Explanatory document to the coordinated redispatching and countertrading methodology for Capacity Calculation Region Core in accordance with Article 35(1) of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management

22 February 2019

1. CONTENT

2. DEFINITIONS AND INTERPRETATIONS

For the purposes of this document, the terms used shall have the meaning given to them in Article 2 of Regulation (EC) 714/2009, Article 2 of Regulation (EC) 543/2013 (hereafter referred to as "Transparency Regulation"), Article 2 of Regulation (EC) 2015/1222 (hereafter referred to as "CACM guideline") and in Article 3 of Regulation (EC) 2017/1485 (hereafter referred to as "SO guideline") and the Core RD and CT Methodology.

Please note that:

- "ATC" means "Available Transfer Capacities";
- "IDCF" means Intraday Congestion Forecast".

Note that the definitions for "RA Requesting TSO" and "RA Connecting TSO" do not correspond to the respective definitions detailed in Article 2 of Regulation (EU) 2017/2195 (hereafter referred to as "EB guideline"). The reason for this is that the definitions in this methodology for coordinated Redispatching and Countertrading (hereafter referred to as "Core RD and CT Methodology") do not refer to the specific principles of electricity balancing. To avoid confusion between the definitions in the EB guideline and in this methodology, Core TSOs decided to include "RA" (for remedial action) prior to the two acronyms.

3. INTRODUCTION

The CACM guideline sets out rules to ensure optimal use of the transmission infrastructure, operational security and optimising the calculation and allocation of cross-zonal capacity.

Pursuant to Article 35 of CACM guideline, all transmission system operators (hereafter referred to as "TSOs") in the Core Capacity Calculation Region (hereafter referred to as "Core CCR") have established Core RD and CT Methodology. This document provides additional information and an explanation of the proposal.

4. LEGAL REFERENCES AND REQUIREMENTS

A number of relevant parts of the preamble of the CACM guideline are cited here and should be taken into account in order to properly interpret the articles stated further below.

No. 10 of the preamble of the CACM guideline states that:
"TSOs should use a common set of remedial actions such as countertrading or redispatching to deal with both internal and cross-zonal congestion. In order to facilitate more efficient capacity allocation and to avoid unnecessary curtailments of cross-border capacities, TSOs should coordinate the use of remedial actions in capacity calculation."

Followed by no. 12 of the preamble of the CACM guideline:
"TSOs should implement coordinated redispatching of cross-border relevance or countertrading at regional level or above regional level. Redispatching of cross-border relevance or countertrading should be coordinated with redispatching or countertrading internal to the control area."

The basis for the Core RD and CT Methodology is Article 35(1) of CACM guideline:
“Within 16 months after the regulatory approval on capacity calculation regions referred to in Article 15, all the TSOs in each capacity calculation region shall develop a proposal for a common methodology for coordinated redispatching and countertrading.”

Article 35(2) CACM guidline further states that:
“The methodology for coordinated redispatching and countertrading shall include actions of cross-border relevance and shall enable all TSOs in each capacity calculation region to effectively relieve physical congestion irrespective of whether the reasons for the physical congestion fall mainly outside their control area or not. The methodology for coordinated redispatching and countertrading shall address the fact that its application may significantly influence flows outside the TSOs control area.”

The Core RD and CT Methodology following Article 35 of CACM guideline is also interlinked with Article 21 of SO guideline specifying that:
“Each TSO shall apply the following principles when activating and coordinating remedial actions in accordance with Article 23:

(a) for operational security violations which do not need to be managed in a coordinated way, a TSO shall design, prepare and activate remedial actions to restore the system to the normal state and to prevent the propagation of the alert or emergency state outside of the TSO's control area from the categories defined in Article 22;

(b) for operational security violations which need to be managed in a coordinated way, a TSO shall design, prepare and activate remedial actions in coordination with other concerned TSOs, following the methodology for the preparation of remedial actions in a coordinated way under Article 76(1)(b) and taking into account the recommendation of a regional security coordinator in accordance with Article 78(4).”

Further Article 23(2) of SO guideline specifies that:
“When preparing and activating a remedial action, including redispatching or countertrading pursuant to Article 23 and 35 of Regulation (EU) 2015/1222, or a procedure of a TSO’s system defence plan which affects other TSOs, the relevant TSO shall assess, in coordination with the TSO concerned, the impact of such remedial action or measure within and outside of its control area, in accordance with Article 75(1), Article 76(1)(b) and Article 78(1), (2) and (4) and shall provide the TSOs concerned with the information about this impact.”

Also relevant in this respect is the requirement for TSOs to develop common provisions for operational security coordination on a regional level in Article 76(1) of SO guideline:
“…all TSOs of each capacity calculation region shall jointly develop a proposal for common provisions for regional operational security coordination, to be applied by the regional security coordinators and the TSOs of the capacity calculation region.”

Article 76(1) further specifies that:
“The proposal shall respect the methodologies for coordinating operational security analysis developed in accordance with Article 75(1) and complement where necessary the methodologies developed in accordance with Articles 35 and 74 of Regulation (EU) 2015/1222.”
Lastly, Article 78(1) of SO GL guideline states:

"Each TSO shall provide the regional security coordinator with all the information and data required to perform the coordinated regional operation security assessment, including at least:
…(b) the updated list of possible remedial actions, among the categories listed in Article 22, and their anticipated costs provided in accordance with Article 35 of Regulation (EU) 2015/1222 if a remedial action includes redispatching or countertrading, aimed at contributing to relieve any constraint identified in the region; and …"

The methodologies of the CACM guideline and the SO guideline are thus highly interlinked. The following paragraphs provide a description of Core TSOs interpretation and scope of the Core RD and CT Methodology.

4.1. Definition of redispatching and countertrading

According to Article 2(13) of Transparency Regulation:
"'countertrading' means a cross-zonal exchange initiated by system operators between two bidding zones to relieve physical congestion."

In the case that upregulating and downregulating measures are Countertrading, they are considered as a measure between at least two bidding zones with the objective to relieve physical congestions, and, thus, to maintain network security, where the precise generation or load pattern alteration is not pre-defined.[1] This measure is a market based-solution, where the cheapest bid or offer is selected independently of the geographical location within the bidding zone. By using countertrading resources, the relieving effect on the congestion must be ensured.

Article 2(26) of Transparency Regulation further clarifies that:
"'Redispatching' means a measure activated by one or several system operators by altering the generation and/or load pattern in order to change physical flows in the transmission system and relieve a physical congestion."

Redispatching is therefore considered as a measure with the objective to relieve physical congestions and, thus, to maintain network security. In case of congestion, it includes the modification of particular generation and/or load patterns. In more detail, one TSO or several TSOs request from specific generators (consumers) to start or increase the production (to decrease the load), while other specific generators (consumers) are requested to stop or reduce the production (to increase the load).[1]

With regard to the above-mentioned definitions, the general idea of Redispatching and Countertrading is to alter the generation and/or load pattern by one or several TSOs in order to change physical flows and thereby relieve the physical congestion.

The table below shows a list of possible combinations for RD and CT in two different bidding zones to relieve a congestion:

[1] ACER: Based on the definitions from the questionnaire for Market Monitoring Report.

Bidding Zone A	Bidding Zone B
RD	RD
CT	CT
RD	CT
CT	RD
RD + CT	RD
RD + CT	CT
RD	RD + CT
CT	RD + CT
RD + CT	RD + CT

Countertrading and Redispatching are also mentioned in Article 22 of SO guideline as categories of RA[2] that are in line with the definitions specified in the Core RD and CT Methodology and in this document.

Please note that the definitions for “Countertrading” and “Redispatching” do not correspond to the respective definitions detailed in Article 2 of Transparency Regulation. The reason for this is that the definitions used in this Core RD and CT Methodology need to be more detailed compared to the definition in the Transparency Regulation. This means that the definitions in this RD and CT Methodology allow that on one side Redispatching is used and Countertrading on the other side, i.e. Redispatching and Countertrading can be combined. The distinction between Redispatching and Countertrading can only be made by considering the local activation within the bidding zone and not the cross-border trade.

Countertrading, defined in the Core RD and CT Methodology, underlines that the exchange activated can be made between more than two bidding zones and the location / locations of the activated sources as countertrading RA are not known, which implies an increased degree of uncertainty, an important aspect for methods applied throw this proposed Core RD and CT Methodology.

The available resources for Redispatching and Countertrading are currently based on the specific legal and national regulatory frameworks. Core TSOs are bound to these frameworks. If there is a harmonized legal framework regarding resources for Redispatching and Countertrading in the future, references to national legislations are not necessary any longer. However, this is not the case at present and therefore national framework conditions need to be taken into account.

4.2. Interpretation and scope of the proposal

Firstly, this proposal is limited to Core CCR purposes only, meaning that the geographical scope of this proposal is confined to the bidding-zones within the Core CCR and the set of coordinated network elements that will be identified pursuant to Article 76 of SO guideline. This set of elements should at least include all the critical network elements of the CCR, according to the Coordinated Security Analysis Methodology (hereafter refered to as “CSAM”) pursuant to Article 75 of SO guideline. The

[2] “Remedial action” is defined in Article 2(13) of CACM guideline as “any measure applied by a TSO or several TSOs, manually or automatically, in order to maintain operational security.”

Core RD and CT Methodology will be applicable to any future bidding-zones which may be added to Core CCR by a NRA decision or an ACER decision.

The legal framework stated above needs to be given an interpretation in order to formulate a legally sound Core RD and CT Methodology, to define the scope of this methodology and to make the methodology implementable.

Countertrading and Redispatching are considered RA as defined in SO guideline and can be prepared in different processes and in different timeframes, i.e. day-ahead, intraday and real-time.

When Countertrading and Redispatching are used to mitigate congestions, the TSOs identify the potential need in advance. The effective application on the network is performed at the latest time compatible, and if the TSOs need is confirmed by the last available information on the expected situation. For example, Countertrading and Redispatching may be considered necessary to secure the grid under certain expected market scenarios, but are not applied if the market results turn out to be different than expected.

Since these measures influence each other, an enduring coordination process is required and the main target of the coordination process is to ensure that RD and CT Measures that have been identified in one process step are also taken into account in the following process steps. To allow the Core TSOs to relieve congestions effectively and economically efficient, an appropriate coordination between TSOs has to be ensured through this Core RD and CT Methodology. The coordination will be performed largely by the Regional Security Coordinators operating in the Core CCR (hereafter referred to as “Core RSCs”).

5. Current practices of RD and CT

In this section, the redispatching and countertrading solutions currently in place within the Core CCR are described. Those measures are applied in the Core CCR for congestion management on both cross-zonal and internal network elements.

TSO	RD/CT	How resources are selected	Resources used
APG	CT	mostly last resort: location (balancing market)	mostly last resort: balancing market
	RD	based on location/sensitivity/MW availability/price or costs	generation units/pumps/loads respecting technical constraints
CEPS	CT	not used	
	RD	based on location/sensitivity/MW availability/price or costs	spinning generators and fast activated generation
CREOS	CT	not used	
	RD	not used	
ELIA	CT	Merit Order	MW available on production units that are not reserved for contracted balancing products

ELIA	RD	based on location/sensitivity/MW availability/price or costs	MW available on production units that are not reserved for contracted balancing products respecting technical constraints
ELES	CT	merit Order	As a last resort: balancing market
	RD	based on location/sensitivity/MW availability/price or costs	all available generators /pumps respecting technical constraints
HOPS	CT	Not used	Not used
	RD	based on location/sensitivity/MW availability/price or costs	all available resources respecting technical constraints
MAVIR	CT	not used	
	RD	based on location/sensitivity/MW availability/price or costs	all available resources respecting technical constraints
PSE	CT	merit order according to balancing market offers	all available generators respecting technical constraints
	RD	based on location/sensitivity/MW availability/price - merit order according to balancing market offers	all available generators respecting technical constraints
RTE	CT	merit-Order on the Balancing market	balancing market
	RD	based on location/volume available and merit order. For the same costs, bids from RES are activated first. All available resources on the balancing market can be activated for congestion management.	balancing market, (MW available on production units that are not reserved for contracted balancing products)
SEPS	CT	not used	
	RD	not used	
Transelectrica	CT	balancing market, merit order based. Taking position in intraday market, minimum 2 hours before real time.	Generators respecting technical constraints
	RD	based on location/sensitivity/MW availability/price - merit order according to balancing market offers	Generators respecting technical constraints
50Hertz Amprion TenneT Germany TransnetBW	CT	asking for bids at the German Intraday market	intraday market
	RD	based on location/sensitivity/MW availability/costs	generators loads pump storages storages for electrical energy respecting technical constraints
TenneT Netherlands	CT	not used	
	RD	based on location/sensitivity/MW availability/prices	generators loads storages for electrical energy respecting technical constraints available resources offered by the market

6. CROSS-BORDER RELEVANCE OF RD AND CT

6.1. Cross-border relevant remedial actions and cross-border relevant network elements

Article 35(2) of CACM guideline describes that this RD and CT Methodology shall include actions of cross-border relevance. Actions of cross-border relevance (or cross-border relevant RA, it is the same) shall enable all TSOs in each capacity calculation region to effectively relieve physical congestions irrespective of whether the reasons for the physical congestion fall mainly outside their control area or not.

XBRNEs are subject to specific and detailed cost sharing principles described in the methodology pursuant to Article 74 CACM guideline. Non-XBRNE are treated with the owner principle. When managing congestion during the Coordinated Security Analysis (hereafter referred to as "CSA") performed according to the methodology pursuant to Article 76 of SO guideline, there are no separate processes for XBRNEs and other elements. That means that each cross-border relevant RA will be coordinated during the CSA process where preferably all congested network elements will be optimized during the CSA. XBRNEs will however be treated differently in the cost sharing process. Indeed, the total incurred costs will be mapped to the dedicated congested network elements in each bidding zone according to the methodology pursuant to Article 74(1) of CACM guideline and the costs mapped to XBRNEs will be shared according to the methodology pursuant to Article 74 CACM guideline.

As any other RA, RD and CT Measures can be cross-border relevant actions when they are used to relieve physical congestions on XBRNEs.

6.2. Cross-border relevant remedial actions and cross-border impacting remedial actions

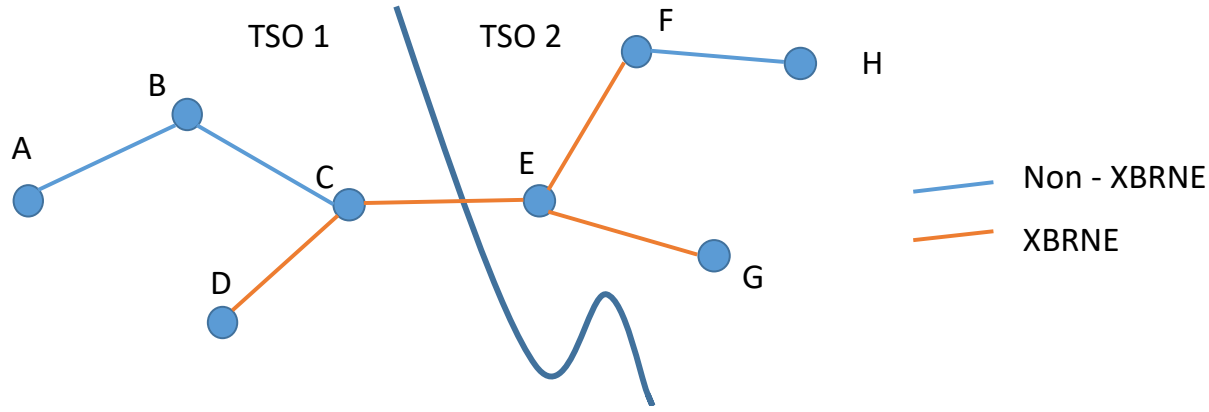
There is a difference between cross-border relevant RA and cross-border impacting RA:

- First, the meaning of both terms is different. Cross-border relevance is used to determine what RA are relevant for cost sharing. Cross-border impact is used to determine what remedial actions have to be coordinated in case of activation. At least RA with a certain cross-border impact will be used to solve congestions on elements of cross-border relevance. Nevertheless, every remedial action of cross-border relevance also needs to be coordinated;
- Second, both terms originate from different regulations. Cross-border relevance is defined in the Core RD and CT Methodology required by Article 35(1) of CACM guideline. Cross-border impact is defined in the methodology required by Article 75 of SO guideline and will be further described per CCR in the methodology required by Article 76(1) of SO guideline.

A quantification of the minimum level above which the cross-border impact of a RA is significant enough to request coordination will be established in the methodology required by Articles 75 and 76 of SO guideline. This threshold is the minimum above which there is a need for coordination because the RA is then deemed cross-border impacting and all impacted TSOs should accept the RA before the RA is activated. The threshold is not a limitation to the market for offering or using resources and Core TSOs also do not see this as a limitation in the process for solving congestions. Both resources above and below the threshold can be used as input for the RA optimisation and coordination.

For example, in some situations, a TSO will want to apply internal Redispatching to solve an internal congestion. If the Redispatching has a impact above the threshold on another TSOs network element, then this Redispatching is cross-border impacting and needs to be coordinated even if the Redispatching does not solve any congestion on the other TSOs grid. This redispatching action is only cross-border relevant if the relieved congestion was on a XBRNE.

Depending on its effect, a RA can be either cross-border relevant or cross-border impacting or both or neither. This is illustrated in the following example.



Congested element	RA	XB impacting RA ?	XB-relevant RA ?	Coordinated RA ?	Cost shared (CACM 74)
Line B-C	Internal RD between A and B	No	No	No	No
Line B-C	Internal RD between B and C	Yes	No	Yes	No
Line D-C	Internal RD between A and B	No	Yes	Yes	Yes
Line E-F	XB RD between B and F	Yes	Yes	Yes	Yes

6.3. Experimentation

An experimentation will be done by Core TSOs in 2019/2020 and will aim at testing several scenarios for the cost sharing methodology pursuant to Article 74 of CACM guideline but also at testing different options for the cross-border relevance definition.

The following options could be evaluated:

1. XBRNE = cross-zonal elements & elements with zone-to-zone PTDF > 5%;
2. XBRNE = cross-zonal elements & elements with zone-to-zone PTDF > 10%;

3. XBRNE = tie-lines & lines connected to tie-lines.

6.4. Overview of different XBRNE possibilities

At the moment there are still several XBRNE definitions under discussion, as reflected in paragraph 4 of Article 19:

“This methodology shall be amended no later than 12 months after its approval, or as soon as the details that require clarification are available, whichever happens earlier. In particular, TSOs shall investigate whether the XBRNE definition shall stay as is, whether XBRNE shall be equal to CNEC from Core DA CCM or whether XBRNE shall be limited to the cross-border elements and the elements directly connected to them. This submission shall contain a detailed time plan for implementation in accordance with Article 9(13) of the CACM guideline.”

6.4.1. XBRNE = cross-zonal elements & internal elements with PTDF above threshold

This first possibility is retained in Article 4 of the methodology. It details that the list of XBRNE consists of all cross-zonal elements and internal elements (proposed by TSOs) which have a zone-to-zone PTDF above an agreed threshold. Also, the considered elements must have a voltage level of 220 kV or higher.

The starting point of PTDF threshold to be considered is set to 5% and will be evaluated more in detail during the experimentation phase. The impact of increasing the threshold up to to 10% will be assessed.

The final criteria for internal elements will be agreed for the amended version of the methodology.

6.4.2. XBRNE = CNEC

A second possibility is that XBRNE are equal to the elements selected as CNEC in Core DA CC.

If Core DA CC methodology would not be approved prior to the Core RD and CT Methodology, the approach from 6.4.1 could be used as interim solution.

6.4.3. XBRNE = tie-lines & lines connected to tie-lines

A third possibility, formulated by NRA’s, is to use a geographical constraint. Using this approach, the set of XBRNE would be limited to tie-lines and internal lines connected to the tie-lines. This approach will also be evaluated during the experimentation phase.

7. THE COORDINATION PROCESS

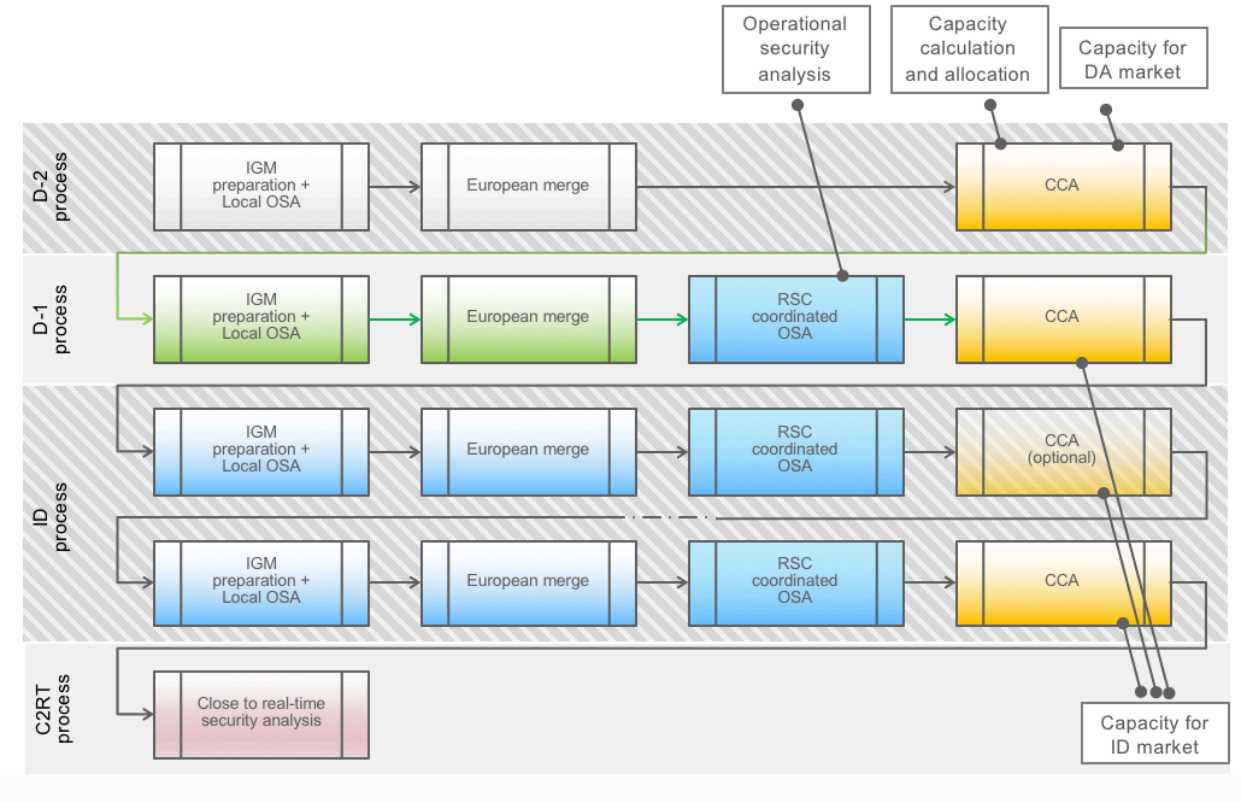
The Core RD and CT Methodology is built upon the cooperation of TSOs in Core CCR via the RSCs. Specific requirements in the SO guideline already require to a large extent the coordination of RA. As Redispatching and Countertrading are RA, these are implicitly included.

7.1. Time-scales for coordination

The redispatching and countertrading application will be coordinated at least on following time-scales:

a. Day-ahead process;
b. Intraday process;
c. Fast Activation Process (including Close to real-time process).

This is illustrated in the following figure:



The following table illustrates the different methodologies related to the different process steps described in the figure above.

Step	Process	Methodology
D-2	• European merging (CGM building)	• CGMm art.16 and 17 CACM guideline • IGMm art. 70 SO guideline
D-2	• CCA (day-ahead) • DA Coordinated Capacity Calculation • Non-costly Remedial Action Optimisation for CC (NRAO)	• CCm art. 21 CACM guideline
D-1	• European merging (CGM building)	• CGMm art.16 and 17 CACM guideline • CSAM art. 76 SO guideline

D-1	• RSC coordinated OSA (DACF) • (Coordinated Security Analysis)	• RDCTm art. 35 +74 CACM guideline • CSAM art. 76 + CSAm 75 SO guideline
D-1	• CCA (intraday)	• CGMm art.16 and 17 CACM guideline • CSAM art. 76 + CSAm 75 SO guideline
ID	• ID Coordinated Capacity Calculation • Non-costly Remedial Action Optimisation for CC (NRAO)	• CCm art. 21 CACM guideline
ID	• European merging (CGM building)	• CGMm art.16 and 17 CACM guideline • CSAM art. 76 + CSAm 75 SO guideline
ID	• RSC coordinated OSA (IDCF) • Coordinated Security Analysis	• RDCTm art. 35 +74 CACM guideline • CSAM art. 76 SO + CSAm 75 guideline

The number and frequency of intraday process will be decided in the CSAM.

Espically long lead times of power plants could lead to a need of an earlier CSA (e.g. D-2 or D-3) to decide on costly RA which have to be activated before the DACF process. Should an earlier CSA be implemented to decide on costly RA which have to be activated before the DACF process, the Core RD and CT Methodology will be updated by amending the methodology, according to Article 9(13) of CACM guideline. Until such an implementation of an earlier CSA, RA decided before DACF will not be subject to cost-sharing.

7.1.1. Fast activation process

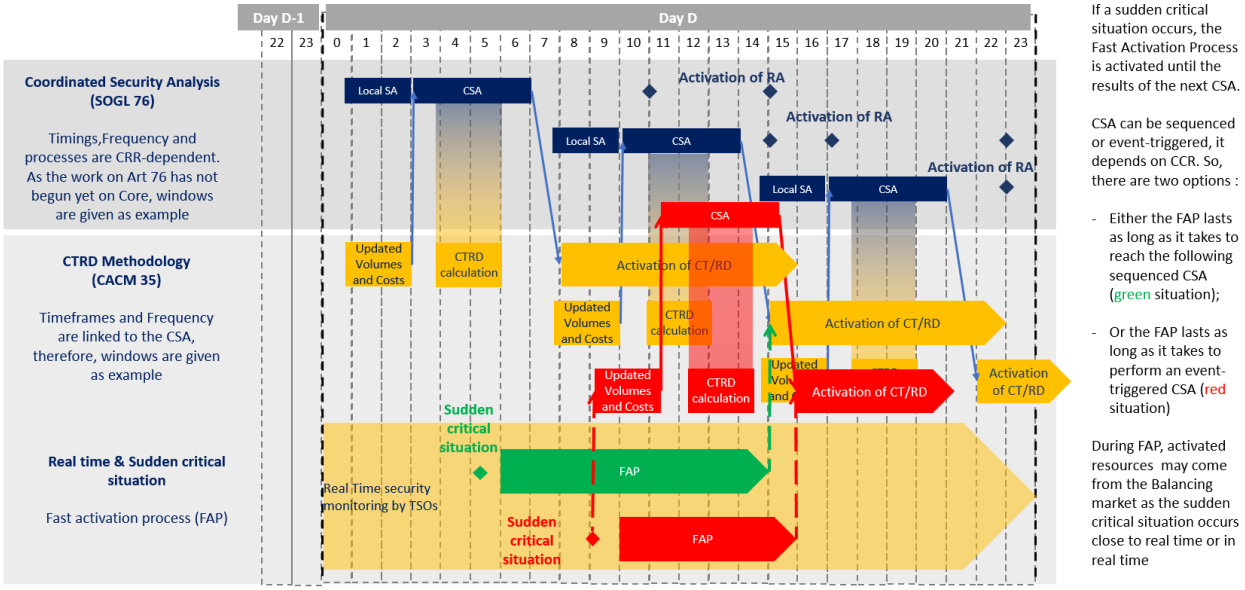
The Fast Activation Process is defined as a process to relieve physical congestion where the detection of the physical congestion occurs either between or after occurrence of the CSA cycles and a fast activation of a RA is required and cannot wait for the next CSA.

For example, in case sudden physical congestions arise close to real-time or in real-time, a TSO has the responsibility to alleviate the congestion in its grid as soon as possible. In such a case the fast activation of a RA is required and the Fast Activation Process will be applied. In case the RA is not cross-border impacting, no coordination with RSCs or neighbouring TSOs is needed. In case it concerns a Cross-border Impacting RA, the activation of such a RA will often be outside the coordination process of the RSCs because of timing constraints related to the RSCs coordination process. However, TSOs impacted by the activation of the RA and their RSCs will be informed by the RA Requesting TSO as soon as possible to the activation and about its impact, which is in line with the methodology of Article 75(1) of SO guideline. If the ordered RA is a cross-border RA (via cross border Redispatching or Countertrading), the RA Connecting TSO will coordinate with the TSO facing the congestion.

Lastly, TSOs will take into account the bilaterally agreed CT and RD Measures in the next relevant IGMs. New congestions as a result of a Countertrading or Redispatching measure within the Core CCR should be avoided.

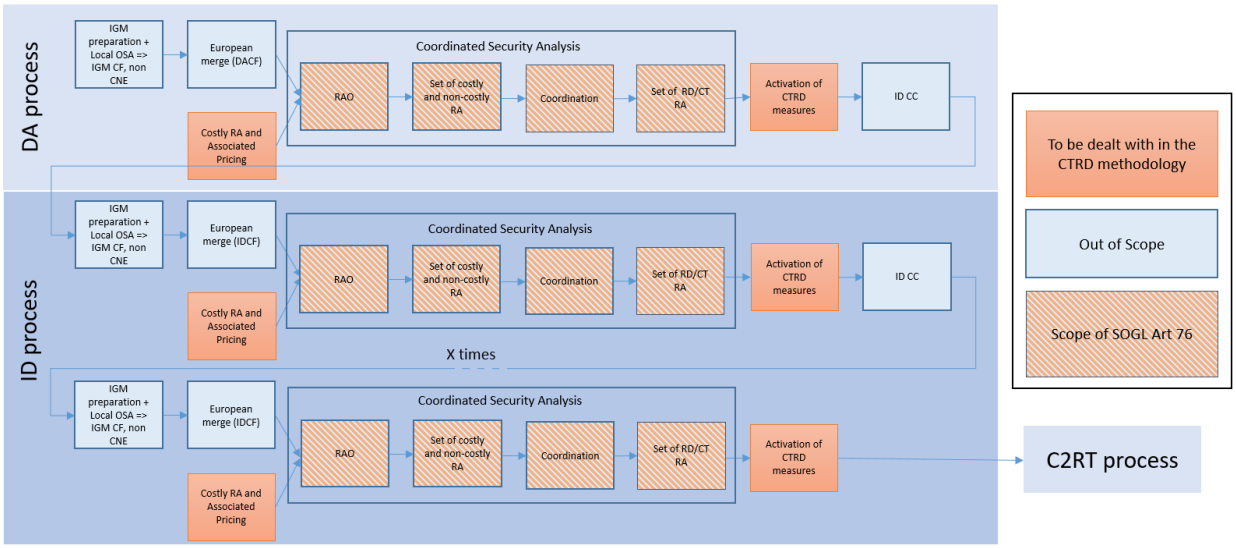
The frequency of the fast activation of a Cross-border Impacting RA should be minimized. These occasions could be situations with out-of-range contingencies (in line with used definitions in methodology Article 75(1) of SO guideline) or updates in forecasts (e.g. unforeseen weather circumstances with impact on feed-in of renewable energy).

The Fast Activation Process can be activated as long as it takes to have results and measures from the following CSA. A CSA can be started with fixed times or can be event-triggered (see flow chart below).



7.2. RSC coordination process

The general details of the future RSC coordination process is shown in the following figure:



List of abbreviations used in this figure:
RAO = Remedial Action Optimisation
DACF = Day Ahead Congestion Forecast
IDCF = Intraday Congestion Forecast
IGM CF = Individual Grid Model Congestion Forecast
RA = Remedial Action
C2RT = Close to real-time
CNE = Critical Network Element
OSA = Operational Security Analysis

Coordination is performed during different timeframes in relation to the different market timings. The preparation of Countertrading and Redispatching starts at least on day-ahead, i.e. the day before the point of delivery. Firstly, TSOs shall individually assess possible Countertrading and/or Redispatching volume and supply a list of these volumes (including their anticipated costs) to the RSCs. The RSCs require such a list amongst other data such as common grid models (hereafter referred to as "CGMs"), the contingency list and the operational security limits, in order to carry out a CSA. The RSCs deliver the results of the CSA to the Core TSOs.

The RSCs shall, where it detects congestion, recommend to the relevant TSOs the most effective and economically efficient Redispatching and/or Countertrading measures. This recommendation is the result of the coordination within the whole Core CCR.

Any recommendation received from the RSCs for a particular Redispatching or Countertrading measure shall be evaluated by the significantly impacted TSOs with regard to the elements involved in that measure and located in its control area. The decision-making on the effective implementation of a Redispatching or Countertrading measure remains the responsibility of the TSOs. The conditions under which each TSO shall accept or refuse the proposed RA will be described in the methodology for preparation of RA in a coordinated way pursuant to Article 76 SO guideline. The accepted actions

should be included by the TSOs in the forthcoming relevant grid models ,in accordance with the SO guideline requirements.

The described process leads to the coordination of RD and CT Measures, as the assessment for required measures on regional level will be performed by a third party, the RSCs. Thus, these neutral entities will ensure efficient dispatching of relevant resources on a regional level (Core CCR) in comparison to the current situation where congestion is often relieved bilaterally by TSOs.

In particular, the forecast failure of renewables feed-in and the possible change of the power plant schedules lead to the need of iterative coordinating processes, especially in case of a high demand for Redispatching.

The full set of required measures has to be divided in subsets which will be applied stepwise related to the different coordination processes.

7.3. Lead times

For the coordination of RA, it is crucial to consider the activation lead times of Redispatching resources. The lead times depend on the respective technical specifications, operational procedures and on the timings of the CSA. For example, the ramp-up time of power plants requires long lead times. Thus, coordination processes must be carried out in a timely manner and can only be based on the information available at that time. The forecast errors require that RA are activated gradually. For this, in the first coordination process, only the RA that cannot be activated later because of their lead times will be activated according to the optimisation result. These activated actions respectively Ordered RA form the basis for the following optimisation process and will therefore be added to the next IGM. In the next coordination process the activated measures are reviewed and, if possible, adjusted. This procedure is repeated until the final coordination process is reached, in which the actions still available are utilised.

8. SHARING OF RD AND CT RESOURCES

Information regarding available resources for Redispatching and Countertrading and relevant additional information (e.g. volume of storage, restrictions of gas supply, etc.) are shared transparently between Core TSOs and the RSCs via the RSCs. Regarding the sharing of resources for Redispatching and Countertrading in the CSA or the future common optimisation, many aspects have to be considered and are described below.

8.1. Dependencies in sharing of resources for redispatching and countertrading

The amount of resources for Redispatching and Countertrading shared by the TSOs depends on:

a. Uncertainties of forecast security calculations in connection with the timeframe of security calculation;
b. The level of coordination.

8.1.1. Uncertainties of CSA in different timeframes

The aim of the CSA and RA is to assure the effective and efficient reduction of risks to the reliability and security of the grid for real time operations. As many measures have to be decided prior to real-time (e.g. start-up of a power plant), forecast calculations have to be made, i.e. day-ahead congestion forecast (DACF) and intraday congestion forecast (IDCF). Inter alia, the following changes may occur during the period between the DACF calculation and real-time:

- Intraday-changes due to forecast errors of renewables;
- Changes of generation units which can act fast (e.g. pump storage power plants, gas power plants) and therefore react on changes of renewables;
- Changes of generation units which provide ancillary services;
- Changes of other RA (PST, topology changes);
- Changes of scheduled generation units or exchange flows due to ID-trading;
- Changes of the availability of network elements due to unplanned outages changes of the availability of generation units due to unplanned outages or technical incidents.

All of these changes have an influence on the load flow situation and therefore on the RA which are required to assure the reliability and security of the grid. Therefore, resources for Redispatching and Countertrading have to be used/shared wisely amongst the different timeframes. In particular, it must be considered that, on the one hand, the closer to real-time, the more resources can be shared due to decreasing uncertainties, but, on the other hand, the closer to real-time, the less resources are available due to decreasing activation time left. Any coordinated Redispatching and Countertrading should be activated as close as possible to real-time taking into account the lead time for activation, urgency of the system operation which needs to be solved and any limitations to the availability of resources.

8.1.2. The level of coordination

In the regular process, TSOs coordinate the CSA via RSCs, in compliance with the optimisation principles described in the methodology pursuant to Article 76(1) of SO guideline.
In the Fast Activation Process, a full CSA is not possible due to lack of time. In these cases, normally only bilateral cross-border Redispatching or Countertrading can be used.

8.2. Sharing of resources for redispatching and countertrading

There is a difference in the process for sharing resources for Redispatching and for sharing resources for Countertrading during the different timeframes. Next to this, sharing these resources with different CCRs introduces a different dimension for both Redispatching resources and Countertrading resources.

8.2.1. Redispatching

When sharing resources for Redispatching, the aspects for sharing these resources during the different timeframes and aspects for sharing resources with different CCRs need to be taken into account. The following paragraphs describe these different aspects.

8.2.1.1. Aspects for sharing redispatching resources between different timeframes

- Redispatching resources with a long lead time have to be considered in the earliest coordination process. Redispatching resources with a short lead time should be preserved for intraday and close to real-time;
- Pumped storage power plants should be used only for short periods. When used for long periods the water reservoirs are reduced and this implies that these measures are not available in the future or/and additional congestions can arise due to increased pumping;
- Balancing resources should not be endangered;
- Local legislation and technical and regulatory restrictions have to be taken into consideration (e.g. regulations regarding renewable power plants, regulations regarding lead times for the nomination of gas schedules, etc.);
- Batteries, demand response facilities and aggregators can be used as resources for Redispatching if the information of localization and the technical parameters are known and a legal authorization is given. The implementation for these resources regarding timeframes and activation time depends on the respective technical constraints;
- If changes occur on the grid or in the availability of the resources, TSOs update the availability of their resources and notify the RSCs;
- Every TSO is responsible for the security of its own grid. Therefore, the decision on which resources are made available at which time should be made by the TSO. The terms and conditions will be defined by the methodology pursuant to Article 76(1) of SO guideline.

8.2.1.2. Aspects for sharing redispatching resources between other CCRs

When a TSO is part of more than one CCR, resources of Redispatching have to be shared, depending on the needs of the different CCRs or the need of network elements which are part of more than one region. The sharing of resources between CCRs is a matter of coordination between CCRs. According to the CSAM, RSCs should ensure coordination between CCRs. TSOs shall only decide and inform the RSCs whether a resource provided to a CCR is offered simultaneously to different CCRs or is offered only to one CCR. To decide if a resource is offered to one or several CCRs, the following options could be considered by TSOs:

- The basis for sharing of resources between CCRs will be based on the cross-border impact of RA defined in the methodology of Article 76(1) SO guideline;
- The impact of the activation of a resource which has a cross-border impact will be monitored in the CSA process via the observability area defined in the methodology of Article 76(1) SO guideline;
- In case that one CCR does need only little resources, most of the resources can be given to the other region;
- In case the need of one CCR is to increase a resource and the need of the second CCR is to decrease the same resource, RSCs should coordinate the use of the resource;

- The decision for sharing resources can be done on the basis of sensitivities: If two CCRs need the same resource and that resource does not worsen any congestion or the grid situation in general, the resource can be activated for the congestion which is most influenced;
- The Redispatching resources shared between different CCRs, specified by the TSO where the resource is located in its control area, has to be reasonable. In case of conflicts, a coordination process between the different CCRs via RSCs should be performed. If the same conflict occurs on a regular basis, then a different approach for sharing resources has to be defined by the respective TSO, either or not with guidance from the RSCs;
- In case resources are shared with more than one RSC or between CCRs, the TSO will flag this to the relevant RSCs.

8.2.2. Countertrading

When sharing resources for Countertrading, the aspects for sharing these resources during the different timeframes and aspects for sharing resources with different CCRs need to be taken into account. The following paragraphs describe these different aspects.

8.2.2.1. Aspects for sharing of countertrading resources between different timeframes

The resources for Countertrading are power plants on the balancing market, intraday market, demand response facilities, aggregators and balancing platforms. A total amount of available volume for Countertrading should be estimated per TSO for each timeframe.

The implementation of Countertrading in the RAO is still to be investigated (the aspects of uncertainty are especially challenging).

8.2.2.2. Aspects for sharing of countertrading resources between different CCRs

The basis for sharing of resources between CCRs will be based on the cross-border impact of RA defined in the methodology of Article 76(1) SO guideline.

The impact of the activation of a resource which has a cross-border impact will be monitored in the CSA process via the observability area defined in the methodology of Article 76(1) SO guideline;In case a TSO is part of more than one CCR, the total amount of potential Countertrading has to be shared between the CCRs, depending on the need of the different CCRs or the need of network elements which are part of more than one CCR.

When Countertrading is structurally more efficient on some CCRs (HVDC links, electrical peninsula, the Countertrading does not endanger the security of other parts of the grid, etc.), Countertrading could be given in priority to these CCRs.

Sharing of a TSOs Countertrading resource with different CCRs has to be reasonable and should be specified by the TSO where the resources are located. In case of conflicts between CCRs, a coordination process between the different CCRs via RSCs should be performed. In case of regular conflicts, the TSO should propose a different approach for sharing Countertrading volumes, either or not with guidance from the RSCs.

8.2.2.3. Countertrading and Balancing market

Only a few Core TSOs actually use the balancing market as resource for countertrading. For these Core TSOs, however, the balancing market may be the only resource for countertrading, e.g. because some Core TSOs are not allowed to take position in the intraday market, not even if it is requested by a third party on their behalf. Therefore, the use of the balancing market highly depends on the national legal and regulatory framework. In the following, the balancing systems of ELES, PSE, RTE and Transelectrica are outlined in more detail because these TSOs currently utilize the balancing market as resource for countertrading:

- **ELES** in principle does not use the balancing market for CT. However, we have a trading platform run by our power exchange where we sell/buy energy for balancing (free energy bids) or CT, respectively. In both cases the selection of cheapest bids is made up to the requested volume and accepted bids are settled by using the pay-as-bid principle. ELES clearly distinguishes trades which are used for the purpose of balancing and CT. Mandatory energy bids resulting from procured balancing capacity (FRR) are not collected/activated on the trading platform. The balancing market is not impacted by the utilization for CT because the amount of capacity procured for balancing (FRR) remains untouched until all other voluntarily/free bids available in the control area are exhausted. Only in case of last resort or an emergency situation the energy from the procured balancing capacity (mFRR) could also be used for CT. All bought or sold energy used for CT does not have a direct impact on imbalance prices while those trades are fully excluded from the imbalance settlement. Potential indirect impact can be only observed through the reduced liquidity on balancing market if any balancing intervention is needed afterwards. When there is a need for CT, a TSO usually informs all major market participants about the needs in the system and therefore asks them to offer their bids on the trading platform. Participation on this platform is limited only to those balance groups which have their own balancing responsible in the Slovenian control area. ELES clearly indicates the reasons why activation is send out or a trade is concluded on the platform. When the reason for activation is CT incurred costs/incomes are not considered as a part of costs reimbursed through the imbalance settlement process. However, in case balancing energy bids from procured balancing capacity are activated for CT there could be an indirect impact on BRPs since more expensive bids (mFRR) would have to be activated for balancing, if needed. These extreme case is not very likely, thus no compensation of BRPs is foreseen for such cases.
- At **PSE**'s side of the interconnector, RD and CT resources are activated within the Integrated Scheduling Process (ISP) run by PSE based on the volume of RA (RD/CT) agreed with other TSOs. The ISP process is bid-based security constraint unit commitment and economic dispatch, where balancing, reserve procurement and congestion management are co-optimized within one integrated process run by PSE just immediately after the day-ahead market closure that continues until real-time. Commitment and operational set-points of all centrally controlled generation units in Poland are determined by PSE within the abovementioned ISP, minimizing the global cost. The price used in the settlement of RA reflects energy delivery/receipt cost of energy at the balancing market, i.e. it is based on the balancing market price and cost of activated resources when the location of resources is relevant to realize RA, i.e. most efficient resource is activated before all other resources from control area. The imbalance price is calculated with RD and CT energy filtered out, i.e. only the imbalance of Polish market participants is taken into

account when calculating imbalance settlement price. Imbalance price and imbalance volume do not depend on RD and CT. BRPs are not affected by RD and CT.

- When the volume of countertrading is known, **RTE** respects the merit-order and selects the cheapest bids until the needed volume is reached. In the future, RTE plans to use the interconnection controllability provided by the Balancing Platform to express the CT needs on each border. The activation of CT through the balancing market impacts the imbalance price and the Weighted Average Price. RTE's methodology to calculate ex-post the CT cost is based on the imbalance price and the activated volume. Today there is no distinction between Balancing actions and CT actions on the Balancing market. When RTE activates CT, a cross-border exchange is done between RTE and another TSO. This new cross-border exchange is a new input for RTE's Balance. RTE activates bids on the Balancing market to reach the new balance and charge a fictive BRP with the cause of the imbalance. The costs of congestion management are borne by the fictive BRP owned by RTE. In that way, when a countertrade is made, the imbalance created by the cross-border exchange is compensated by the activation of bids from the Balancing Market and the fictive BRP is deemed imbalanced so that the incurred costs are borne by the fictive BRP. The costs are calculated as it would be for any other BRP, i.e. calculated ex-post, based on the imbalance price.
- For **Transelectrica**, a way to manage a congestion on interconnection is the system of CT, so that once a congestion is observed or predicted, the network operator countertrades against the flow of congestion, thereby reducing the flow over the interconnector, until the congestion is solved. To countertrade against the flow on the interconnection, the operator may use either the balancing market or the auction on the intraday market, in this last case with at least two hours before the congestion occurs.On the balancing market platform, the operator selects the bids on upward regulation merit order up to volumes requested by neighboring TSO. The selected bids which make possible the CT are paid by TSO using the current national rule (pay-as-bid). The imbalance price is impacted because the bids selected due to the countertrading will increase the deficit price which have to be supported by all BRP, having negative imbalance during the respective ISP. The capacity for the countertrading exchange is not procured. The capacity used could be part of TRM or unused capacity by market participants. For now it is not possible to avoid that balancing responsible to bear the costs of congestion management. One feasible solution in the future is to mark different the bids which are selected for countertrading and those bids to not be considered when the imbalance price for national market is computed. In this way, the bids selected for CT will be pay only by TSO.While the methodology of Article 35(1) of CACM guideline and related methodologies will be implemented, the whole process will be improved along the way with the monitoring of their application.

9. SCOPE OF CSA

When performing the CSA, all RA aim at securing the grid. The CSA should preferably be calculated with the full grid model.. The exact scope of the used grid model will be defined in the methodology of Article 76(1) SO guideline.

10. ACTIVATION OF REMEDIAL ACTIONS

Together with the activation of the RD and CT Measures, the cross-border capacities shall be modified or recalculated in order to avoid that market trades go in the opposite direction than the RD and CT Measures. If this is not done, market trades could decrease the effect of the RD and CT Measures or even worsen the congestion. In particular, the ID cross-border Available Transfer Capacity (ATC) will be put to 0 in the direction that worsen the congestion during the period concerned by the RD and CT Measures. The ATC in the other direction won't be modified.

This modified ATC and the planned and Ordered Redispatching and Countertrading will be inputs for the ID CC process (incl. models).

11. REMEDIAL ACTION OPTIMISATION PRINCIPLES

Disclaimer: The optimisation principles described in this chapter are a subject to change and will further evolve, based on the development of the methodology of Article 76(1) of SO guideline*.*

This document provides a high level overview of the RA optimisation principles in a coordinated way (henceforth RA optimisation) and is based mostly on the preliminary concept for "Decision Support and automated Remedial Action assessment" (DSaRAa) provided by TSCNET.

11.1. Inclusion in the regional CSA

The RA optimisation will be included in the regional CSA process, as defined by Article 76 of SO guideline, i.e. within the DACF process and the IDCF processes. The optimisation shall start after all TSOs provided their confirmation on their input data that will be used for the optimisation. After the results of the CSA are available, in which also the RA are considered, two cases may occur after the application of the proposed RA: either the grid is secure, i.e. because there is no congestion or because one or more TSOs accept not to be (N-1) secure if these (N-1) have consequences limited to those TSOs, or the grid is not yet secure and the process has to continue with the next CSA iteration. In the latter case, TSOs have the possibility to update the pool of RA that is to be used in the next process iteration.

11.2. Security assessment principles

The RA optimisation includes two security assessments to fulfil the (N-1) security principle of the transmission system regarding power flows for temporary and permanent admissible transmission loadings: the preventive security assessment and the curative security assessment.
In the preventive assessment, constraints of temporary admissible transmission loading (TATL) or of permanent admissible transmission loading (PATL) are taken into account and the impact of preventive RA application is assessed for all contingency cases. The reason for the activation of RA during preventive assessment is to enable the TSO to solve forecasted contingencies in due time.
In the curative assessment, constraints of PATL are included and the impact of curative RA application is assessed independently for all linked contingency cases.

11.3. Required input data

The necessary information to perform the RA optimisation comprises of:

a. The merged CGM of best possible quality;
b. The list of contingency cases and admissible loading per element to be considered in the process;
c. The list of Special Protection Schemes (SPS);
d. Additional data.

The RA considered for optimised coordination are defined by the TSOs as input data (update of RAs during the process is possible). Note that already included RAs in the CGM must be considered as activated RAs in the optimisation.

11.3.1. CGM

The RA optimisation will become an integral feature of the CGM process and considers all 24 timestamps/ all remaining hours of each day. The CGM, the contingency list, RA and additional constraints provide the required supportive files for the TSOs on what is the optimal set of RA that is to be applied to achieve a congestion free model. The model must contain all necessary data to perform load flow calculations (e.g. susceptance of branches). Furthermore, the TSOs must provide IGMs which contain the values for reactive and active power loads and feed-ins. The handling of active power losses of the transmission grid requires the modelling of relevant limitations for active power feed-in. These aspects require the modelling of active power limits and reactive power limits for generations units.

11.3.2. Contingency cases and admissible loading

The RA optimisation principle uses contingency cases that are defined by the combination of monitored elements (i.e. a set of network elements that is to be monitored during the contingency analyses) and simulated outages (i.e. a set of network elements that define the outages that are simulated during the contingency analyses). Note that the definition for monitored elements and simulated outages remains unchanged by the introduction of the RA optimisation. Transmission admissible loadings serve as security constraints in each contingency case and consist of PATL and TATL. The PATL describes the physical limits of each monitored element that can be accepted by a network branch for an unlimited duration without any risk for material, whereas the TATL describes the temporary limit that can be accepted by a monitored element for a certain, limited duration. Prior to the definition of admissible loadings, it is important to emphasize that the value of the current limit is defined for each element in TSOs IGMs.

11.3.3. Special protection scheme

SPS is a RA or a set of RAs respectively, which is implemented automatically if a certain condition is fulfilled. Thus, these RAs must be considered in the security assessment process in any case as they are predefined and will be activated before any other curative RA. In case a SPS is defined for a particular contingency case, this implies that it has to be prioritized over any other curative RA.

11.3.4. Additional data

To identify the most effective and economically efficient set of RA, an optimisation area has to be defined. Within this area, technical constraints relevant and consistent with CSAM are monitored. Furthermore, all relevant contingencies have to be defined, and all available degrees of freedom must be included. If generation units, transformers or HVDC connections are provided for the optimisation algorithm, their respective limits need to be specified. For Redispatching, the required data shall include, but are not limited to:

a. Volume;
b. Identification of Redispatching resources and mapping to nodes in the CGM;
c. Specific up-to-date upward and downward regulating availabilities;
d. Operational constraints, e.g. ramping constraints, minimum and maximum duration of the delivery period, lead time, Pmin, Pmax;
e. Characteristics of standard products;
f. If the resource is offered simultaneously to different CCRs or only to the Core CCR.

For Countertrading, the following features will accompany the volume itself, but are not limited to:

a. Volume;
b. Bidding zone or location if known;
c. Product related lead times;
d. Characteristics of standard products;
e. If the volume is offered simultaneously to different CCRs or only to the Core CCR.

For phase shifting transformers (PST), the objective function penalty term as well as minimum and maximum tap positions (the range of possible adjustments) need to be defined. For HVDC converter stations, at which the power injections can be changed within the optimisation algorithm, the considered information includes the objective function penalty term and its power operating range to describe the available range for the optimisation. Furthermore, possible topological measures have to be considered.

11.4. RA Coordination

In general, RAs can be applied as a preventive or curative measure. Preventive RAs are used to meet a contingency that may occur, while curative RAs are used after the occurrence of a contingency case.

11.4.1. General optimisation approach

The RA optimisation is a global optimisation approach for all RA (costly and non-costly) that minimizes the costs/volume for RA application (objective function), while limiting the impact on the market. This means that all existing congestions are considered in conjunction with the available RA. The optimisation is time-coupled, i.e. the optimising algorithm explicitly considers temporal dependencies of RA and does not neglect the interdependencies (e.g. technical, organizational and legal) between consecutive timestamps. For time-coupling optimisation, it is crucial to make use of constant identifiers for all relevant grid elements. For the decision on which RA to utilize, the optimisation approach considers both the costs and the efficiency (i.e. sensitivity) of a RA or a set of RA, respectively, on a specific congestion. That is, the optimisation includes the total RA costs as well as the total activated RA amount. Therefore, both economic and technical aspects of RA application are taken into account. In the optimisation algorithm this is implemented by means of objective

function penalty terms, e.g. for generation/load units, phase shifting transformer, HVDC converter stations and topological RA. These are taken into account by the optimisation algorithm if the power output of a generation unit is modified. For a generation unit, for example, the objective function penalty term consists of the unit's marginal costs and its specific penalty term. It is applied to avoid too large modifications of the market solution, i.e. the power injection before the optimisation. The interdependencies of RA and congestions are considered implicitly based on the formulation of the optimisation problem. For the coordination of RA, TSOs must define suitable assets as RA and define sharing parameters, which are taken into account during the RA assessment. In addition, it is possible for TSOs to introduce manual corrections of the suggested RA. This is implemented by an iterative operational process comparable to the currently applied DACF runs.

11.4.2. Definition of RA types

The considered types of RA are control changes (modification of a phase shifting transformer tap position or transformer, flow control via DC links), topological changes (open or close network elements, node reconfiguration, cancelation of outages) and electric energy injections (Redispatching and Countertrading, curtailment of renewable energy sources). The RA optimisation must consider technical constraints (e.g. continuous application of topological modifications over time operational constraints (e.g. activation lead time of different types of RA) and balancing constraints (e.g. Redispatching and Countertrading must be activated in a balanced way). Note that technical constraints must be differentiated between TATL and PATL in order to calculate the loading of the network elements.

11.4.3. Uncertainties of RA

RA whose exact location in a grid is known usually deal with less uncertainty regarding their physical impact and therefore the effectivity of the RA, especially in case of a meshed grid with AC connections. On the other hand in a case of more isolated grid not knowing the exact location of RA (usually CT) should not be a limitation, as is depicted in the table below comparing estimated impact of RD and CT performed in meshed and unmeshed grids.

Estimated level of uncertainty:

Grid topology	unmeshed	meshed
RDxRD	low	low
RDxCT	low	medium
CTxCT	low	high

11.4.4. Definition of RA sharing

In the RA definition, different types of sharing can be defined. In the DSaRAa project for example, three sharing types of RA are distinguished in the RA optimisation: shared RA, conditionally shared RA and non-shared RA. Shared RA relieve congestions within their technical restrictions, while there are no organizational restrictions that need to be considered. Conditionally shared RA are equivalent to shared RA; however their applicability depends on additional factors. Such factors are, for example, limitations in the 110 kV grids. Non-shared RA are used to relieve specific congestions, but are not available for the global optimisation (e.g. phase shifting transformer on an external border). The described three different types are given as examples. In any case, all different types of sharing of RA have to be in line with the methodology required by Article 76 of SO guideline.

11.4.5. Priorities of RA application

The coordination of different types of RA must consider several economic and regulatory requirements but is not limited to:

a. Non-costly RA should be considered before applying costly RA. If non-costly RAare not efficient enough, then both non-costly and costly RA should be considered. In any case, the algorithm should be able to find a solution with only non-costly RA if it exists;
b. The minimization of RA costs must be implemented (particularly for Redispatching);
c. The consideration of national specificities that affects the optimization needs to be clarified and will be defined in the methodology required by Article 76 of SO guideline.

In the RA optimisation, these requirements could be met by defining adequate objective function coefficients, which reflect the priority and cost of each RA. These objective function coefficients could be used to perform the coordination process in an optimisation of all available RA.

11.5. Concepts for RA Activiation

The consideration of activation lead times is crucial for the decision on when to apply which RA. RA with long lead times must be activated earlier, whereas RA with shorter lead times are activated at a later time. Therefore, limits for the activation time and specific criteria to decide on the activation must be included in the optimisation for each RA.

11.6. Output of the RA optimisation

The result of a future optimisation should be displayed in a 24 timestamps overview structure for DACF and till the end of the day for IDCF. It should include a list of RA (phase shifting transformer regulation, grid topology, Redispatching, Countertrading), load flows (lines, tie-lines, transformers), a contingency analysis, phase shifting transformer tap positions, a list of outages, net positions and tie line flows including power flows. Furthermore, a graphical and numerical comparison between each stage of the calculation process would be beneficial. Note that the responsibility for final decision of RA implementation and activation remains on TSO side.

12. DOCUMENTATION OF REDISPATCHING AND COUNTERTRADING ACTIONS

Today, the TSOs in the Core CCR are obliged to record and report the use and costs of Redispatching and Countertrading following the Transparency Regulation, more specifically Article 13(1) on information relating to congestion management measures:

"For their control areas, TSOs shall provide the following information to the ENTSO-E:

(a) Information relating to Redispatching per market time unit, specifying:

- The action taken (that is to say production increase or decrease, load increase or decrease);
- The identification, location and type of network elements concerned by the action;
- The reason for the action;

- Capacity affected by the action taken (MW).

(b) Information relating to Countertrading per market time unit, specifying:

- The action taken (that is to say cross-zonal exchange increase or decrease);
- The bidding zone concerned;
- The reason for the action;
- Change in cross-zonal exchange (MW).

(c) The costs incurred in a given month from actions referred to in point (a) and (b) and from any other RA.

The Core RD and CT Methodology proposes that the RSCs appointed by the Core CCR keep a record of the proposed Redispatching and Countertrading actions for five years. The record shall include:

- The Redispatching and Countertrading carried out based on the RSC proposal;
- All additional Redispatching and Countertrading carried out in relation to the Core CCR borders;
- All justifications for why a recommendation from RSCs is not followed.

With the recording of this information, the RSCs have a full picture of the Countertrading and Redispatching action in the Core CCR, including why a recommendation has not been followed by the TSOs. This information is also to be used for the cost-sharing between the TSOs following the methodology being developed according to Article 74 of CACM guideline. The details of reporting such as which RA shared in the CSA will be treated in the methodology required by Art. 76 of SO GL Regulation.

13. PLAN FOR IMPLEMENTATION

The implementation of this proposal is dependent on a number of conditions:

a. Regulatory approval of Redispatching and Countertrading cost-Sharing methodology required by Article 74 of CACM guideline;
b. CSAM, according to Article 76 of SO guideline, has been implemented and is in operation for the Core CCR.

The pan-european CSAM was submitted for approval by all NRAs in September 2018 (escalated to ACER on 21st December 2018).

14. PRICE INFORMATION EXCHANGE

As input for the RA Optimizer, to be specified by the methodology pursuant to Article 76 of SO guideline, indicative prices will be made available. Core TSOs must be able to estimate RD and CT prices in advance.

Different pricing mechanisms for RD exist in different countries. The exact pricing mechanism applied depends on the several national legal and regulatory obligations.
Main pricing mechanisms are:

1. price related, i.e. based on bids for upward regulation and downward regulation;
2. cost related, i.e. based on fuels, CO2, opportunity costs, startup costs, shutdown costs, etc;
3. cost related plus, i.e. cost related complemented with an additional margin.

Price and cost information is available ex-ante based on best estimates.