreseen already in 3rd package) and ACER (for RCC tasks added in 4th package) and their operationalization will be subject of relevant agreement between Baltic RCC and PSE.

1. DK 1 in Nordic region and interface Nordic / Central - coordination between RCCs in line with methodologies and relevant agreements

DK 1 in Nordic region

Historically, there has been a strong and close cooperation between Energinet and the other Nordic TSOs, and between Energinet and Continental Europe (CE) TSOs, including TenneT (DE) as a close interconnected synchronous partner.

From a technical perspective it is possible to have DK1 in both a Nordic SOR and a CE SOR or to have DK1 in CE SOR and DK2 in Nordic SOR. All of these mentioned options are from a legal perspective valid.

In order to have best conditions to ensure the system security it is a main priority for Energinet to keep Denmark in a same System Operation Region. Placing the entire Danish power system (DK1 and DK2) within a Nordic SOR is supported by the other Nordic TSOs.

The main priority from TenneT´s view is to ensure the system security at the DK1-DE border and the directly impacting DK1-NL (COBRA) border where a high demand of redispatching/countertrading beginning from day-ahead up to real time operation is needed. Compared to the other connections in the Hansa region, DK1-DE is the only AC-connected border and DK1-NL (COBRA) is a DC-connection within a synchronous area with a high present and future need of operational coordination. An efficient steady operational coordination via two SOR has a high complexity. It is especially from TenneT’s view important to ensure a common coordination and optimisation considering the remedial action potential from DK1 within the synchronous area and avoid possible conflicts of usage of RD/CT potential for SOR Nordic.

The operation of a synchronous interconnection is a delicate real-time process and the DE/DK1 interconnection is directly, and physically inevitably, affected by failures of the surrounding DC interconnections of the Nordic synchronous area with the CE synchronous area. TenneT therefore believes that the adherence could help in shaping the DE/DK1 interface operation more smoothly by setting consistent rules within one SOR. Also, with a view at the committed doubling of DE/DK1 interconnector capacity when the East coast and West coast projects will be finalized by about 2026, the mentioned needs for redispatch and countertrade could increase.

The close cooperation and collaboration between Energinet, CE and bilaterally with TenneT (DE and NL) will continue as is today. In accordance with article 36 (4) of regulation (EC) 2019/943, there is also the possibility to reconfigure the definition of SORs in the future if needed.

TSOs have established good cooperation for these affected borders, which will continue. All of Energinet’s agreements (e.g. SAFA of the synchronous area Central Europe, LFC Block …) towards the CE and TenneT(DE) will continue as agreed and Energinet commits to them to their full extent. Notably Energinet will keep providing all necessary data for the CE region (e.g. in terms of the needed data for the DSA analysis related to the security calculations) and will keep being fully committed to the continued close cooperation and collaboration towards the CE and bilaterally with TenneT(DE).

TenneT welcomes and appreciates Energinet’s commitment and underlines the very good cooperation. Therefore, TenneT is not blocking the proposal of Energinet to include both DK1 and DK2 in the Nordic SOR as proposal submitted to stakeholder consultation.

Interface Nordic / Central - not assigned to a SOR

Since not all of Europe will be one single SOR, there will be interfaces between SORs, as there are already between CCRs today. It needs to be clarified how borders between SORs shall be coordinated, as specified in CEP §36.1 *"For the bidding zone borders adjacent to system operation regions, the proposal in paragraph 1 shall specify how the coordination between regional coordination centres for those borders is to take place."* Three different options are being proposed by ENTSO-E:

* The bidding zone borders participates in one of the SORs
* The bidding zone borders participates in both SORs
* The bidding zone borders participates in neither of the SORs, but the borders are coordinated by the two relevant RCCs. The coordination is done according to the already approved NC or the foreseen new methodologies, depending on the services.

Below we describe why the third option is preferred for Hansa.

CCR Hansa consists of radial connections between the Nordic area and Continental Europe, and are for the most part HVDC connections. CCR CORE has appointed TSCNET and CORESO as their CCC/RSC and CCR Nordic has appointed RSC Nordic as their CCC/RSC. There is already a close cooperation between the Nordic TSOs and RSC Nordic and the Continental TSOs and TSCNET, and we aim to further develop these relationships in CCR Hansa. CCR Hansa has therefore appointed both TSCNET and RSC Nordic as CCC/RSCs for the region.  All CCR Hansa methodologies have been developed in coordination with the adjacent regions to avoid duplicating processes, avoid sharing of CNEs and any ex ante sharing of capacities. This is done by Hansa focusing on the interconnector assets only, and leaving supervision of the adjacent AC grids to respectively CCR Nordic and CORE. Therefore CCR Hansa can be considered to be an "interface" between CCR CORE and CCR Nordic. The non-assignation of Hansa CCR will allow for required flexibility to the TSOs and NRAs in the concerned SOR. TSOs will develop specific operational procedures at SOR level, while ensuring the necessary coordination between Hansa-concerned TSOs in line with the relevant methodologies and relevant agreements.

Regardless of whether the Hansa borders are included in SOR Nordic, Central Europe SOR, both SORs or in no SOR at all, there is the same need for coordination, which requires a cooperation of RCCs established by the two SOR in line with the applicable methodologies and agreements.

Based on the above the most efficient solution will be to not include CCR Hansa in any SOR, but let the SORs coordinate as they anyway will do through their RCC.

1. Interface IU / Central – ensemble of interconnectors, assigned to one SOR

This interface is composed of the borders between GB and the continent, ie GB-FR, GB-BE and GB-NL borders. Although there is no strong physical interdependency between electrical flows in RTE, Elia and TTN’s control areas and electrical flows in NGESO’s control area, the networks of all connected TSOs are directly and significantly affected by the transfers on the interconnectors.

Channel bidding zone borders are physically composed of HVDC interconnectors. In the IU SOR part, Channel interconnectors are operated by independent interconnectors parties and the transmission over the interconnectors can change throughout each day as a result of capacity allocation, which uses specific auctions run by those interconnector parties in the IU SOR part. Besides applicable CCR methodologies, the operation of the interconnectors in Channel is ruled under specific trilateral operating protocols detailing the coordination between onshore TSOs and the certified interconnector-TSO and taking into account market participants trading. Coordination between SOR will be ensured by onshore TSOs and relevant RCCs with due regards to those applicable methodologies and protocols, in order to ensure the secured operation of the interconnected system as well as the consistency of the different process (secure cross-border trade allocation, emergency management, reserve sharing, etc).

The interconnector parties play a defined role in CACM and FCA and independently provide interconnector schedules as well as take remedial actions where requested by the network TSOs. With this in mind it is clear that the interconnector parties play a distinct albeit limited role and, as a consequence, it is important that the physical interconnectors are included within a System Operation Region. The interconnector parties are certified TSOs under the GB NRA although their role is restricted by the GB NRA and has limited scope. Although the legal proposal does not include the interconnector parties as forming part of the management board of the regional co-ordination centre it does include them as named relevant stakeholders who will be consulted along with the Central RCC, Elia, Tennet, RTE and associated NRAs in the development the co-operative processes associated to Article 37 and Article 38.

In light of the above and taking into account that the GB network is a much smaller synchronous area than the Central European, this interface is proposed to be included in the IU SOR. However, coordination of all regional processes on this interface will be ensured by the RCC established by TSOs in IU SOR, in close cooperation with the Central SOR, RTE, Elia, TTN and the interconnector parties. This coordination will be supported by the implementation of several legal requirements: RCCs established for a SOR have to coordinate with the other RCCs of the bidding zone borders adjacent to SOR (CEP article 36), have to establish clear cooperative processes with their TSOs, other RCCs and relevant stakeholders (CEP article 37) and have to develop consultation procedure with other RCCs, relevant stakeholders and NRAs when required (article 40).

Furthermore, once the SOR and associated RCC is established it is expected that Channel CCR will continue to exist and Elia, RTE and Tennet NL will remain strongly involved in the Channel CCR, having the right to propose, amend and draft the relevant methodologies to coordinate this area. Therefore, it is assumed that all regional tasks on this interface will be handled following the methodologies required by SOGL, NCER, CACM, FCA and designed for the Channel CCR when relevant. The other tasks will be performed as standard inter RCC ones according to relevant CEP requirements.

1. Interface GRIT / Central – two sets of bidding zone borders, assigned distinctly to two SORs

This interface is composed of the bidding zone IT NORD, being BZ borders IT NORD-FR, IT NORD-CH, IT NORD-AU and IT NORD-SL covered only by Central Europe SOR and other BZ borders of Italy being covered by GRIT SOR.

BZ IT NORD is strongly influenced by electrical flows coming from northern neighbouring countries (including Switzerland) and also between other countries part of Central Europe (especially Germany). This influence is expected to increase in the future with new interconnections in development that will require coordinated actions among all the involved TSOs in order to grant both electricity market efficiency and secure, reliable power operations.

On the other hand, BZ IT NORD grid represents also a large portion of Italian TSO’s control area which is also entirely included in GRIT SOR. Moreover the operation in this area really needs specialized and well targeted expertise requiring a holistic national approach, especially for what concerns internal cross-zonal tasks as well as those related to adequacy and reserves.

The reasons explained above justify our proposal to include it in both Central Europe and GRIT SORs.

Thus coordination of regional processes relevant for this interface will be ensured by RCC that will be appointed in Central Europe and GRIT SORs, in close cooperation with Terna, which may participate in both RCC as specified in paragraph 2.1. It is assumed that all regional tasks on this interface will be handled in accordance with the methodologies developed pursuant to SOGL, NCER, CACM, FCA for the CCRs in which this interface is involved regarding the tasks already in the scope of the third Energy package.

In the light of the low interdependency between Central Europe and the peninsular Italian power system, both in terms of flows and operation differences, no harmonization of methodologies to manage capacity calculation and coordinated security processes for Central Europe and GRIT SORs are foreseen. The other tasks will be performed as standard inter RCC ones according to relevant CEP requirements.

1. Interface GRIT / South East – ensemble of interconnectors, assigned to one SOR

The interface between SOR GRIT and SOR SEE is the border between IT and GR belonging to GRIT CCR and the coordination is ensured by GR TSO as it is part of both SEE and GRIT SORs. The interface will integrate also as the border Italy CSUD-Montenegro.

Italy SUD-Greece border is composed of a single HVDC link and there are low physical interdependencies regarding internal flow in Italy and Greece control area. The HVDC link is operated in coordinated way by both Italian and Greece TSOs, that shall be involved in GRIT SOR. Such a setup has already been applied, among others, to the methodology for coordinated capacity calculation approved by the NRAs for GRIT CCR in the framework of CACM implementation.

It is assumed that any other RCC tasks on this link will be handled according to the same criteria, i.e. relevant methodologies will be developed by GRIT TSOs (for services foreseen already in 3rd package) or all EU TSOs (for RCC tasks added in 4th package) and approved by GRIT CCR NRAs (for services foreseen already in 3rd package) and ACER (for RCC tasks added in 4th package).

The Proposal has integrated so far the HVDC border Italy CSUD-Montenegro in GRIT SOR, in line with the position expressed from Energy Community Regulatory Board that recommends to include the Italy-Montenegro border in CCR GRIT in order to have equivalent treatment with Italy-Greece border. There is an open question on the technical need for this future BZ Border IT CSUD-ME to be included in both GRIT SOR and SEE SOR. Therefore the Proposal integrates a provision for ENTSOE to further clarify this aspect. Moreover, regardless of placing Italy CSUD-Montenegro only in a GRIT SOR, all the involved TSOs recognize the need for coordination therefore will promote the cooperation of RCCs established by GRIT and SEE SOR in line with the applicable methodology and agreements, as well as it acknowledges the interest for best use of ENTSOE structures and projects to ensure alignment with TSOs in the Balkan region.

1. Interface South West / Central – two sets of bidding zone borders, assigned distinctly to two SORs

This interface is composed of the bidding zone FR, BZ border FR-ES being covered only by SWE SOR and other BZ borders of FR being covered by Central Europe SOR.

BZ FR is at the crossroad of cross-zonal electrical flows coming from the western part of Central Europe and heading to South West Europe and vice-versa : on one hand, French grid is strongly influenced by commercial exchanges with its neighbors, and also by commercial exchanges between these neighbors (for instance between The Netherlands and Germany or between Germany and Switzerland). On the other hand, French grid is also strongly influenced by commercial exchanges with Spain. This influence will increase with the coming development of new interconnections and will be spread as far as center of France. Those large amount of cross-zonal flows exchanged on all FR BZ borders reflect the functioning European market and are transmitted through the BZ France thanks to a strongly meshed grid. That is why, in spite of the lack of interdependency between flows in BZ border FR-ES and the rest of French BZ borders and the peninsular character of Iberian system with few synchronous link compared to the total capacity, it is necessary to ensure a holistic approach of the coordinated processes to ensure operational security of the whole BZ FR.

Even if a harmonization of methodologies to manage all FR BZ borders in the capacity calculation and coordinated security processes is not required neither technically justified, with larger available capacities for cross-zonal trades foreseen with the Clean Energy Package and the development of new interconnections, those flows and mutual influences will increase in the future, necessitating consistent coordination between the Central Europe and SWE SOR especially for the processes associated to adequacy and reserves as well as in case of electricity crisis.

Then, it makes sense for the BZ France to be part of both SOR, Central Europe and SWE, and that’s why we propose to include the BZ FR in both.

It is assumed that all regional tasks on this interface will be handled in accordance with the methodologies developed pursuant to SOGL, NCER, CACM, FCA for the CCRs in which this interface is involved regarding the tasks already in the scope of the third Energy package. The other tasks will be performed as standard inter RCC ones according to relevant CEP requirements.

1. Interface South East / Central – ensemble of interconnectors, assigned to one SOR and further evolution of regional agreements

This interface is composed of the border between RO and BG, part of the SEE CCR and the borders of Balkan power system and Central SOR.

Border RO-BG is assigned to SEE SOR, thus coordination of relevant regional processes on this border will be ensured by SEE RCCs.

The coordination between the borders of Balkan countries and Central SOR will be established in line with the existent agreements and making best use of ENTSOE structures and projects.

1. Interface Nordic / IU – not defined

The coordination of the interface between Nordic SOR and IU SOR is not clarified, due to the current regulatory uncertainty in GB, which makes it unclear if setting up an interface within this framework will be needed.

1. Relationship between SORs and CCRs

System Operation Regions are understood as the geographical scope for technical cooperation and they shall be compatible with progress towards a competitive and efficient internal market for electricity (El. Regulation recital number 42). In this sense, there is a need to underline the technical character of the cooperative processes to be submitted by TSOs of SOR to concerned NRAs (articles 38 and 42 of EU Regulation 2019/943) when establishing RCCs (art 35). Those cooperative processes shall be totally in line with applicable methodologies at CCR level or others as applicable (eg. SAOA or SAFA agreements). In line with this, and in consistency with the legal requirement, a SOR shall cover at least one CCR.

CEP states that a SOR shall cover at least one CCR. Hence a SOR does not replace a CCR. Notably, for capacity calculation (CC) and coordinated security analysis (CSA), as well as for the rest of tasks described in NCs and GLs implementing EU Regulation 2009/714, the legal and technical framework given by the CCR has to be followed since the CEP states that for each SOR, the RCC has to carry out CC according to the methodologies developed under CACM and CSA according to the methodologies under SOGL. Those methodologies are all developed per CCR.

The understanding is that if a SOR covers more than one CCR, the methodologies of each CCR shall apply and there is no obligation for harmonization. Besides, for the CCRs being an interface between two SORs, those methodologies are a strong legal framework to design the coordination between SORs.

1. Coordinated tasks at SOR, pan-Eu or other geographical scope

According to art. 37 of Clean Energy Package (CEP or 4th package) each Regional Coordination Centre shall perform tasks of regional relevance in the entire system operation region where it is established.

Tasks defined in article 37(1) letters “a”-“f” and “n” are already being developed by RSCs and ENTSOE based on 3rd EU package network nodes and guidelines (SOGL, NCER, CACM, FCA).

The other tasks are the new ones required by Clean Energy Package.

Regional coordination centers shall issue so called coordinated actions to the transmission system operators in the framework of coordinated capacity calculation and coordinated security analysis. For all other tasks Regional coordination centers shall issue recommendations to the transmission system operators, unless the RCCs are granted with the capability to issue coordinated actions for those tasks, in line with article 42(6).

In the opinion of ENTSO-E TSOs some of the tasks listed in article 37 allocated by CEP to each RCC can be realized much more efficiently in the different set up, i.e. by one RCC on behalf of all EU TSOs or even by another entity. The best example of such process realized already now in one place in preparation of seasonal adequacy assessment (task ”n” in article 37.1 of Electricity Regulation) which has been run for years by all TSOs within the working structure of ENTSO-E and there is no generalised need for all regions to regionalize it. One can even say that in case of its regionalization much more complex process would need to be developed in order to keep the current quality of its results (in the sense of interdependencies between the regions).

It is also worth to mention here, that ongoing implementation of CGM, OPC and STA processes is based on development of pan-European IT hardware and software tools within ENTSO-E working structure, which will be owned or licensed by ENTSO-E. Indirectly this refers to CCC and CSA processes, once they are based on CGM IT tools (temporarily they can be run in some CCRs without them). This means that operation of these tools, once they are implemented, might also be more efficient if done differently than by each RCC in its own SOR. This obviously shall be decided later on based on actual experiences.

Looking at the new CEP tasks it is quite clear that identification of regional electricity crisis scenarios (task ’m’ in art 37.1 of Electricity Regulation) also shall be run in one place in order to ensure inter regional compatibility of this process. It is already written in the relevant methodologies required by Risk Preparedness Regulation that this task is to be run by all TSOs in the working structure of ENTSO-E. The same, although for other reasons (mainly efficiency, including using existing structures) refers to optimization of inter-transmission system operator compensation mechanisms (task ’l’ in article 37.1 of Electricity Regulation), which is efficiently organised. Finally also the calculation of the maximum entry capacity available for the participation of foreign capacity in capacity mechanisms (task ‘o’ in article 37.1 of Electricity Regulation) and the identification of needs for new transmission capacity, for upgrade of existing transmission capacity or their alternatives (task ‘p’ in article 37.1 of Electricity Regulation) seem to be good candidates for realization by one dedicated team, not necessarily within any of RCC – maybe within working structure of ENTSO-E as it is done already know in case of TYNDP.

Summarizing, due to the above mentioned reasons ENTSO-E TSOs believe that it is more efficient to allocate realization of some tasks listed for RCC in CEP to other entities or to be done in some SORs by other RCCs than the hosting one. Thus ENTSO-E TSOs propose ACER to keep this allocation open and flexible for the time being and, in order to be able to adopt the most efficient solutions. Relevant decision in the future per each task during implementation of relevant methodologies and the coordination process between RCCs to be established pursuant to Article 38 and/or Art. 30.1.e of the Electricity Regulation.

1. Inclusion of ENTSO-E Non-EU TSOs in ENTSO-E SOR Proposal

The European electricity network evolves with the primary goal of ensuring stability of the system and security of supply while enabling the integration of the EU energy markets and fulfilling the ambitious RES deployment objectives of the EU. The Continental Europe synchronous area has the most meshed transmission network in the world, making a seamless coordination between all European TSOs (EU and non-EU) crucial to achieve these objectives, in particular to continue to maintain the security of the European transmission system. This is only possible if all relevant operational processes are coordinated and applied by all TSOs (EU and non-EU TSOs) in Europe.

System operation tasks require non-discriminatory coordination among all the transmission system operators which are connected to the same synchronous area in Europe. Numerous past examples of close coordination among TSOs demonstrate its important role in how major crises were avoided.

Besides, the Continental power system is linked, synchronously or non-synchronously and with different degrees of interdependency in terms of flows, with other power systems, some of them are control areas of EU-TSOs.

When implementing EU Regulation 2009/714, in line with their responsibility to maintain system reliability by ensuring operational security and supporting security of supply, in an efficient way, TSOs within ENTSO-E have contributed to the establishment of network codes and guidelines, which constitute today a harmonized power system operation framework with cross-regional and pan-European geographical coverage. The need to strengthen and deepen coordination between technical parties was highlighted and enforced by current Network Codes and Guidelines, notably by EU Regulation 2017/1485 on electricity transmission system operation and EU Regulation 2017/2196 on electricity emergency and restoration.

In line with EU Regulation 2017/1485 on electricity transmission system operation: ‘*The Union, Member States and TSOs should aim for secure system operation inside all synchronous areas stretching on the Union. They should support third countries in applying similar rules to those contained in this Regulation. ENTSO-E should facilitate cooperation between Union TSOs and Third-country TSOs concerning secure system operation*’.

It is of relevance to clarify that, when facilitating cooperation between TSOs aiming for secure system operation, ENTSOE distinguishes between:

* Cooperation at technical level of all ENTSOE member TSOs, in line with ENTSOE Statutes, ToR and Internal Regulations.

In consistency, the SOR Proposal integrates the ENTSOE member TSOs.

* Technical cooperation with non-EU TSOs that are not ENTSOE member, so far clarified in line with December 2016 recommendations approved by ACER and published by ENTSO-E[[1]](#footnote-2) when implementing EU Regulation 2009/714.

Therefore, the SOR Proposal does not integrate non-full ENTSOE member TSOs, and it is understood that the technical cooperation with them can be clarified by specific agrements.

* 1. Techical and legal considerations.

Due to interconnectivity and influence in terms of flows, to maintain operational security of the pan-European power system TSOs rely as much as possible on established operational procedures. Those procedures are the technical layer of implementation of methodologies pursuant to network codes and guidelines agreed at the relevant regional level (Capacity Calculation Region, Synchronous Area agreements, …), which are intended to allow the highest level of exchanges and efficiency of the IEM, while ensuring operational security.

In this context, it is of relevance to state the **technical character of the requirements in article 35 of EU Regulation 2019/943, related to the description by TSOs at SOR level of the cooperative processes, in line with articles 38 and 42 of EU Regulation 2019/943, when establishing RCCs**.

Third Package implementation led to the establishment of RSCs, which cover the coordination of important processes across Europe and provide corresponding services to all (EU and non-EU) TSOs to ensure system security. Any exclusion of certain areas from the corresponding methodologies and coordination processes could pose a risk to the European transmission system, especially when remedial actions are not properly coordinated.

This cooperation framework is further developed in the Clean Energy Package (Article 34 and 35 of the Regulation), eventually leading to the replacement of the existing RSCs by RCCs, with an additional number of services to be provided. These RCC tasks need to take into account the interdependency of the electricity system and their corresponding flows, regardless of national boundaries between member states and non-EU countries. Article 36 of the Regulation highlights the importance to take into account the reality of the system when putting in place those RCCs: the corresponding System Operation Regions “… shall take into account the grid topology, including the degree of interconnection and of interdependency of the electricity system in terms of flows and the size of the region which shall cover at least one capacity calculation region.”

In short, SORs will be the level where all system operation relevant processes (RCC tasks) will be coordinated. As highlighted, it is crucial to coordinate those processes between all concerned TSOs (EU or non-EU) in order to ensure the overall system security. It is therefore essential to include non-EU TSOs in the relevant SORs.

Technical arguments

In addition to the general arguments given above specific technical drivers for the need to include relevant non-EU TSOs can be detailed:

The increasing amount of intermittent RES and distributed flexibilities introduce additional complexity in operational planning and real-time operation because of potentially large and unpredictable forecast errors and the increasing need of coordination with DSOs. The increasing number of complex devices such as PSTs and HVDC links further necessitates appropriate and comprehensive coordination. Upon the implementation of the requirement of the recast Electricity Regulation, that 70% of the transmission capacity of network elements should be available for cross-zonal trade, the amount of unscheduled flows is expected to increase. It should be noted that for some countries in Continental Europe unscheduled flows already pose significant threats to regional security of supply nowadays. Only through an impartial coordination before real-time operation can unscheduled flows be much more efficiently reduced and mitigated.

The increasing number of market transactions and complex interactions between electricity markets players and system operators require all TSOs to coordinate all system operation relevant tasks. Many of them will be performed within each SOR by RCC(s). Exchange or application of insufficient or incomplete information (e.g. incomplete network models for a highly meshed network) and partial coordination (e.g. the exclusion of specific TSOs in some specific operational processes) among TSOs would not just reduce the efficiency of system operation for the whole region, but also introduce additional operational risks. This is because potentially critical network violations cannot be detected and mitigated in a coordinated and timely manner. Secure system operation can only be achieved, when there is a common, systematic and synchronized technical framework (e.g. processes, platforms, etc.) for the computation and application of the results. With such a coordination framework, contingencies which might happen close to or at real-time can be managed with likely more available resources (e.g. remedial actions) for TSOs during real-time operation, reducing the likelihood of a regional brown-out or even a blackout.

Legislation support

The need to coordinate the different processes between all affected (EU or non-EU) TSOs and the risks associated with a lack of coordination has been widely acknowledged, including in existing EU legislation:

* Point 3.1. of Annex I to Regulation (EC) No 714/2009
* ACER decision 06/2016 (17.11.2016)[[2]](#footnote-3).
* Regulation (EC) 2017/2195 (EBGL) Art. 1.6, 1.7 (for the special case of Switzerland) and
* Regulation (EU) 2017/1485 (SOGL) Art. 13 and Regulation (EU) 2017/2196 (NCER) Art. 10

These items explicitly recognise the need for coordination concerning secure system operation between EU and non-EU TSOs.

The Clean Energy Package continues to recognise the need for seamless coordination between EU and non-EU countries when it comes to system security:

* The cooperation at national level is foreseen in the Recast Regulation, in the Whereas section, paragraph (70): “Member States, the Energy Community Contracting Parties and other third countries which apply this Regulation or are part of the synchronous area of Continental Europe should closely cooperate on all matters concerning the development of an integrated electricity trading region and should take no measures that endanger the further integration of electricity markets or security of supply of Member States and Contracting Parties.”
* The cooperation at ENTSO-E level, in the Regulation Article 30.1(d): “The ENTSO for Electricity shall […] adopt recommendations relating to the coordination of technical cooperation between Union and third-country transmission system operators;”

To conclude, coordination between EU and non-EU TSOs for tasks pertinent to system operation is essential to ensure seamless system operation and security. The need for this coordination has been widely acknowledged by TSOs, regulators and EU legislators and is in line with the CEP requirements. The inclusion of non-EU TSOs in the geographical scope of SORs fulfils the need and constitutes the basis of such coordination.

* 1. Specific clauses in SOR Proposal

The composition of the SORs reflects the interconnection and interdependency of the electricity system in Europe, including the technical needs for covering both the EU and non-EU, and it facilitates implementation at an early stage. Both the technical and regulatory needs are described in the previous section. Moreover, the SOR Proposal integrates specific clauses to ensure that the European governance of the IEM is not at stake when implementing SOR consequent requirements (as in art 35 and others of Electricity Regulation). The clauses are formulated to enable a common understanding and approach towards the varying legal requisites for the relevant non-EU states and are found in the corresponding SOR where the concerned TSOs or Transmission System Operators are proposed to be included.

1. https://docstore.entsoe.eu/Documents/Publications/SOC/Recomendations on Coordination of Technical Cooperation with Third Country TSOs - Web Version.pdf [↑](#footnote-ref-2)
2. ACER Decision, 5.3. (55), page 12:

   “[…] Further, pursuant to point 3.1. of Annex I to Regulation (EC) No 714/2009, capacity allocation at an interconnection shall be coordinated and implemented using common allocation procedures by the TSOs involved in cases where commercial exchanges between two countries (TSOs) are expected significantly to affect physical flow conditions in any third country. Regulatory authorities and TSOs shall ensure that no congestion-management procedure with significant effects on physical electric power flows in other networks is devised unilaterally.”

   ACER Decision, 5.7. (73), page 16:

   “In that context, it is to be noted that point 3.1. of Annex I to Regulation (EC) No 714/2009 requires that ‘[i]n cases where commercial exchanges between two countries (TSOs) are expected to affect physical flow conditions in any third-country (TSO) significantly, congestion-management methods shall be coordinated between all the TSOs so affected through a common congestion-management procedure.”

   ACER Decision, 5.7. (78), page 17/18:

   “[…] It is therefore essential that these remedial actions are fully coordinated and optimised within a common region and involve all TSOs and networks which are potentially affected. The coordination requirement stipulated by point 3.1. of Annex I to Regulation (EC) No 714/2009 should in this case apply not only to exchanges between Member States, but also to exchanges between and within TSO areas (13).”

   (13: I.e. in cases where commercial exchanges within a TSO or between two TSOs are expected to affect physical flow conditions in any third TSO significantly, congestion-management methods shall be coordinated between all the TSOs so affected through a common congestion-management procedure.) [↑](#footnote-ref-3)