

The background of the slide is a map of Europe with a complex network of white lines overlaid, representing a grid or infrastructure network. The map is divided into three horizontal bands: a light purple band at the top, a dark blue band in the middle, and a light purple band at the bottom. The text is white and positioned on the dark blue band.

# Implementation & Planning SG: CoBA Proposals – Scenarios

October 2015

# Content

- **Introduction**
- Imbalance netting CoBA Scenario
- RR CoBA Scenario
- FRR considerations
- mFRR CoBA scenarios
- Next Steps

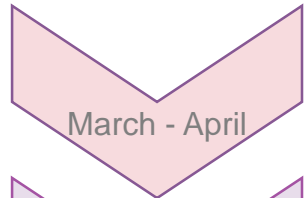
# Introduction: requirement of NC EB

- The Guideline on EB requires the establishment of CoBA's for the exchange of Balancing energy or operating the Imbalance Netting Process.
- Not later than 6 months after the Guideline enters into force all TSOs shall jointly develop of proposal for the Coordinated Balancing Areas for RR, mFRR and aFRR
- The formation of CoBA was identified as one of the early implementation projects in the Terms of Reference of the Balancing Stakeholder Group
- First draft proposal shall be presented in November 2015

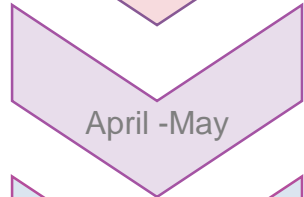
# Introduction: considerations ENTSO regarding CoBA development

- CoBA concept: make implementation of the NC EB possible respecting deadlines
- Initial CoBAs are important: right balance between the ambition of pan-European harmonization and the practicalities of building on existing initiatives
- ENTSO-E has concerns about: the numbers of initial sets of CoBAs and the relationships between CoBAs for different processes being arbitrarily defined without due consideration or analysis
- ACER's view on the consistency between CoBAs for different processes is not shared, in particular the relationship between mFRR & RR. The relationships between CoBAs for different processes should be determined instead through ENTSO-E's analysis
- CoBA definition is highly correlated with market design choices which still need to be made in a later stage (pricing, products, algorithms, imbalance pricing). Hence **ENTSOs can currently not take a firm commitment regarding the geographical configurations for CoBA proposals**

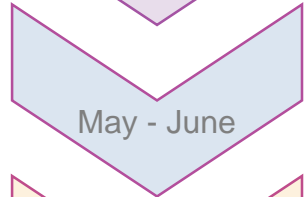
# Introduction: ENTSOe work



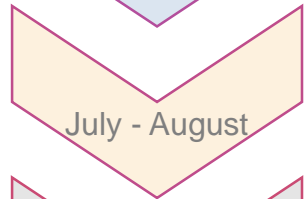
- Scoping work
- Survey on relevant information



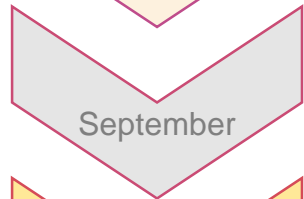
- Analyze results of survey
- Preliminary conclusions
- Identify strategic questions



- Develop First CoBA scenarios
- Identification & proposed answer on strategic questions
- Discussion WGAS and MC: ask for guidance



- Develop CoBA scenarios
- Validation by WGAS & MC



- Start informal discussions with ACER and stakeholders



- Validation by WGAS (14/10) & MC (29/10)
- First draft proposal to Balancing Stakeholder Group (Nov. 2015)

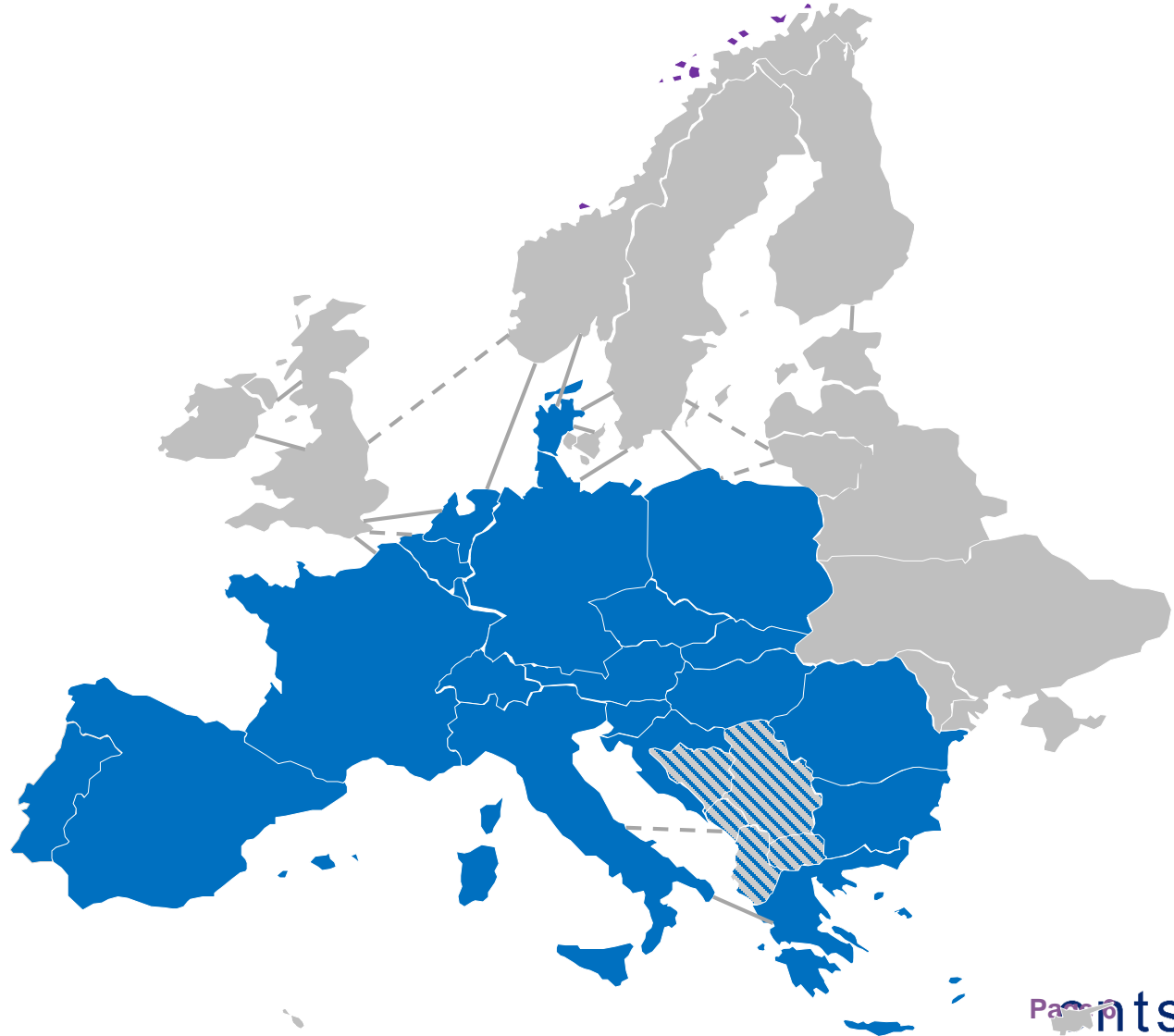
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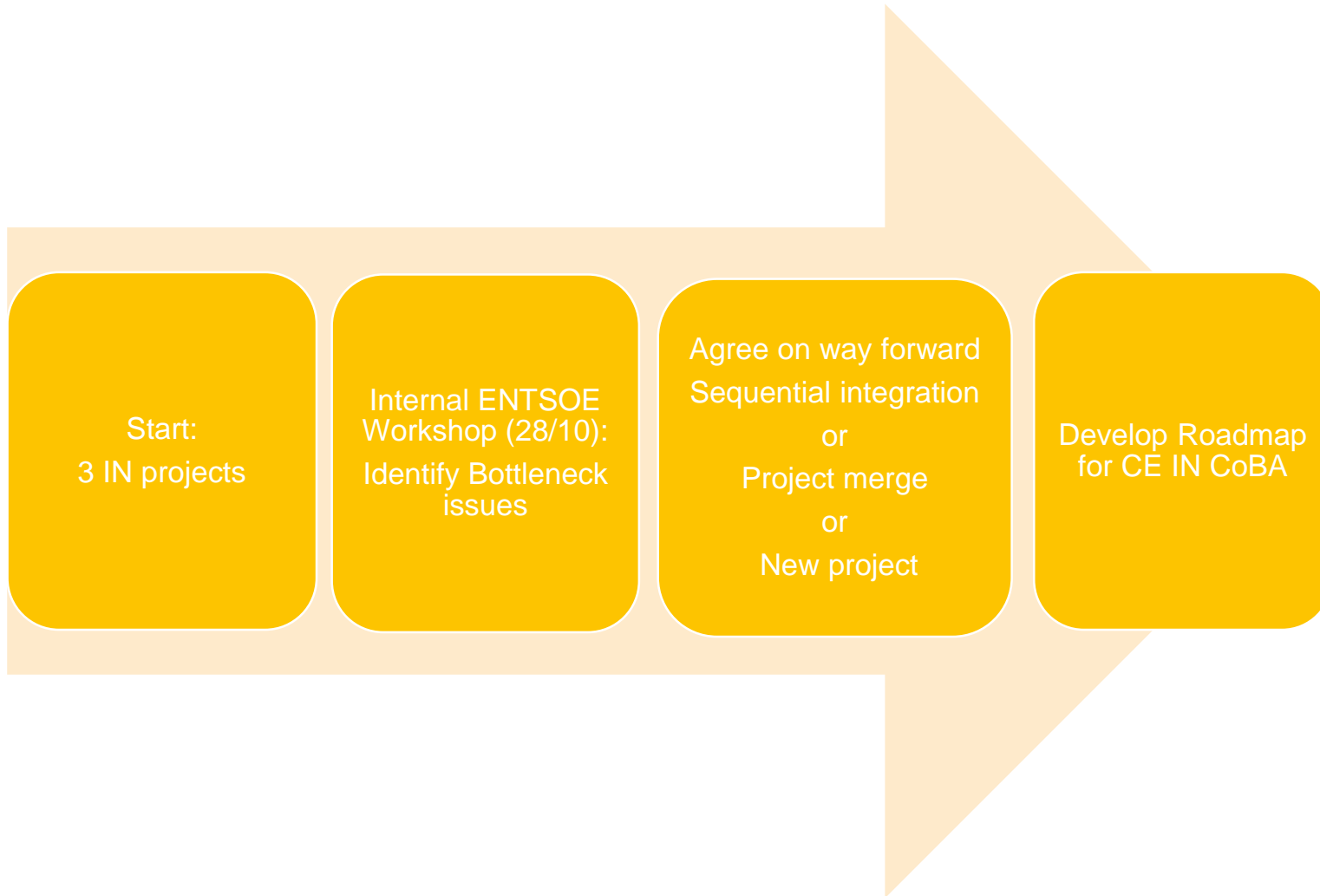
# Imbalance Netting: CoBA - Proposal

Key:

 CoBA 1: Synchronous Area CE



# Imbalance Netting: CoBA – Next steps



## Considerations

- ambitious project
  - No XZ project in the past was realized on such a short time frame
  - Previous experience on imbalance netting; multiple years for limited geographical scope
- Dependent on integration scenarios might require fundamental changes in local market design & local rules imposed by NRA
- Due to tight timescales pragmatic solutions may be required as we progress to the final target model

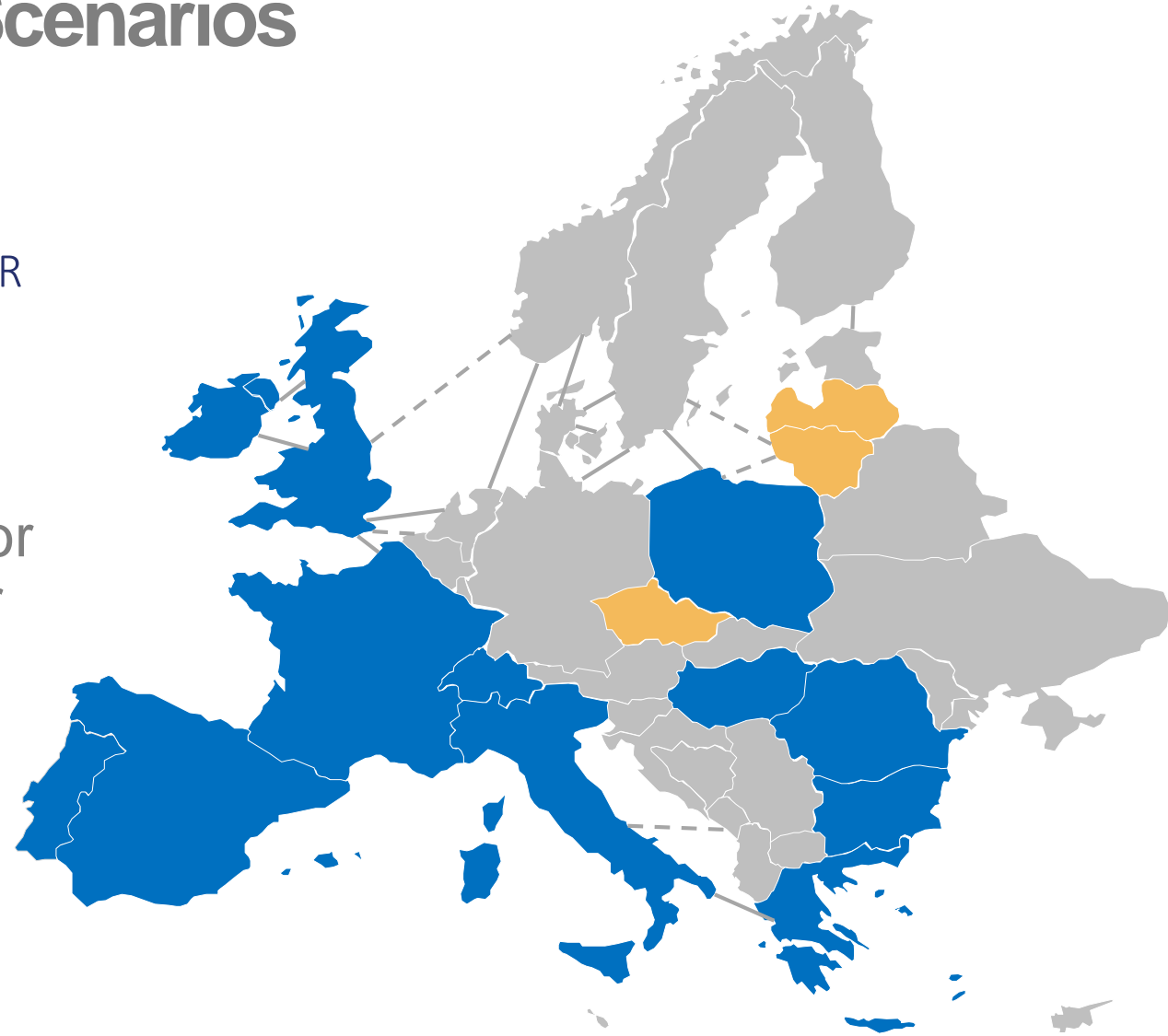


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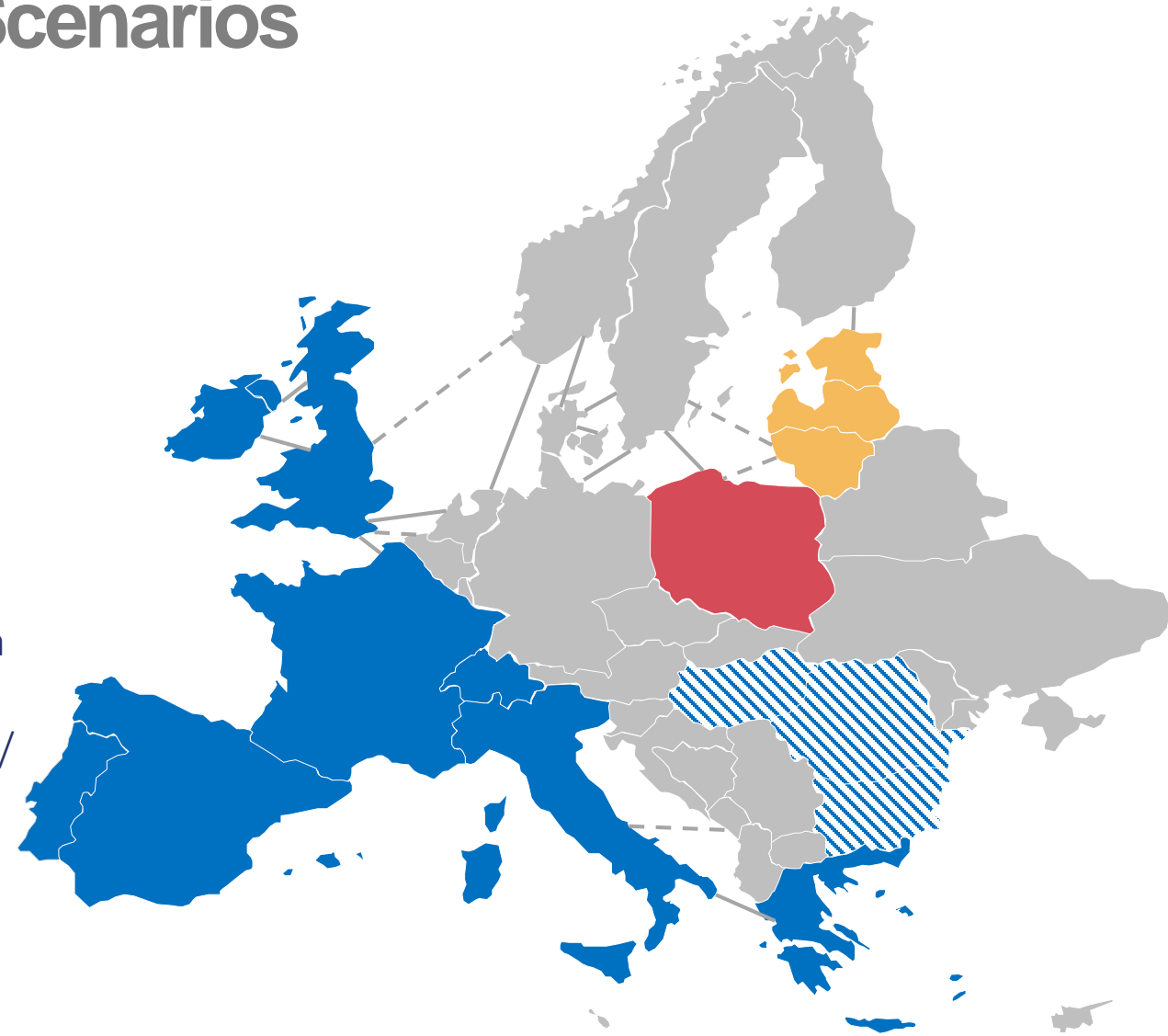
# Replacement Reserves: CoBA Scenarios

- Who uses Replacement Reserves?
  - TSOs shown in blue have indicated they use an RR process and intend to continue doing so
- TSOs shown in yellow have indicated that they are either stopping using RR or there is some uncertainty as to whether they will implement an RR CoBA or not



# Replacement Reserves: CoBA Scenarios

- What are the targets for RR in the NC EB?
  - July 2018: RIM consisting of one or more CoBAs
  - July 2022: EIM consisting of one CoBA including all neighboring interconnected TSOs using RR
- What are the existing RR initiatives?
  - Only Project TERRE (blue)
  - TSOs shown in blue stripes would be required to join a single interconnected RR CoBA by the EIM
  - Baltic: uncertainty regarding RR CoBA implementation/ further investigation required (use RR in future Baltic Area or not? management Baltic imbalance together with Russia)
  - Poland (red): no border with another country that is definitely implementing an RR CoBA



# Replacement Reserves CoBA Scenarios

- What are the possible RR CoBA scenarios for the RIM?

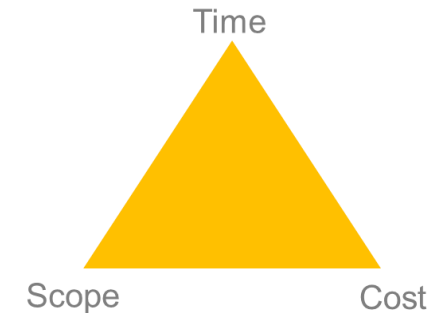


BG: Don't want to commit in CoBA scenarios

- Region Terre + HU/RO/BU
  - One large interconnected RR CoBA or not
  - However
- Region Poland + Baltic
  - Common RR market or not
  - If the Baltics do not implement a CoBA for RR then Poland is isolated? – how does this sit with compliance
- Linking of 2 regions only envisaged as a next step
  - complex transit arrangements
  - Interdependencies use of XZ capacity for other balancing processes (netting, aFRR, mFRR)
- All relevant TSOs/ project should coordinate with each other to avoid potential issues associated with merging later on

# Replacement Reserves: considerations/discussion points

- ENTSO-E is in favor of extending Project TERRE to RO/HU/BU
  - One step vs two step approach, lower implementation costs of developing one single RR platform as opposed to developing two and trying to merge later on
  - However this requires first a detailed discussion between involved TSOs
  - expansion of Terre project to three additional countries relatively late in the design stage of the project → potential impact on timing Terre project (feasibility deadline NC EB)
  - Should the date for achieving one large interconnected RR CoBA be the same as the RIM? 2020 -4Y after EIF) more reasonable date ? Facilitate expansion of Terre/consider ambitious geographical scope
- The feasibility of a **Polish & Baltic RR CoBA** should be further investigated
  - Open questions to be answered
    - Will Baltic develop a common market for RR ?
    - If yes, can Poland join the Baltic market for RR or not?
  - If Poland unable to join a CoBA for RR should not result in non-compliance with NC EB
- Development of RR CoBA: very ambitious projects
  - No XZ project in the past was realized on such a short time frame
  - More challenging then netting CoBA (product definition, algorithms, pricing, imbalance pricing)

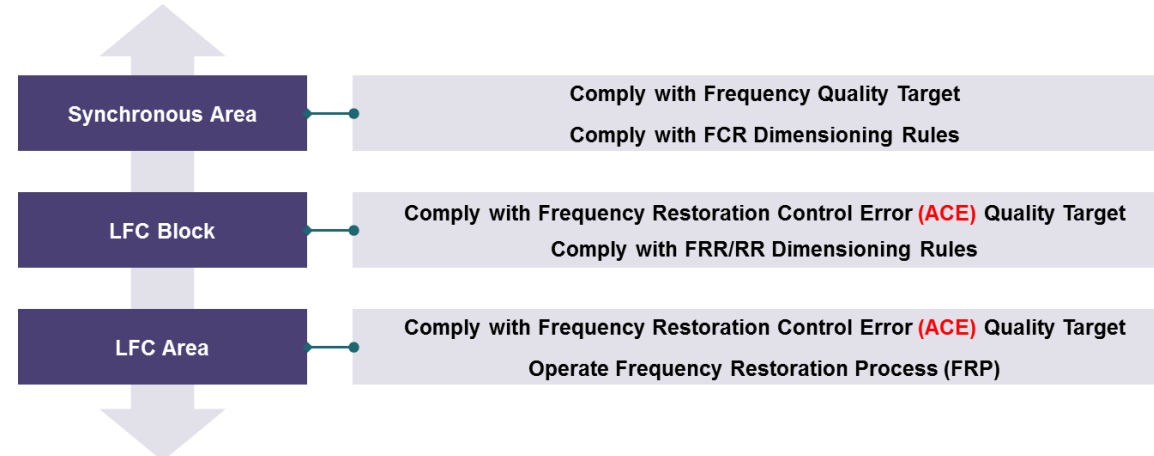


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# FRR Considerations: LFC&R responsibilities

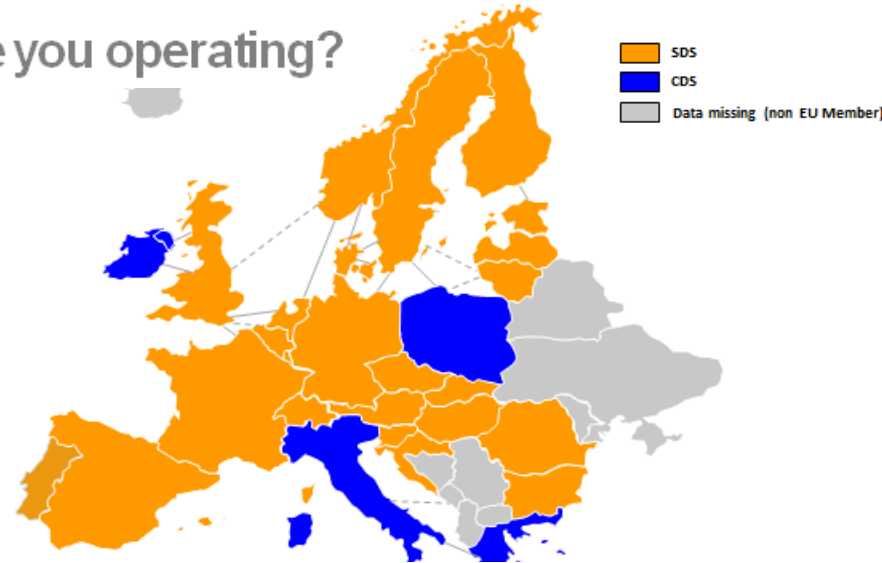
- FRR process is the most important balancing process which is needed to fulfil most of the obligations as defined in the LFC&R code



- TSOs are responsible for the dimensioning of FRR and to achieve satisfactory FRCE (ACE) quality in their LFC Block
  - The harmonization and standardization of FRR and the exchange of products must not jeopardies the local responsibility regarding the ACE quality
  - Product harmonization/standardization (ramp/processes) might affect capacity volumes/capacity prices
- Exchange of balancing energy ⇔ potential impact capacity costs ⇔ link with access tariffs
- Above considerations are even more important for aFRR (=> aFRR study by ENTSO-E)

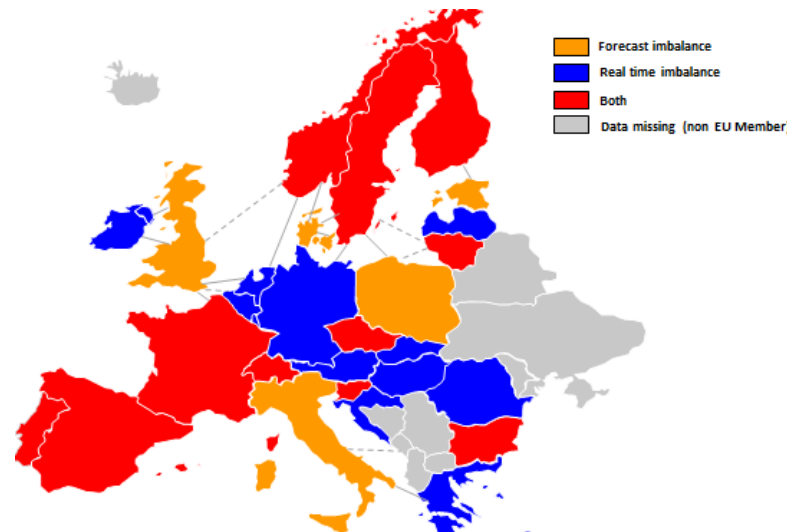
# FRR considerations for CoBA: differences in FRR processes (1/2)

Q 4.1 What kind of system are you operating?



- There are differences for operating the balancing market in Europe: CDS vs SDS
- Even within SDS there are significant differences
- TSOs using a forecasting imbalance are using relatively more manual FRR and RR products
- TSOs only using the real time imbalance are predominantly using aFRR
- While these are not necessarily barriers to forming a CoBA they need to be taken into account

Q 5 How do you currently perform the balancing of your LFC&R area; based on which information?



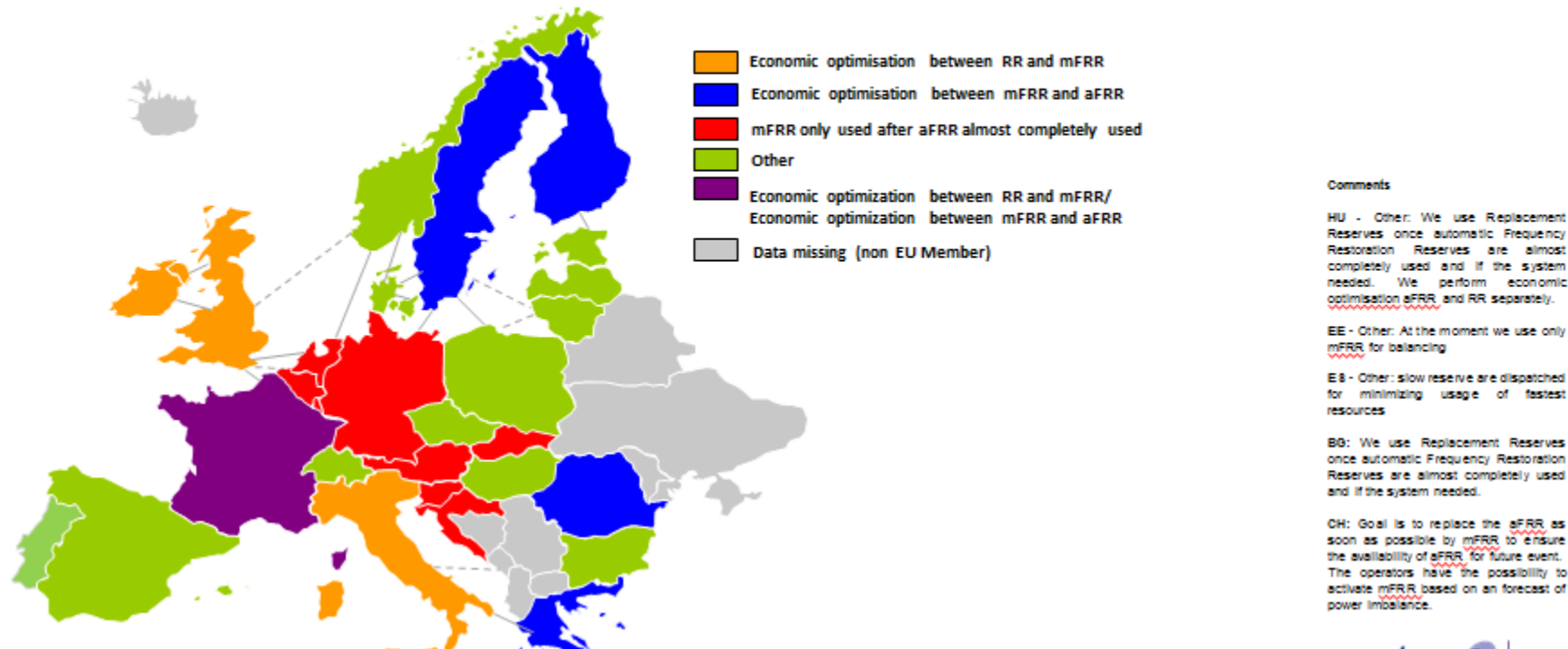
*Disclaimer: picture on the right might not reflect reality due to different interpretations of questions*



# FRR considerations for CoBA: differences in FRR processes (2/2)

- The way how different balancing processes are used => different across Europe
- Collaboration between TSO having different optimization objectives might be complex
- Harmonization of optimization objectives; complex/ feasible ? (=> LFC&R responsibility/local cost)

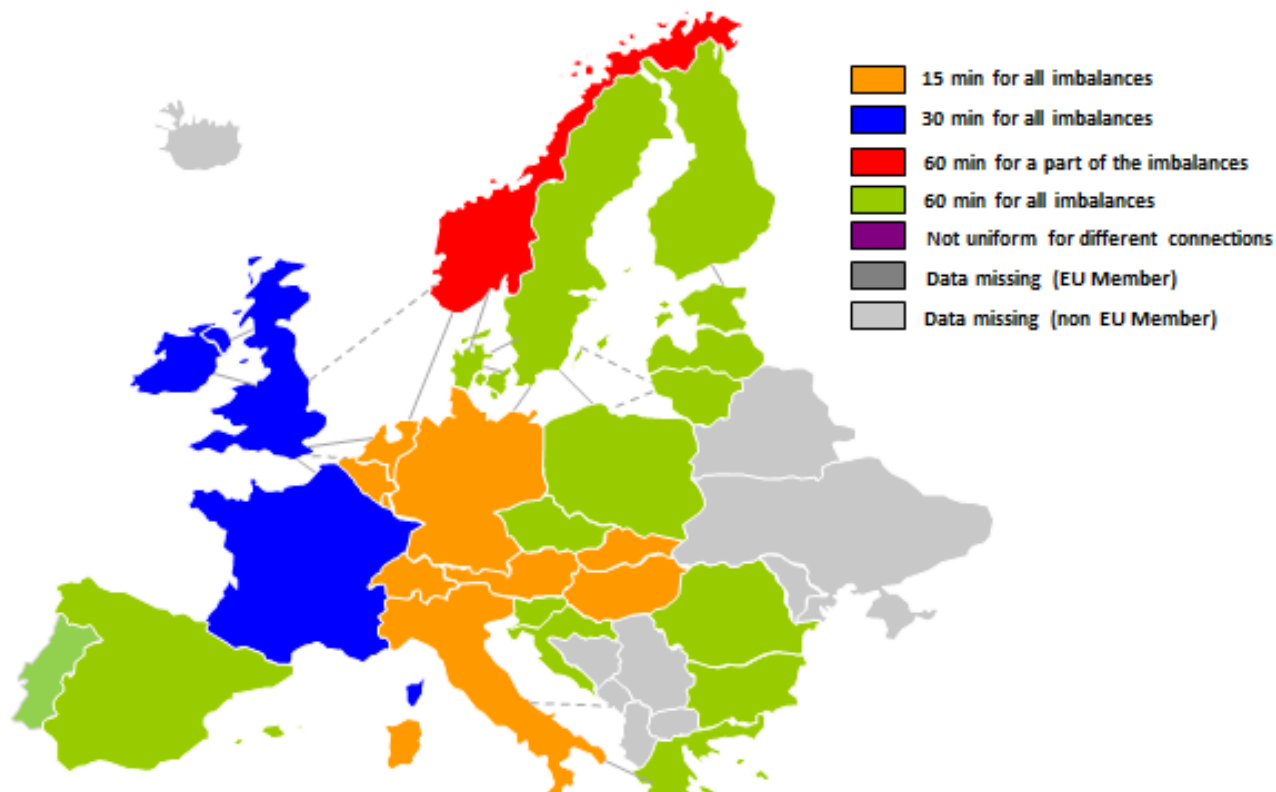
## Q 6.1 How do you currently perform the balancing of your LFC&R area; utilization of procured balancing sources?



# FRR considerations for CoBA : ISP

- Currently different ISPs in Europe = ISP link to minimum boundaries for BGCT

## Q 7.1 What is the current imbalance settlement period of your LFC&R area?



- ISPs may be harmonized across Europe as a required by the NC EB

# Share of aFRR in total balancing energy



Share of activated aFRR balancing energy

$$\frac{aFRR}{aFRR + mFRR + RR} \cdot 100\%$$

- < 20%
- 20 – 40%
- 40 – 60%
- 60 – 80%
- > 80%
- No information

# FRR considerations for CoBA: pricing

- Pricing mechanism for settlement still need to be defined
- Cross border cross product pricing is linking different balancing processes
- Bid prices on CMOs for CoBA are not firm as they might be changed ex-post by other processes (Cross product marginal pricing)

	Local pricing	XB pricing
Pay-as-bid	Pay-as-bid is per definition local pricing	Not applicable
Pay-as-cleared per product	Local pay-as-cleared pricing per product	Cross-border pay-as-cleared pricing per product
Pay-as-cleared cross-product	Local pay-as-cleared pricing cross-product	Cross-border pay-as-cleared pricing cross-product

- Pricing mechanism => potential impact on CoBA Configuration
- In order to develop draft CoBA proposals XB pricing was not considered.

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# Existing initiatives and studies

## Key:

-  Pilot BE NL
-  Pilot GCC
-  Initiative APG-Germany
-  EXPLORE<sup>1</sup>
-  Nordic

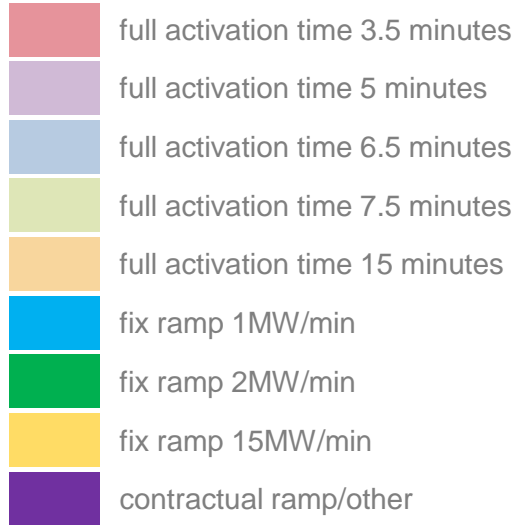


<sup>1</sup> EXPLORE (**E**uropean **X**-Border **P**roject for **L**ong-term **R**eal-time balancing **E**lectricity market design) is a common study of the Austrian, Belgium, Dutch and German TSOs investigating the potential design of a common FRR Balancing Market.

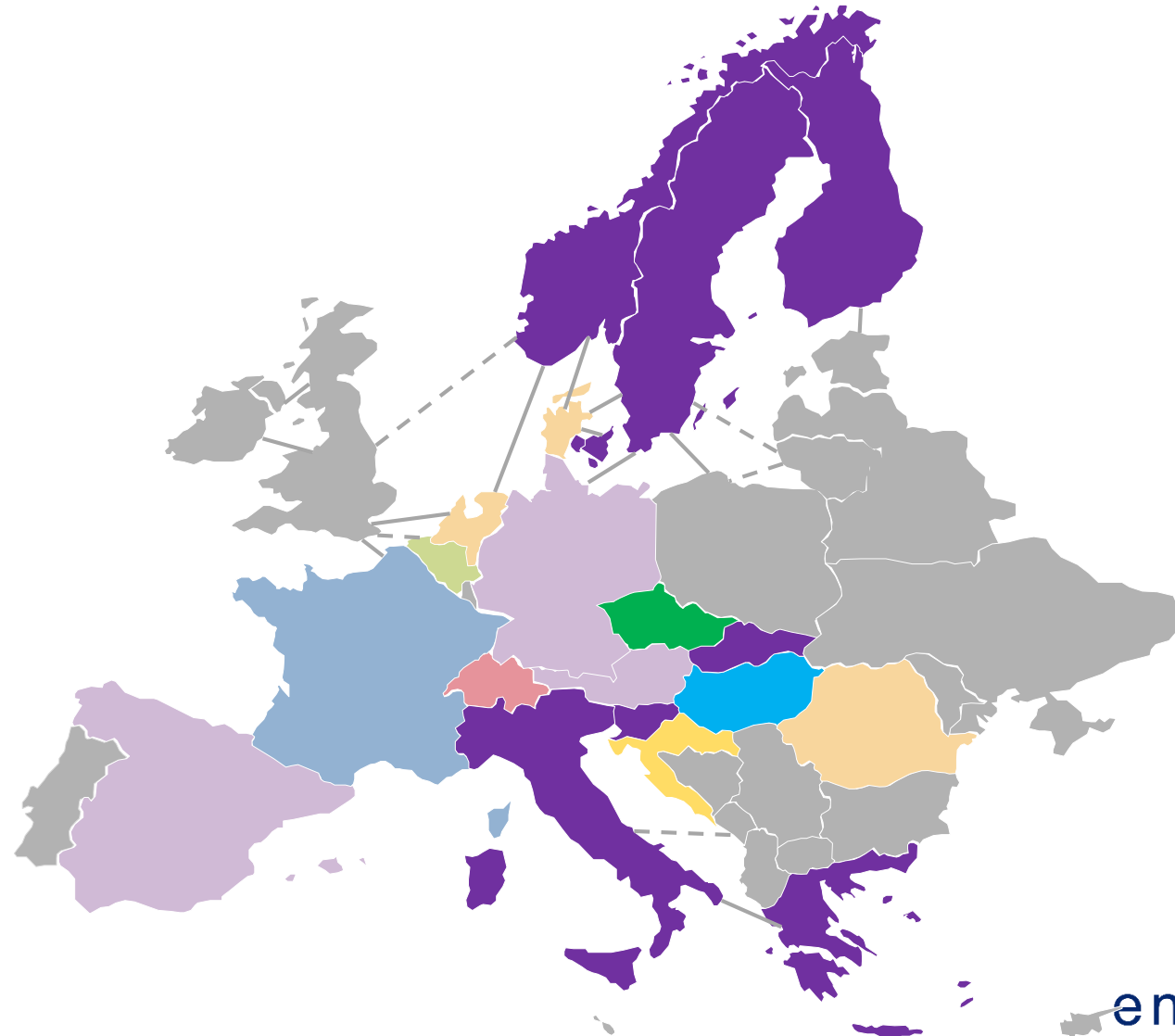
EXPLORE aims at reaching common views on products, interaction with intraday markets, imbalance settlement and the use of cross-zonal capacity after intraday market.

# aFRR CoBAs: current ramping requirements in Europe

## Key:



- Currently lot's of differences in Europe
  - No starting point for CoBA determination from products
- aFRR study ENTSO key input



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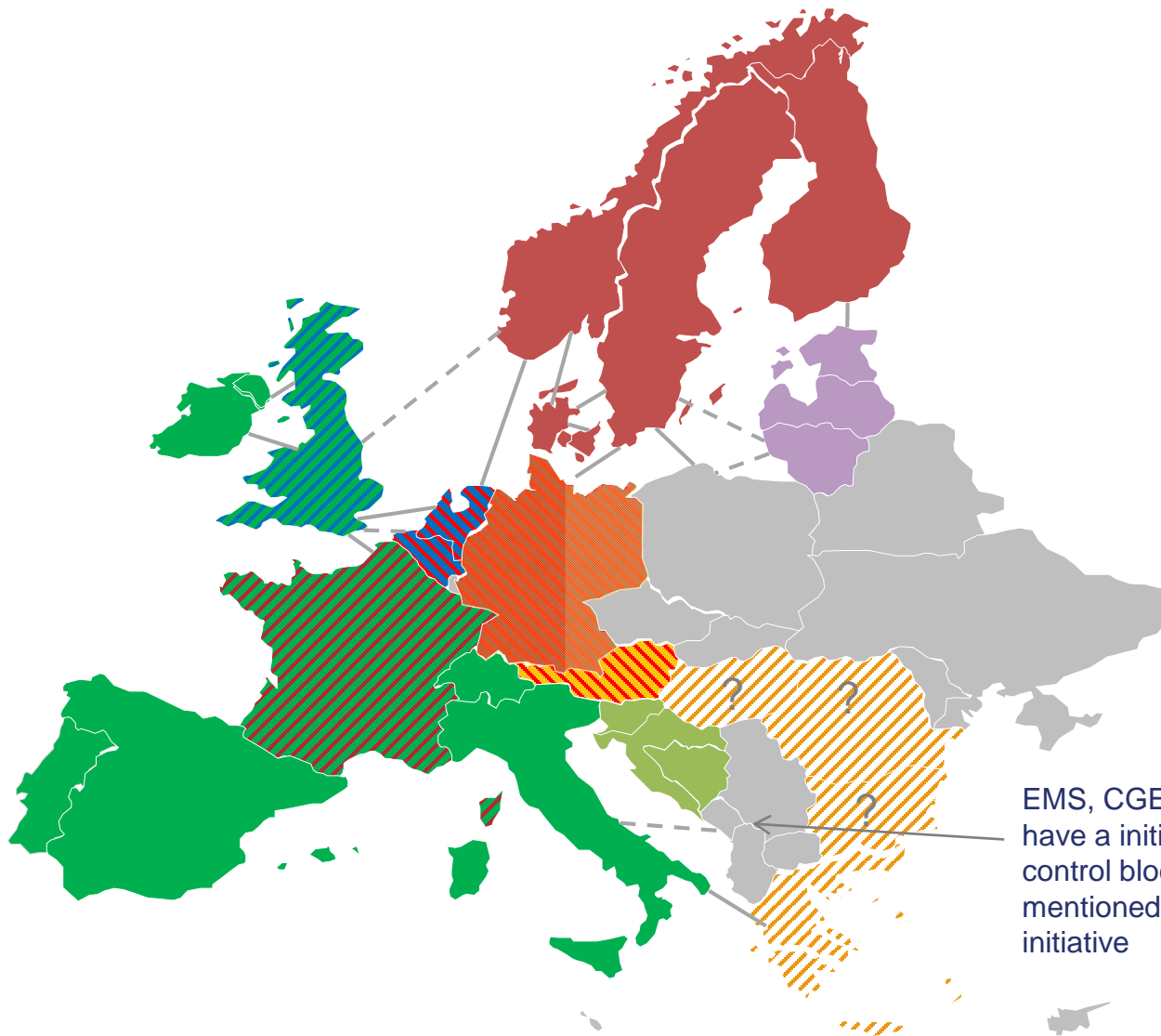
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# Existing initiatives and studies

## Key:

	Pilot BE NL
	Pilot GCC
	Initiative APG-Germany
	EXPLORE
	TERRE discussing expansion to mFRR
	TERRE discussing GB-NL initiative
	TERRE discussing FR-DE initiative
	Possible RR based eastern CoBA
	Nordic pilot project
	Baltic-Nordic project
	Existing mFRR initiative (single control block)



## Additional studies:







- Nordic – Baltic
- Nordic – Poland
- Nordic – Germany

# mFRR scenario 1: Based on existing initiatives

- Concept: use existing initiatives as much as possible
- CoBAs based on existing/possible initiatives for RR
  - TERRE (existing)
  - TERRE (possible extension)
  - Consider technical capabilities GR-IT interconnector
- CoBAs based on existing/possible initiatives for mFRR
  - EXPLORE
  - Nordic
  - Baltic
  - TERRE (thinking about implementing also mFRR)
- Czech Republic, Poland, Slovakia form an own CoBA or join existing initiative
- France & GB choose to stay in TERRE rather than join another initiative
  - Might have an impact on Italy, Portugal, Spain and Switzerland as they are not “connected” any more

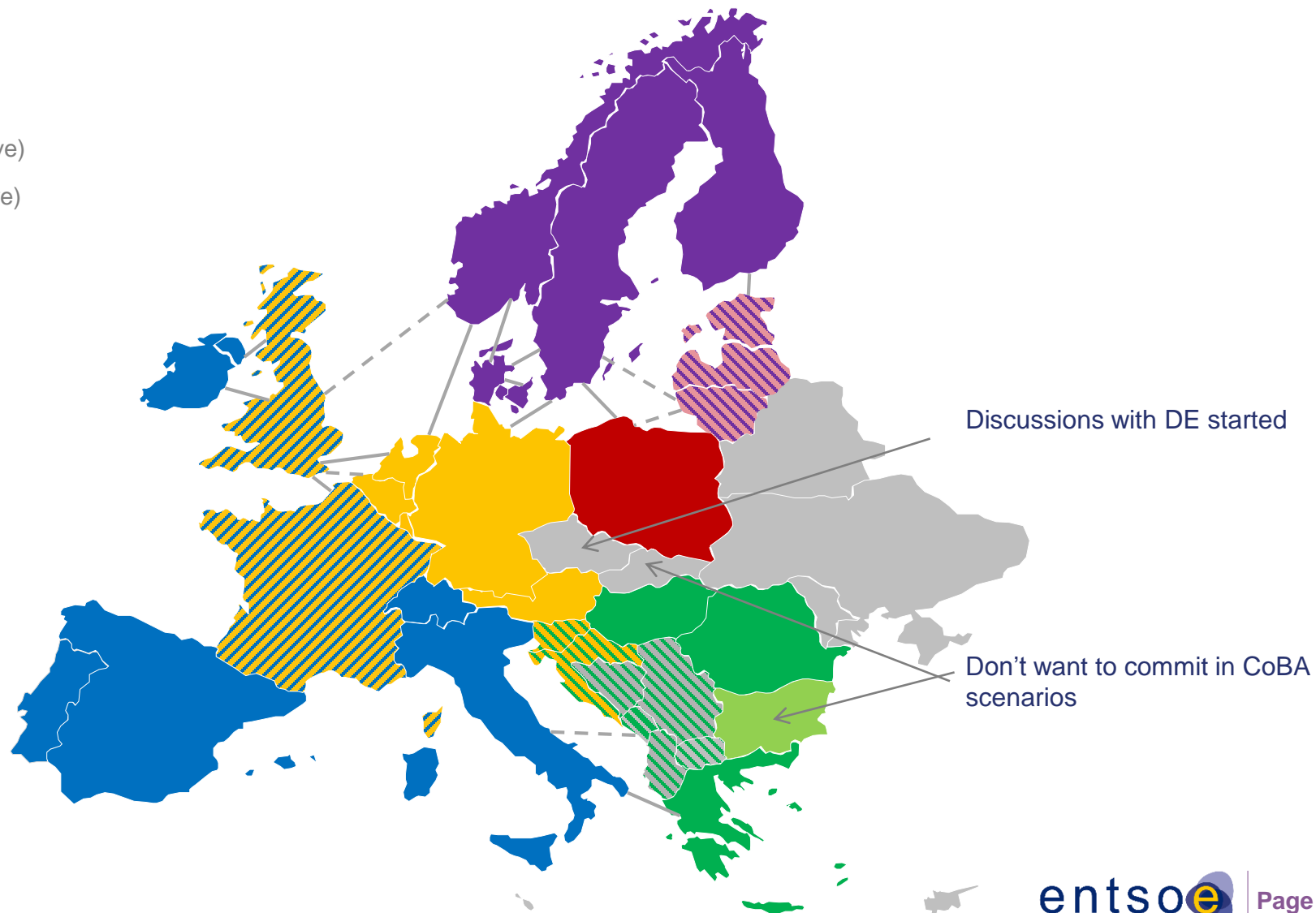
# mFRR scenario 1: based on current initiatives

## Key:

	CoBA 1: EXPLORE
	CoBA 2: West
	CoBA 3: South East (not currently an existing initiative)
	CoBA 4: North East (not currently an existing initiative)
	CoBA 5: Nordic (incl. total DK)
	CoBA 6: Baltics

## Discussion points:

- What about the other TERRE countries if FR & GB join the EXPLORE CoBA?
- Nordic – Baltic CoBA only possible if implementation is on time.
- DE, BE & NL TSOs believe that CoBA for aFRR & mFRR should be congruent (but should not exclude inter CoBA exchanges for mFRR)








# mFRR Scenario 2: Priorities RR solutions

- Concept: RR based because the same concept and algorithms could be used
- CoBAs based on existing/possible initiatives for RR
  - TERRE (existing)
  - TERRE (possible extension)
  - Consider technical capabilities GR-IT interconnector
- CoBAs based on existing/possible initiatives for mFRR
  - EXPLORE
  - Nordic-Baltic
  - TERRE (thinking about implementing also mFRR)
- Poland either joins Nordic or EXPLORE
  - Czech Republic & Slovakia join either EXPLORE ( or South East RR CoBA (despite they don't use RR)

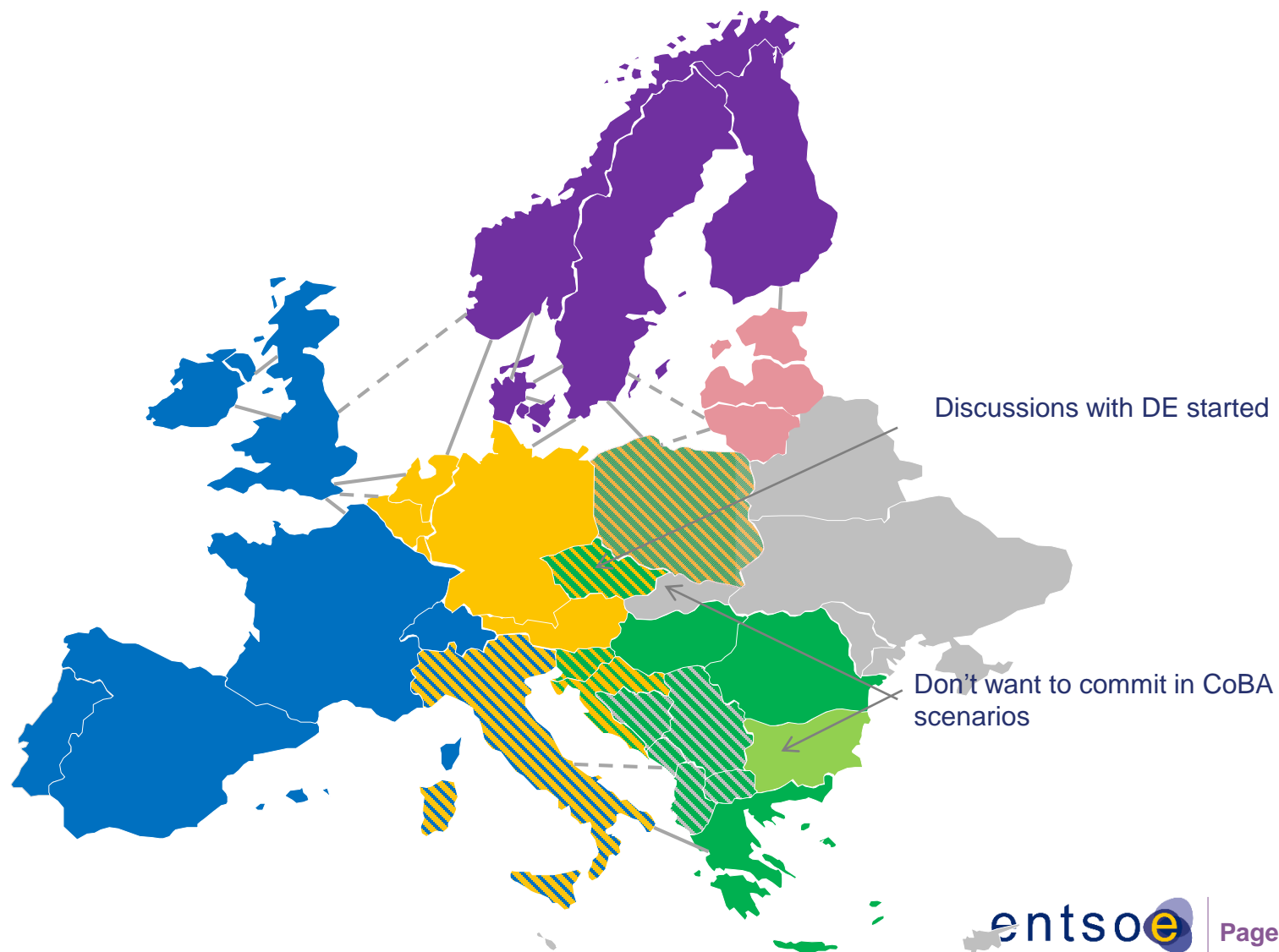
## mFRR scenario 2: Link to RR solutions

### Key:

	CoBA 1: EXPLORE
	CoBA 2: South West
	CoBA 3: South East
	CoBA 4: Nordic
	CoBA 5: Baltic

### Discussion points:

- Poland may join Nordic or EXPLORE CoBA?
- Slovenia & Croatia may join EXPLORE , South East or South West CoBA?
- Czech Republic and Slovakia can join EXPLORE or South East CoBA
- DE, BE & NL TSOs believe that CoBA for aFRR & mFRR should be congruent (but should not exclude inter CoBA exchanges for mFRR)









## mFRR Scenario 3: Starting point PLEF ++ CoBAs

- Concept: based on historical, regional cooperation for other market time frames
  - PLEF (Penta Lateral Energy Forum)
  - Nordic
  - Baltic
- TERRE (south eastern countries)
  - Countries that are not PLEF members
  - Possible extension countries
  - Countries not in TERRE but in-between (SI, CR)
- Czech Republic, Poland, Slovakia form an own CoBA

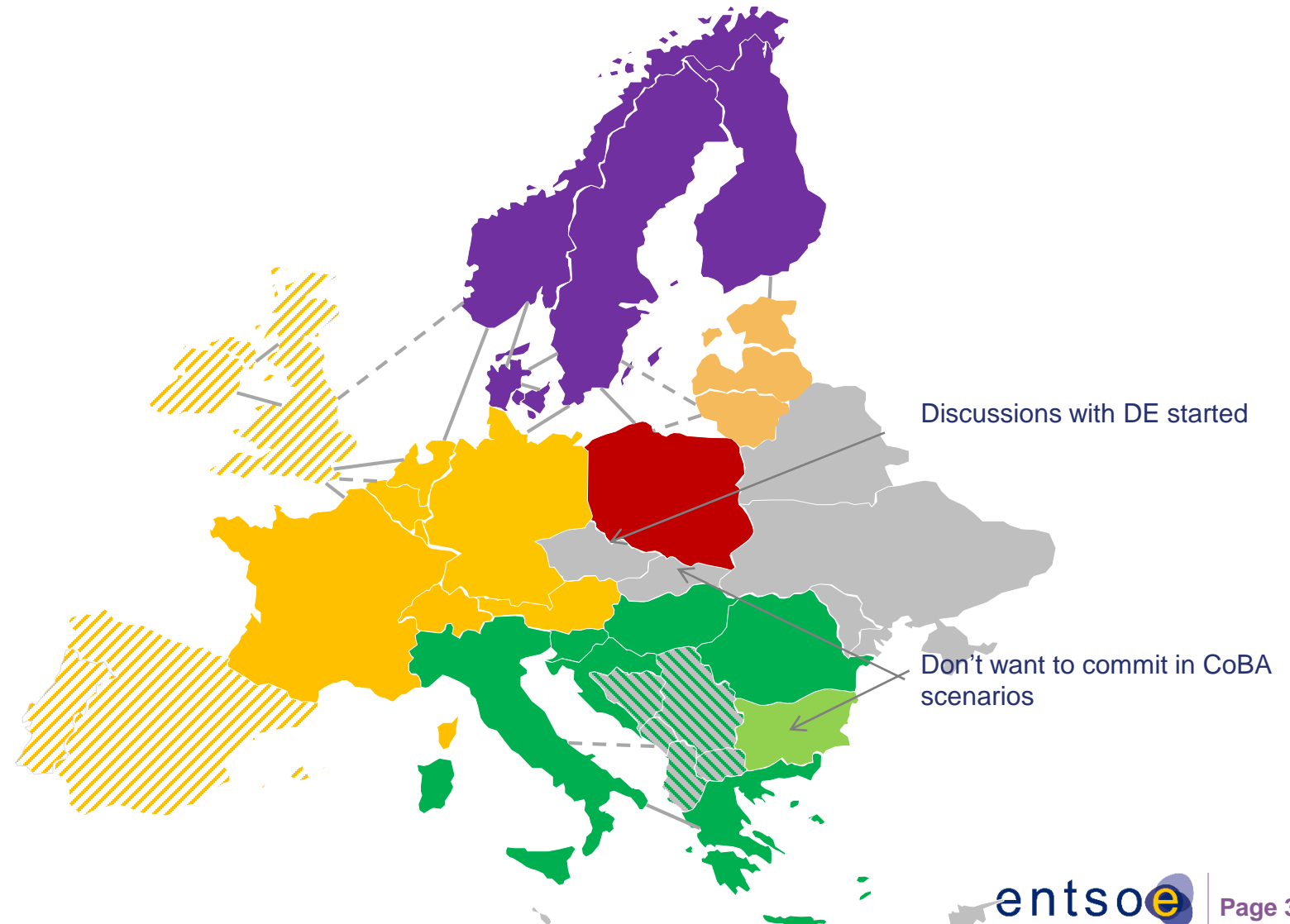
## mFRR Scenario 3: Starting point PLEF ++ CoBAs

### Key:

	CoBA 1: PLEF
	CoBA 1 extended: PLEF++
	CoBA 2: South East (Part of TERRE)
	CoBA 3: North East
	CoBA 4: Nordic (incl. total DK)
	CoBA 5: Baltics

### Discussion points:

- GB, IR, ES, PT may join PLEF CoBA?
- DE, BE & NL TSOs believe that CoBA for aFRR & mFRR should be congruent (but should not exclude inter CoBA exchanges for mFRR)











# mFRR scenario 4: To be feasible for consistency with aFRR

- Concept: CoBA mFRR equal to CoBA aFRR
- Configuration of mFRR CoBA driven by:
  - configuration aFRR as NC EB requests “consistency between CoBAs”
  - RR CoBAs are taken 2nd criterion
  - Non aFRR or non RR countries area together in own CoBAs
- **Additionally**: in case of “cross product pricing”:
  - linking optimization of aFRR, mFRR & RR CMOs



## mFRR Scenario 4: To be feasible for consistency with aFRR

### Key:

	CoBA 1: EXPLORE
	CoBA 2: South West
	CoBA 3: South East
	CoBA 4: North East
	CoBA 5: Nordic (incl. total DK)
	CoBA 6: Baltics
	CoBA 7: GB/Ireland
	CoBA 8: South Central

### Discussion points:

- In case GB/Ireland implement aFRR (based on CBA) they may join either EXPLORE or TERRE or Nordic



# Timeline

- Discussion & approval MC 29/10
- Meeting Subgroup Implementation & planning November 4<sup>th</sup>
- When required written MC approval November 6<sup>th</sup>
- Presentation Balancing Stakeholder Group meeting November 27<sup>th</sup>

After this proceed with further work on proposals CoBA configurations

entsooe

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