USERS' GROUP

WG EMD-SO

Oct 12, 2021

Agenda

Actions	By		Due date	Finalised
Intraday: evaluate impact of new access to German ID market	J-M Reghem	deferred	Next WG EMD-SO	☐
Retrospect on incompressibility	Elia	today	Next WG EMD-SO	☐

Approval report previous meeting and follow-up actions

System Operations

1. Retrospect on incompressibility (Cindy)
2. Winter outlook (Cindy)
3. Learnings from 8/1 system split – impact on way of working in Belgium (Bernard)
4. Feedback from the 24/7 split Spain/Portugal, first learnings (Bernard)
5. Feedback from the emergency situation during the recent rainfall (14&15/7) (Bernard)
6. Emergency & Restoration: update black out proof phones (Peter)

European Market Design

1. Derogation from the 70% rule for 2022 (Steve)
2. Status Core FB DA implementation (Steve)
3. AOB: MRLVC, Core LT CCM, SIDC – CPM,

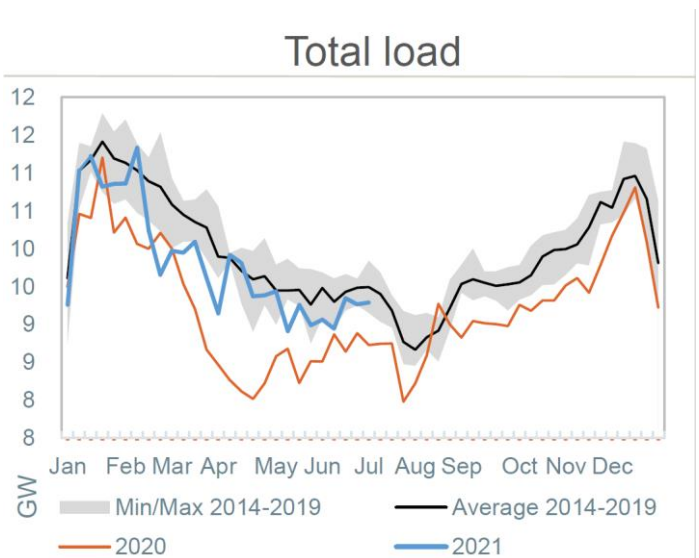
Elia Group event on future-proof zonal market design

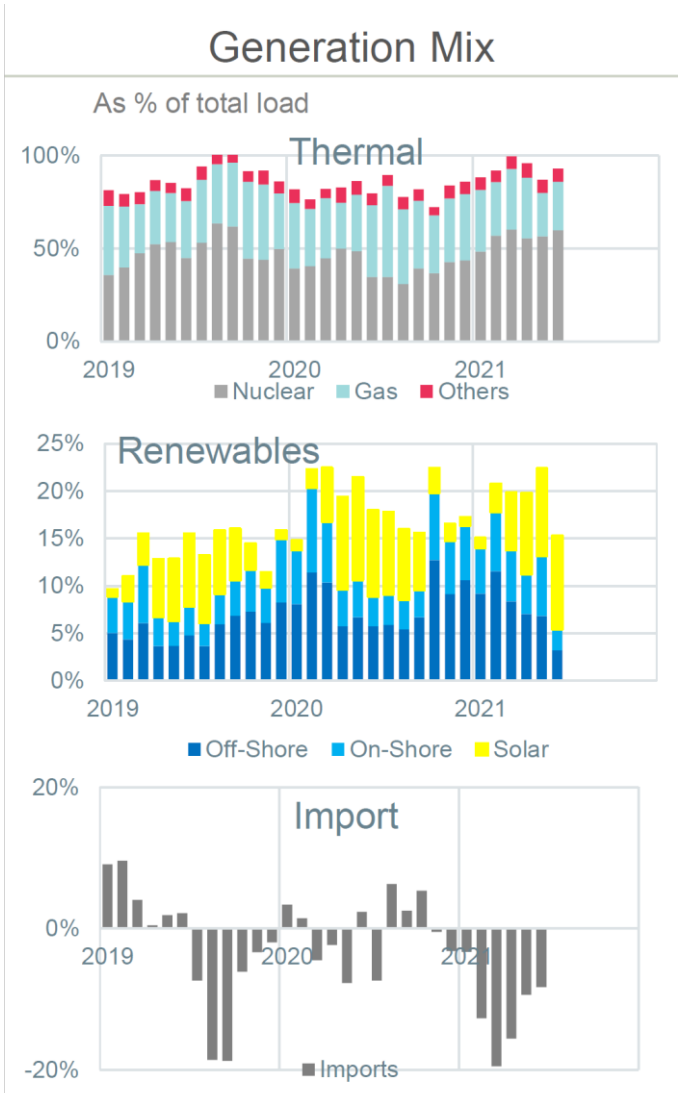
Summer review

Retrospect on incompressibility

Load & generation mix

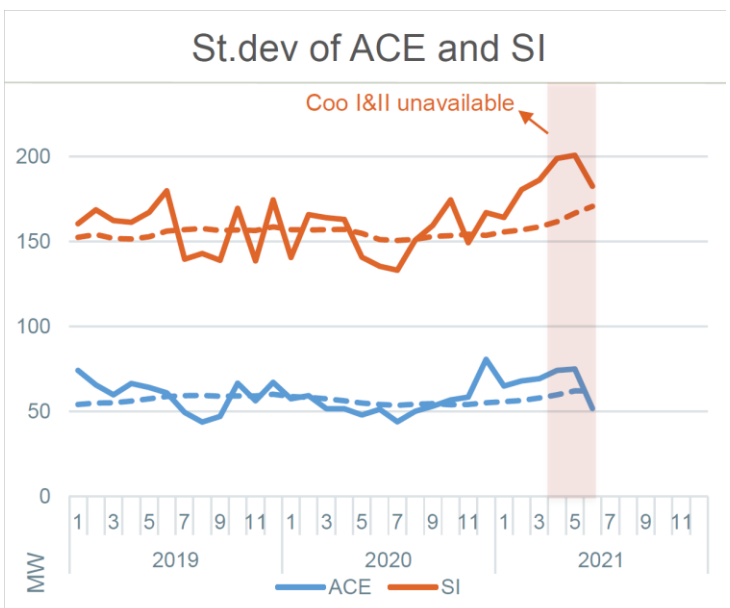
- High availability of nuclear units
- Unavailability of Coo I & II: 16/4 – 15/7
- Load: recovering after Covid pandemic





System imbalance & day ahead price

An overall impact can be observed on the system imbalance during the unavailability of Coo



Belgian Day-Ahead price (€/MWh)

	2019-2020	2021 Q2	
Max (h)	200	125	
Average	36	62	
Min (h)	-500	-66	**9/5/21**

Imbalance (€/MWh)

	2019-2020	2021 Q2	
Max (qh)	2297	3199	**21/4/21**
Average	36	66	
Min (qh)	-378	-490	

Highlight of 2 particular days

21/4 14h28: trip of Tihange 2

- 14h30: ACE/SI max qh deviation -1065MW/-1419MW
- 14h30-16h00: Activation of all I-bids + mFRR sharing RTE (400MW)
- ARP: buy on ID market (too strong for a while)
- 17h00: equilibre

9/5: low load (Sunday) in combination with high wind, solar & nuclear

- Market converged
- Well predicted - action taken by Engie: reduction on nuclear units

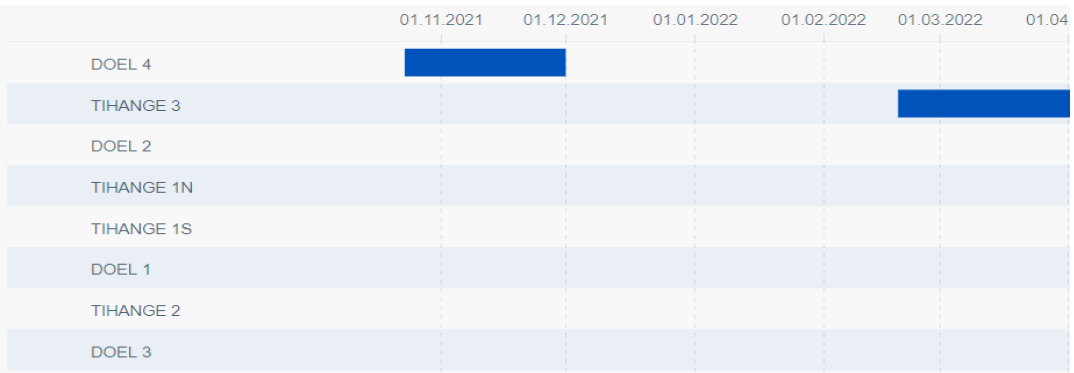
Winter outlook

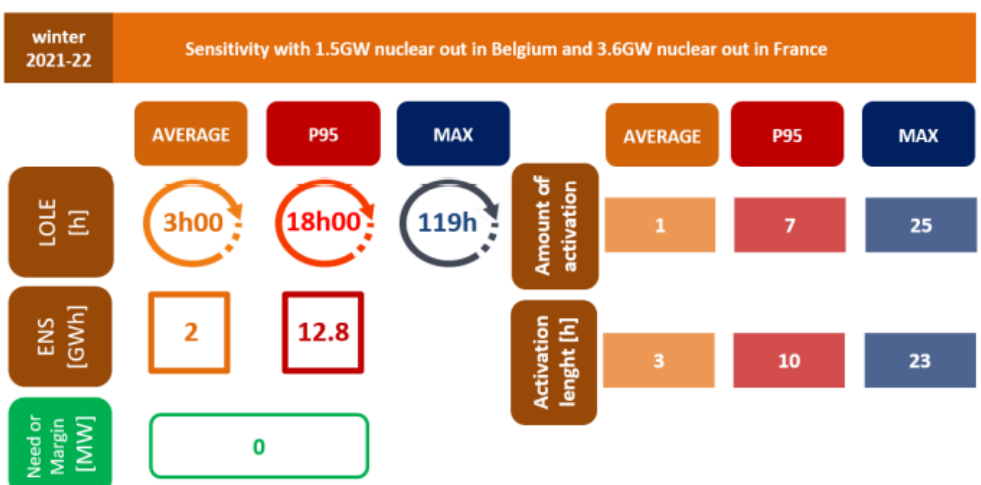
Adequacy issues

Probabilistic analysis: need for strategic reserve?

https://economie.fgov.be/nl/themas/energie/bevoorradingszekerheid/elektriciteitsschaarste/strategische-reserve

BE: Winter Outlook 2021-2022





Due to high availability of production park, the **risk for structural shortages** (announced scarcity) in Belgium **is low**. Knowing the Belgian and French E-markets are highly coupled, adequacy issues in France can have a spill-over to Belgium. Concretely this means that price peaks on the day-ahead markets are likely and (close-to-) real-time events in Belgium (eg loss of a large power plant, big forecasting errors, etc …) could cause stress to remain balanced in Belgium as well. Vigilance remains required.

High energy prices: impact on adequacy?

International context:

- Oil: high demand, low supply (USA: facilities down due to storms)
- Gas: low reserves, LNG goes to Asia, low supply from Russia, high demand
- Gas price follows coal price which is also on record level
- Carbon price (CO_2) almost x3 compared to year ago

High electricity prices are determined by price of primary energy and CO_2. They are **not caused by adequacy problems!**

Use of gas for electricity production has priority according EU regulation if there is a risk for lack of electricity supply.

Several processes to monitor the winter situation

Winter outlook

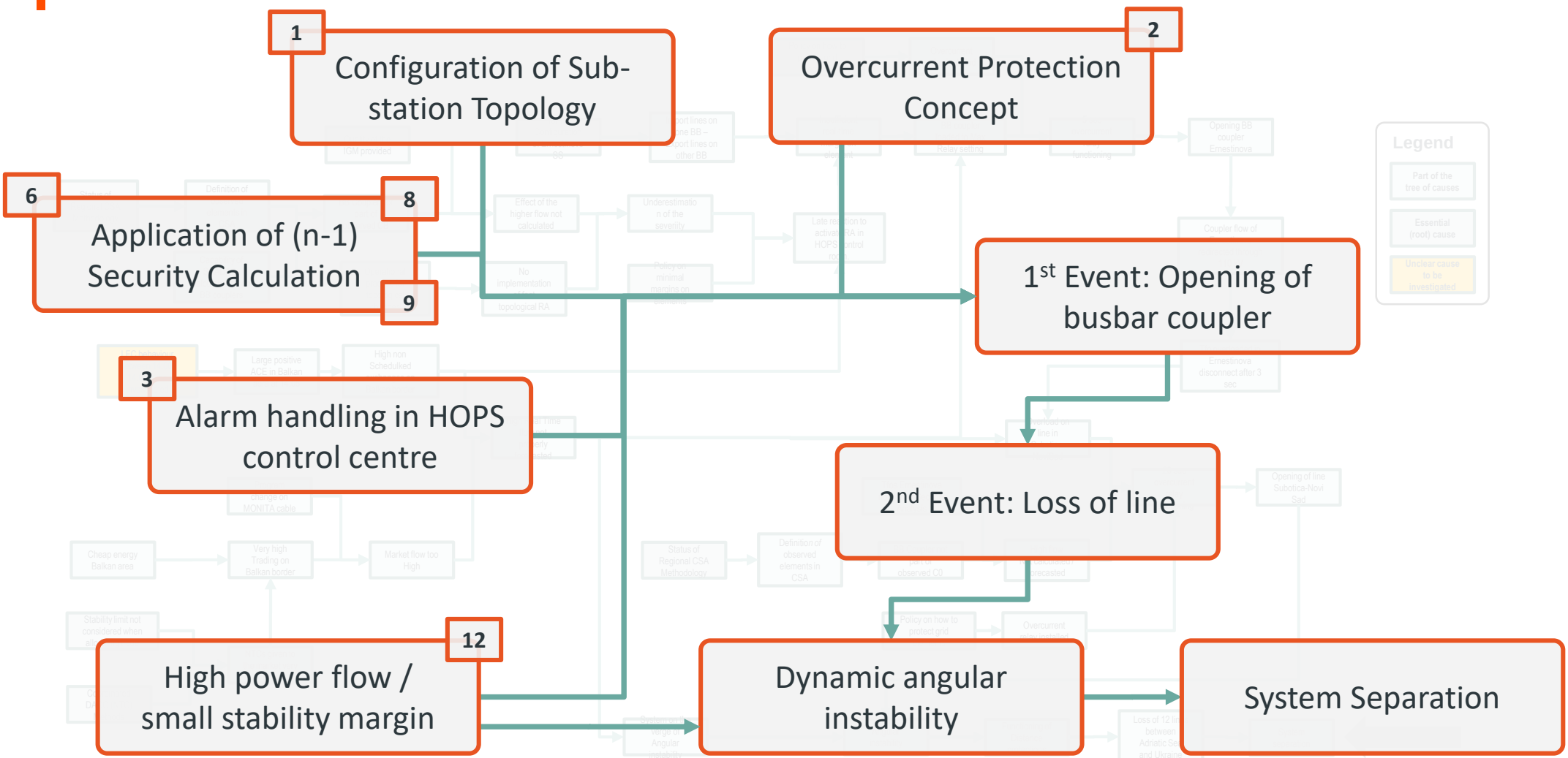
- September: **ENTSO-E winter outlook** data collection & first results available for TSOs
- October: detailed view on **analysis of surrounding countries**
- End of November: ENTSO-E winter outlook publication

Weekly outlook

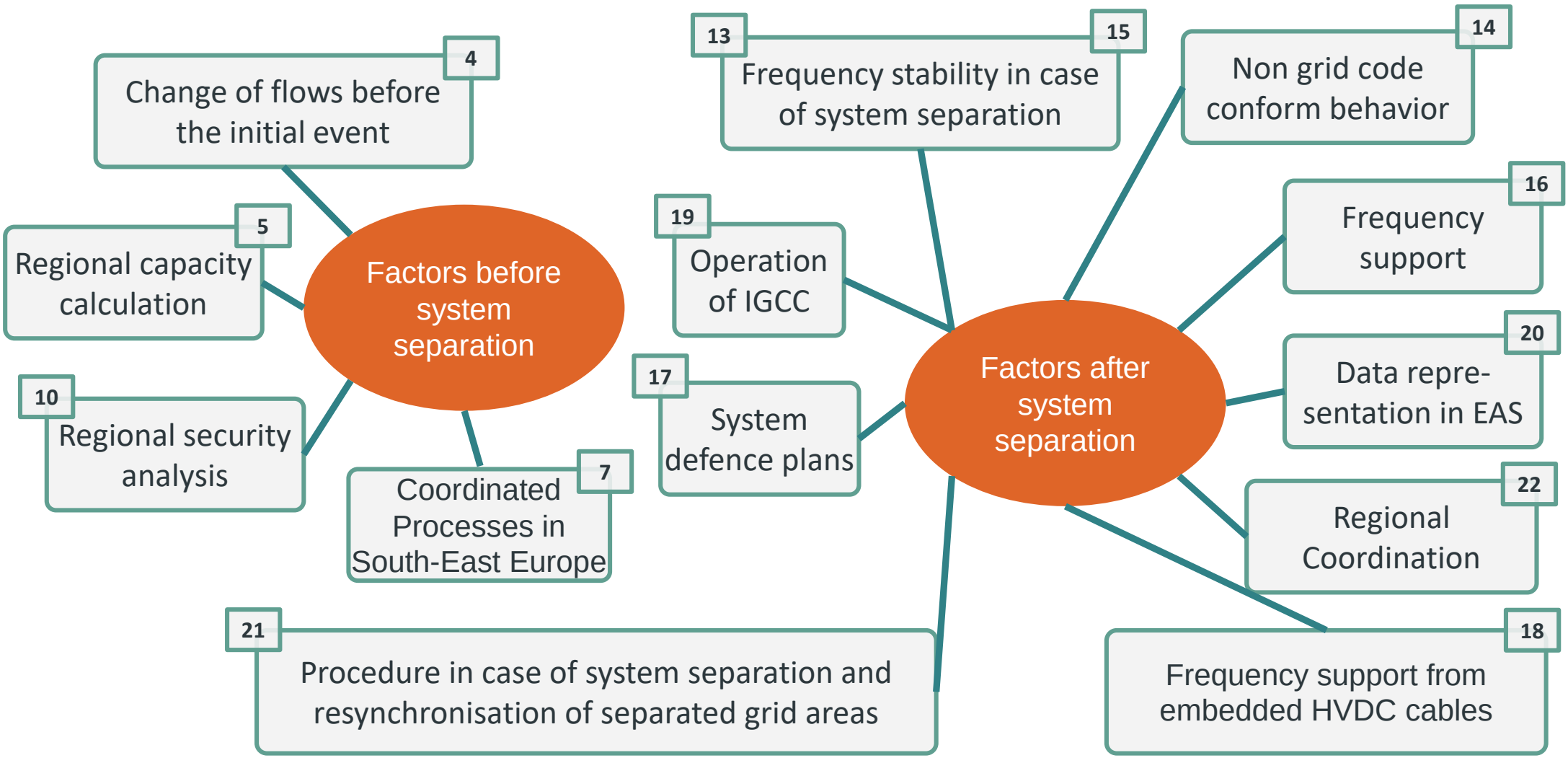
- **STA**: Coreso process
- **CGS**: ad hoc process to start communication/actions with all TSOs and RSCs
- **STAT**: internal Elia tool weekly dashboard (rolling window) + detailed daily view

Learnings from 8/1 system split – impact on BE

Derivation of the root causes of the incident



Further important Factors analysed



Main Messages / Urgent Improvements Required

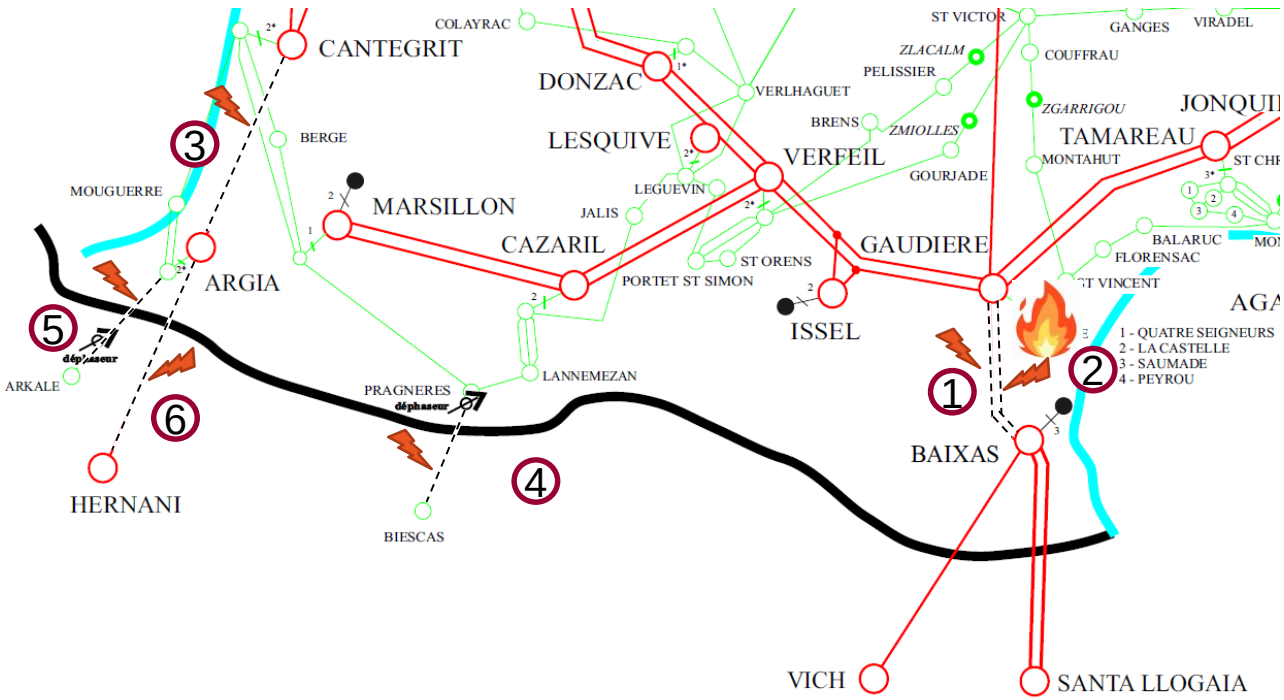
a) Extend **calculation models** and related contingency list for operational planning and real time operation (bb coupler, adjacent meshed distribution systems, extend exchange of real-time data exchange on TSOs borders)
b) Coordinate alarming with equipment **protection settings**
c) Review corridor lines protection settings, consider **SPS** where appropriate
d) Improve **capacity calculation** on pan-European level, extend by considering system dynamic limits
e) Reduce amount of **non-conform disconnections** of generation units
f) Harmonise **system defence plans** including EPS and industrial load shedding
g) Align system operation with current RoCoF **system operation limits of 1 Hz/s**
h) Improve common operation tools like **EAS** by extending with **WAM** system information
i) Intensify efforts for common **dispatcher trainings** and **dynamic stability expert** coordination

Main elements relevant for BE

- Ensure a complete coverage of N-1 calculation in all processes (operational security & capacity calculation)
- Pay special attention to the sizing of busbar couplers > should never be limiting the flows through the grid
- Develop solutions for fast changes in topology without personnel in the substation
- Keep a check on stability limits to avoid any system split with negative effect on the Belgian customer
- Further work on harmonisation of defense plans together with the neighbours in continental europe

Feedback from the 24/7 split Spain/Portugal, first learnings

Sequence of events



13h : Fire starts in Moux area, near Gaudière. For an unknown reason, RTE was not informed of the fire and its proximity to our lines

① 16h33.12s : Fault and trip Baixas Gaudière 2

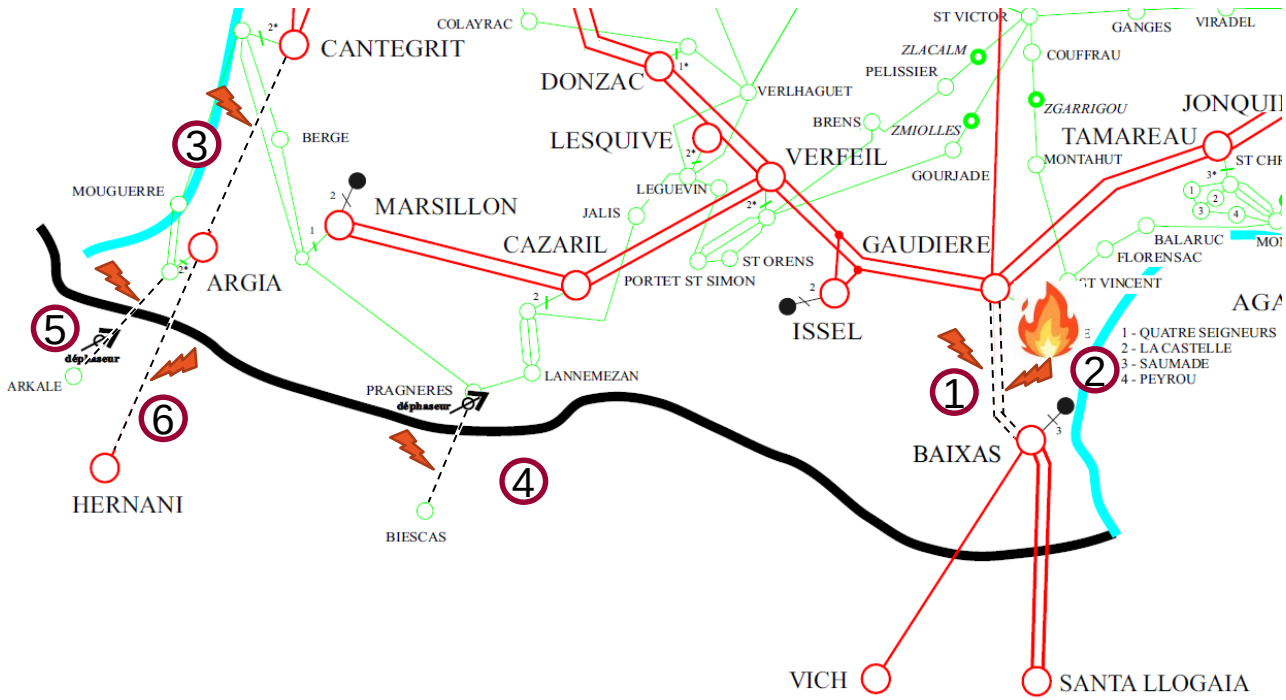
16h34 : Coordination RTE-REE to reduce exports by 1200 MW

② 16h35.25 : Fault and trip Baixas Gaudière 1.
16h35.27 : Overloads on lines Argia Cantegrit, Argia Hernani, Biescas Pragnères

16h36 : Forced reduction of exports directly into SCADA
16h36.37 : Trip Argia Cantegrit
③ Trip of Biescas Pragnères

16h36.40 : Trips of Biescas Pragnère ④ Arkale-Argia ⑤
16h36.41: Separation of Iberian Peninsula after trip of Argia Hernani ⑥

Detailed protections and automata actions



① • Differential protection detected a fault (2-phase to ground with high resistance 15-20 Ohm, 2 phases closer to the ground)
• automatic reclosure after 5s detected a fault again (same distance from substation, consistent with fire area)
➔ final opening of the line

② • Differential protection detected a fault
• automatic reclosure after 5s impossible
➔ final opening of the line

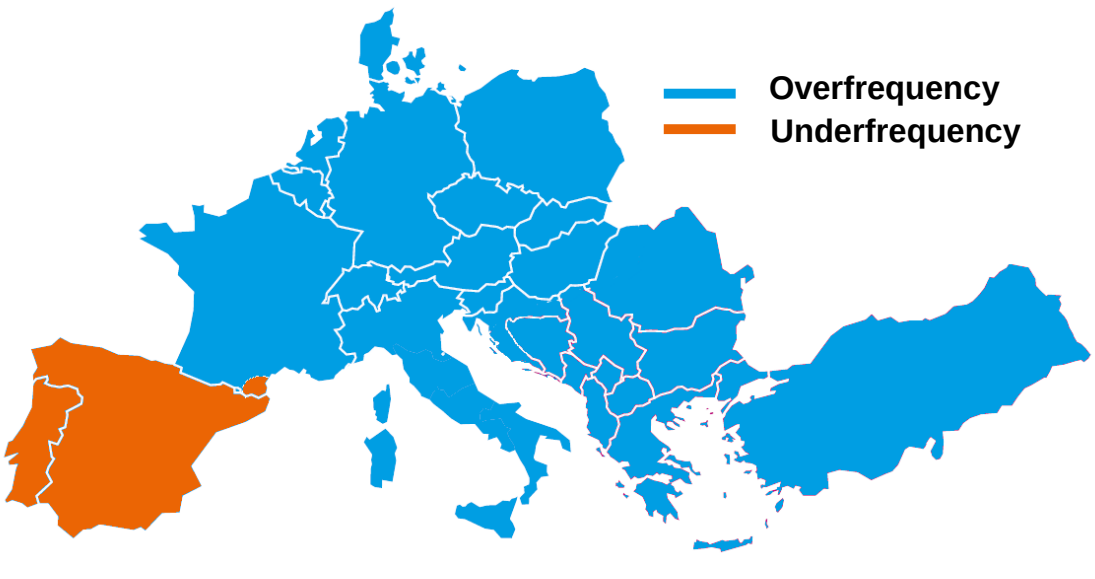
③ Overload automaton (1 min delay) trips the line

④ Distance protection (zone 2 at REE side)

⑤ Out-of-Step protections (DRS) trip lines

⑥ Out-of-Step protections (DRS) trip lines

System separation resulted into two areas



Iberian Peninsula, together with a part of French Pyrenees Orientales, was separated from the rest of European grid.

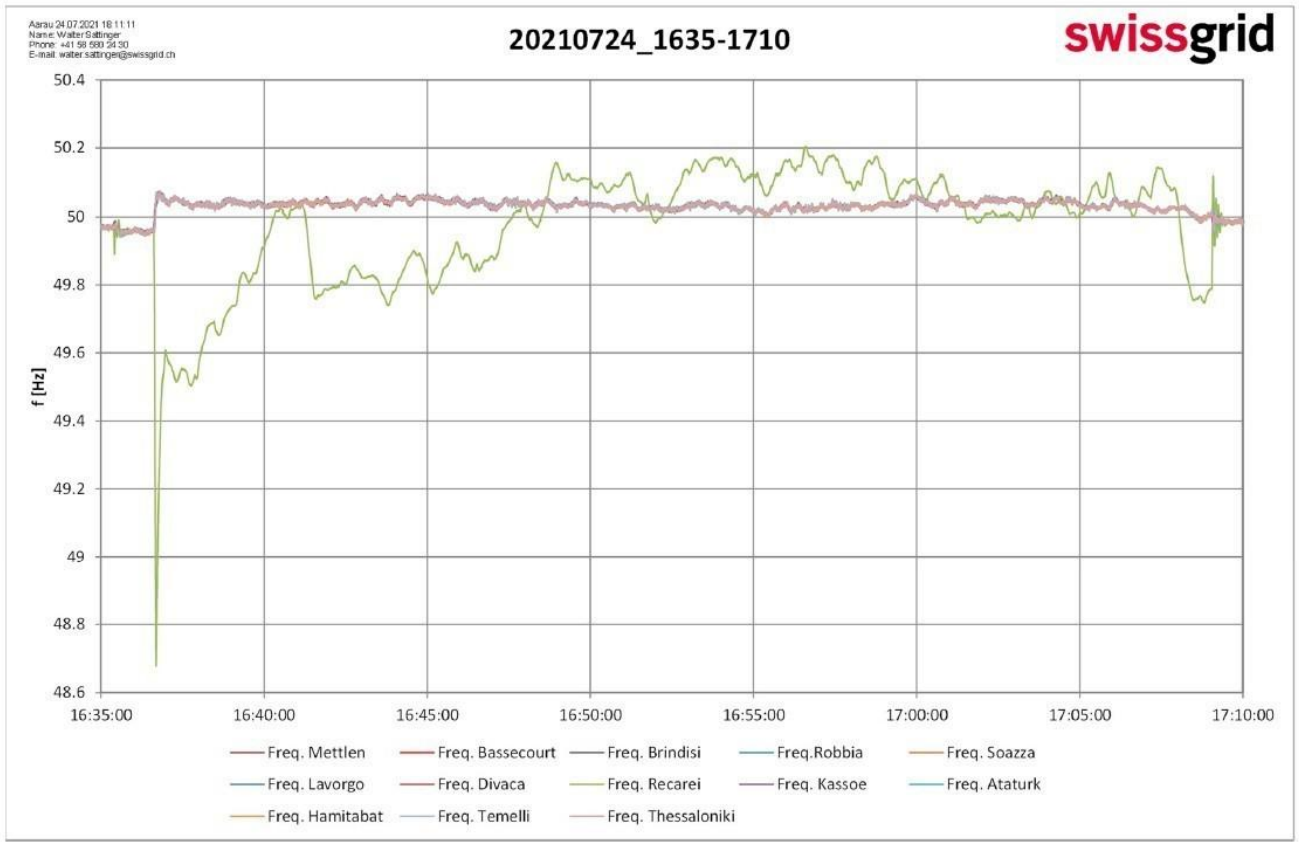
France was exporting 2500 MW at the time of the separation.

The separation resulted in two areas:

- An area with a deficit of energy (orange), frequency reached 48,67 Hz leading to :
  - In Spain, 3068 MW of load shedding, 1995 MW of pump storage disconnection.
  - In Portugal, 430 MW of load shedding, 310 MW of pump storage disconnection.
  - In France, around 100 MW of load shedding.

- An area with a surplus of energy (blue). Frequency went from 49,96 to 50,06 Hz.

Successful reconnection in 33 minutes



The frequency into the Iberian Peninsula stabilised after a few minutes, the frequency in the rest of Europe remained steady during the event as the grid was larger.

Immediately after the separation, exchanges with Spain were forced to 0 into SCADAs to avoid a bad behaviour of the frequency and to allow reconnection.

At 17h09, close coordination between REE and RTE allowed the grid reconnection using the breaker linked to Argia into Hernani substation (Spain).

Feedback from the emergency situation during the recent rainfall 14 – 15 July

Evenements de 14-15 juillet

- Pluie excessive dans la region de la Meuse fait monter le niveau de la Meuse au délà des seuils d'urgence, donnant suite à des inondations extremes.
- 14-7 12:26 court circuit dans le poste de Pepinster 70 kV suite aux inondations dans le poste
- 15-7 02:50 inondations dans le poste de On, provoquant le déclenchement du poste.
- 15-7 Le niveau de la Meuse continue à monter. Elia decide 'active les cellules de crise etse met en état d'urgence.
- Une analyse montre une dixaine de postes à risqué d'inondations. La perte de ces postes mènerait à la perte d'approvisionnement de la partie Est du province de Liège (environ 300 MW)
- Des équipes d'Elia sont dispatchées pour mettre des postes essentiels (le plus possible) à l'abri d'inondations. Entre autre les poste de Spa, Turon et Lixhe ont été sauvé contre l'inondation avec ces actions.
- Vers minuit le niveau de la Meuse commence à descender, plus d'inondations additionalls sont à craindre. L'impact se limite finalement à deux postes et 11 MW de charge interrompu

Apercu des dégats et des travaux de remise en service

Le samedi 14 août, aux alentours de 14h, la cabine 10kV de Pepinster a été remise sous tension par Elia et les collègues de RESA ont commencé à reprendre progressivement la charge de la ville de Pepinster jusqu'alors alimentée par nos postes périphériques via les réseaux de distribution d'ORES et de RESA.

Depuis son inondation le 14 juillet dernier, les équipes d'Elia, de ces contractants et des collègues de RESA et d'ORES travaillent sans relâche à la remise en service du poste de Pepinster. Certains étaient sur place dès le premier jour, certains sont revenus de congé spontanément, certains y ont consacrés du temps durant le week-end, certains se sont relayés pour assurer l'avancement des travaux. Tous ont en tout cas donné le meilleur d'eux-mêmes face à cette situation dramatique afin de fournir une alimentation électrique plus stable à la population de Pepinster.

Emergency and restoration: update black out proof phones

Emergency and restoration: Blackout proof voice communication

Objective	In line with art 40 of NCER, **facilitate blackout proof phones** at SGU identified in the restoration plan **to improve the restoration process efficiency** through adequate communication

Status

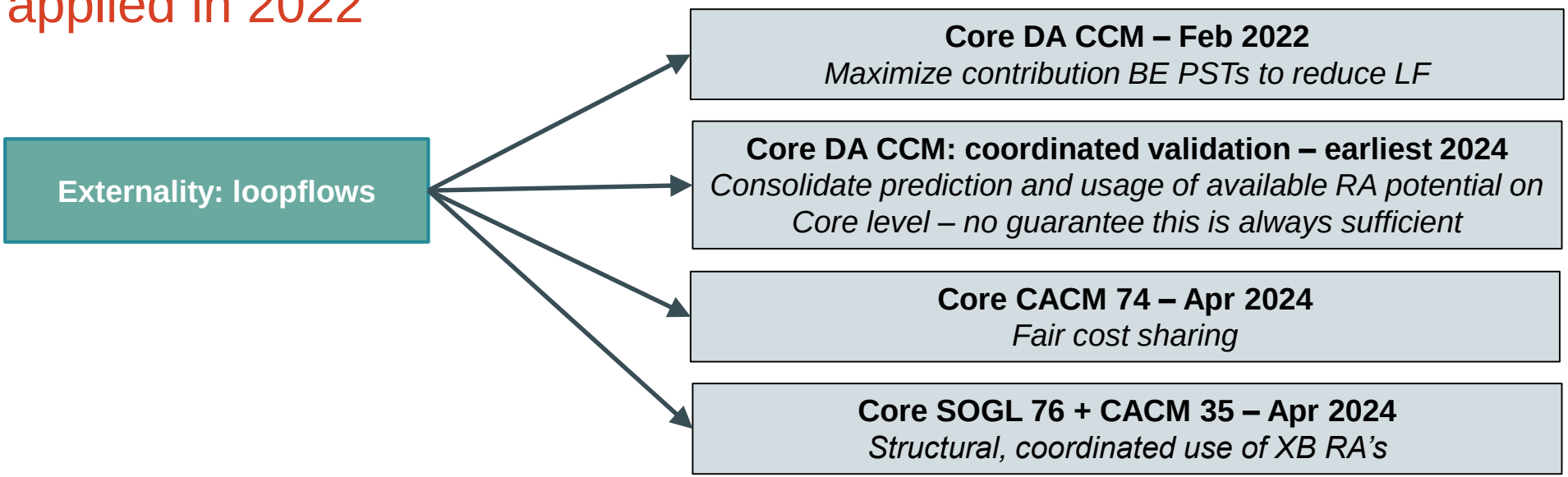
- One phone installed
- Ongoing contacts with 17 SGUs
- Project faces **important delays** due to overload in Data Communication department of Elia
- Necessary actions are taken to **increase the roll-out pace**
- **SGU will be contacted by Elia** in order to start the process and prepare as much as possible on their side.
- A solution is analysed to **connect all Engie sites at once**

Indicative planning

- **Objective for end 2021**: 16 phones installed
- Objective for end 2022: 41 phones installed
- Project has been **extended to June 2023**
- The planning is regularly updated depending on the project progress

Derogation from the 70% rule in 2022

Elia renews its request for derogation on excessive loopflows, to be applied in 2022



No change in formula

$$MACZT_{min} = 70\% - max\left(0; LF_{calc} - LF_{accept}\right)$$

- XB CNEC: LF accept = 30% - FRM
- Internal CNEC: LF accept = (30% - FRM) / 2 thus equal split internal flows – loopflows
- Approach confirmed by CREG study (F)2183 as appropriate

Status Core
FB DA implementation

External parallel run reached a next level of maturity

- Nov 14th 2020: start progressive transition to EXT // run
- April 13th 2021: switch to immediate publication of capacity calculation results for 7 out of 7 business days per week
- May 10th 2021: first NRAO deployed in the EXT // Run
- Jul-Aug 2021: quite some BDs resulted into default FB parameters for which fixes have been put in place. The common systems are now in a final stage of industrialization
- Joint testing started in the second half of September 2021
- Begin 2022: expect to launch the joint testing of the Single Day Ahead Coupling (SDAC) procedures at + involvement of market participants

Daily publication of results: https://core-parallelrun-publicationtool.jao.eu/ - *expansion of the tool is planned*
Monthly KPI reports: https://www.jao.eu/kpi-reports
Q&A forum: Core FB MC Q&A (my-ems.net)

AOB

MRLVC

- Since April when TSOs shared their analysis on MRLVC, the political negotiation is ongoing
- First specialised committee on Energy in July was mostly unconclusive
- EC is now coordinating on EU side to reach a common position at EU council level, which would then be coordinated with UK
- Organisation of next specialised committee is targeted in November

Elia view:

- MRLVC appears too complex from technical and governance perspective
- Implicit coupling will be required at the latest when developing hybrid offshore interconnections with UK

Core LT CCM – decision to move to flow-based

- Essentially, the decision to move to flow-based is not new
  - TSOs already consulted on a flow-based approach
  - This was also brought several times to WG EMD or Core CG
  - Limited questioning from market parties

- A NTC approach suffers from the limitation that an artificial split between inter-dependent borders is required
  - Particularly tricky in LT context where political/regulatory agreement are currently applied
  - A technico-economic efficient approach (flow-based allocation) to overcome this limitation was preferred

- Results from ACER should not be considered as full-fledge parallel run
- ACER decision is due in the coming days
- Market parties are invited to follow up closely the results before go-live

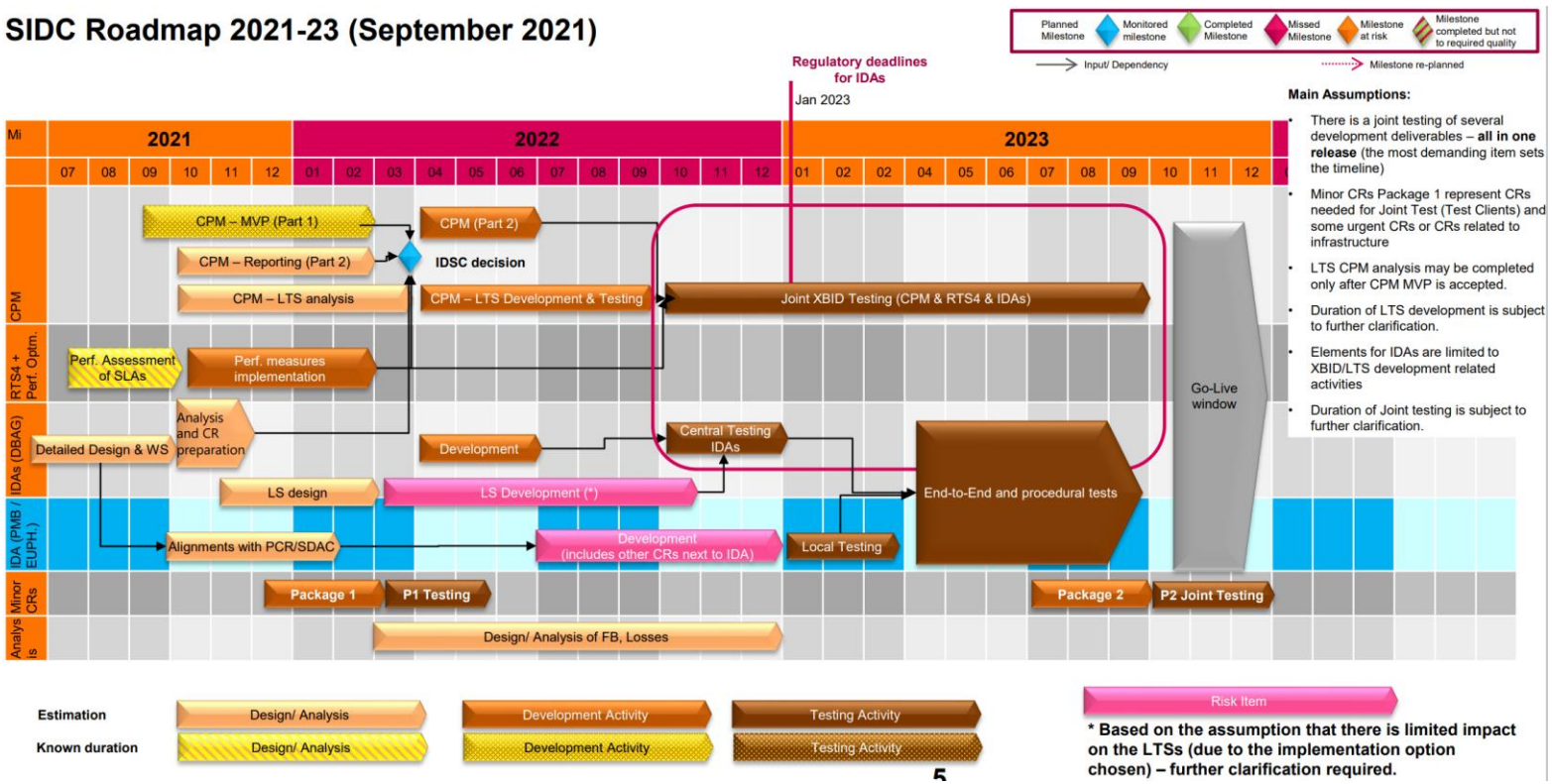
SIDC – Cross Product Matching

Cross-product matching (CPM)

- Common technical analysis with the SIDC service provider has been finalised and development of the mimimum viable product has been started. The expected impact on performance remains a significant challenge and is therefore closely monitored through a staged development process in which development slices are validated by SIDC parties before the development continues.

- Market participants will be informed once the technical details are stable enough for sharing. SIDC will organise an online user group meeting for that purpose.

SIDC – Cross Product matching



Bringing market and physics together - Elia Group event on how to future-proof our zonal market design

elia group
Elia | 50Hertz | EGI

INVITATION | Brussels, Berlin, 12 October 2021

Bringing market and physics together

Elia Group event on how to future-proof our zonal market design

8th November 2021 – 1 to 4PM CET
Virtual event targeted at market design and regulatory experts from market parties, TSOs, regulatory authorities, policy makers and academics.

The Clean Energy Package requires that TSOs make available 70% of the capacity of their infrastructure to facilitate cross-border trades. Today its implementation is foreseen with virtual margins. Despite the apparent simplicity of the 70% requirement, complex implementation questions arise. Transparency and foresight on future grid situation are also becoming more difficult. Alternative approaches to virtual margins are not discussed today whilst discussions about the impact of these virtual margins and related redispatching actions on price signals are emerging.

Elia Group proposed in 2019 its so-called **Flex-in-Market design**, in order to future-proof our grid for the challenges towards 2030 with more and more renewable integration. In a nutshell, the idea is to enhance our way of calculating and allocating cross-border capacity by giving more flexibility to the allocation algorithm to steer the flows in the grid. Doing so, Flex-in-Market can square the circle: more capacity can be offered for trades, but this capacity is not virtual and is representing an actual physical reality.
The goal of this interactive workshop is three-fold:

- **Give further insight on Flex-in-Market design.** Throughout our discussion with stakeholders, many questions were raised regarding the design of the dispatch hubs, which are one of the flexibility tools to be offered to the algorithm, next to phase shifting transformers and HVDC links. With the support from Neon, we looked at possible market designs for dispatch hubs, and in particular how market parties should be compensated to avoid distortive incentives. *Presentation by Prof. Dr. Lion Hirth and Dr. Ingmar Schlecht.*

Registration
Send an email to MarketDesignEvent@eliagroup.eu until 4th November

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- **Map the concerns related to the current regulatory framework related to virtual margins.** As highlighted above, the implementation of the current regulatory framework is not a walk in the park. From our TSO perspective, we do not expect the current concerns to ease with the advance of action plans and the phasing out of derogations, quite the contrary. Here, we want to shed some light on some current and possible future concerns and engage with stakeholders to capture their perception. *Presentation by Dr. Benjamin Genêt and Dr. Johannes Henkel.*
- **Call for engaging with the wider electricity market community to co-create our future market design, which would be fit towards 2030 and beyond.** Our goal goes beyond Flex-in-Market design. We believe that our idea is a valid improvement proposal but other ideas may be worthwhile to explore. And as market design is far from being a TSO-only story, we want to engage into discussion on what the next step of our zonal market design should look like.

The workshop will be introduced by James Matthys-Donnadieu and Jan Voet.

We would welcome your attendance to our workshop on 8th November, from 1PM to 4PM CET. To register, please send an email to **MarketDesignEvent@eliagroup.eu** until 4th November. The event is open to all interested parties, do not hesitate to forward the invitation further.

Registration
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