

# ENTSO-E Public Webinar on Bidding Zone Review (BZR) study

16 September 2022



# Agenda

1. Introduction
2. ACER decision on alternative configurations
3. Organisation of the BZR and timeline update
4. PAN EU Studies: Transition costs questionnaire
5. BZRR Central Europe – status update
6. BZRR Nordic – status update
7. Conclusion

# Introduction

The All TSOs proposal of methodology and configurations submitted in October 2019 ended in ACER ' desk...

## Methodology and assumptions

- by ACER decision
- Approved: 24 November 2020

## LMP

- by All TSOs
- Delivered: March 2022

## Alternative Configurations

- by ACER
- Approved: 8 August

We are here

## Bidding Zone Review

- by the TSOs of the BZRRs
- From 8 August 2022 to 8 August 2023

Relevant MSs unanimous decision to maintain or amend the BZ in 6 months

ACER methodology approved has 2 steps:  
1. Methodology + request to TSOs to deliver LMP  
2. Definition of alternative configurations



European Union Agency for the Cooperation  
of Energy Regulators

# ACER's Decision on the alternative bidding zone configurations

ENTSO-E public webinar

16 September 2022



- 
- The Decision was adopted on 8 August and follows from the lack of configurations submitted by TSOs for continental Europe back in 2020
  - The Decision uses **ACER's high-level approach (consulted in July 2021)**, which relies on TSOs LMP simulation results and additional analysis on e.g. loop flows (see below)
  - **In line with the Electricity Regulation (Article 14(1))**, the alternative configurations have been selected based on the objectives of **maximising economic efficiency and cross-zonal capacity**. In essence, the selection relied on **two high-level indicators**:
    - **Geographical nodal price dispersion within a bidding zone** resulting from TSOs simulations: The higher the dispersion, the higher the scope to manage congestions through better bidding zones delineation.
    - **The cross-zonal capacity taken away by loop flows and other internal flows** on network elements relevant for capacity calculation. The higher these flows, the higher the scope to increase cross-zonal capacity through better bidding zones delineation.
  - Additionally, ACER took into account the configurations previously proposed by TSOs and TSOs' feedback on the configurations initially identified by ACER

Member State	Individual alternative configurations		Justification
Germany	DE2	ACER clustering algorithm (k-means)	Germany ranked first in terms of nodal price dispersion and flows 'consuming' cross-zonal capacity. The indicators improve when splitting it into 2 or more BZs.
	DE2	TSOs' modifications on ACER clustering algorithm (Spectral P1)	
	DE3	ACER clustering algorithm (Spectral P1)	
	DE4	TSOs' modifications on ACER clustering algorithm (Spectral P1)	
France	FR3	ACER clustering algorithm (Spectral P1)	France ranked the second 'poorest'; however, only one configuration is proposed because the overall improvements when splitting France were not so perceptible as for Germany.
The Netherlands	NL2	ACER clustering algorithm (Spectral DIRC)	The Netherlands and Italy (North) are the third and fourth countries in the ranking. The indicators improve when splitting.
Italy (North)	IT2	ACER clustering algorithm (k-means)	

In addition:

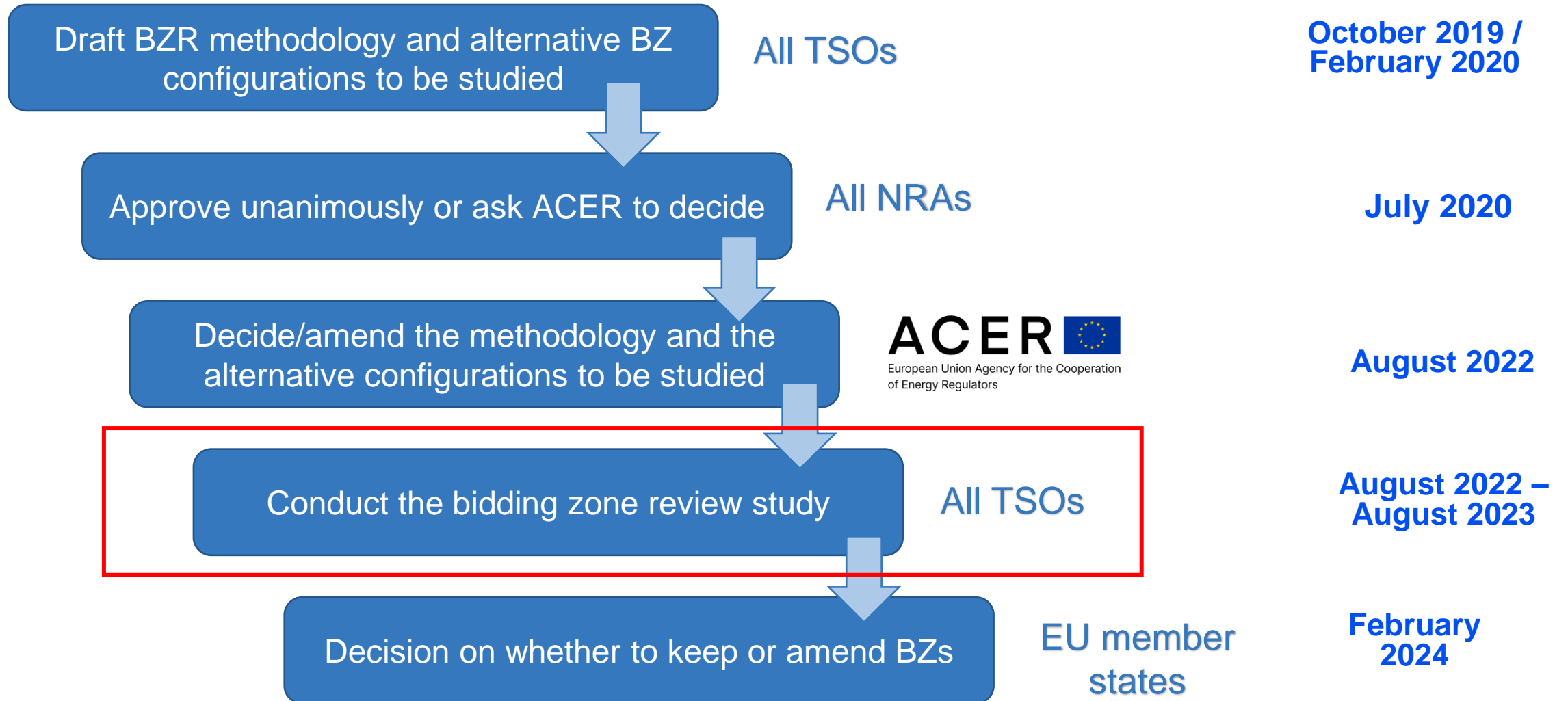
- TSOs are requested to study **at least the 2 more promising combinations**, comprising two Member States and based on the intermediate results obtained during the bidding zone review study (e.g. MS<sub>x</sub> split into 2 BZs combined with MS<sub>y</sub> split into 3 BZs)
- **Fallback configurations better following control area borders were envisaged for Germany**, in case challenges with the unique assignment of generation and load units to BZs in the configurations proposed by ACER are found



# Summary of the proposed configurations: Nordics

Member State	Individual alternative configurations		Justification
Sweden	SE3	ACER clustering algorithm (Spectral P1)	<p>These alternative configurations in 3 and 4 BZs lead to an improvement for both indicators compared to the status quo.</p> <p>They confirm that the focus of the splits is on the area around Stockholm, in line with the alternative configurations proposed by the Nordic TSOs back in 2020.</p>
	SE3	TSOs' modifications on ACER clustering algorithm (Spectral P1)	
	SE4	ACER clustering algorithm (Spectral P1)	
	SE4	TSOs' modifications on ACER clustering algorithm (Spectral P1)	

# Overview of the bidding zone review process

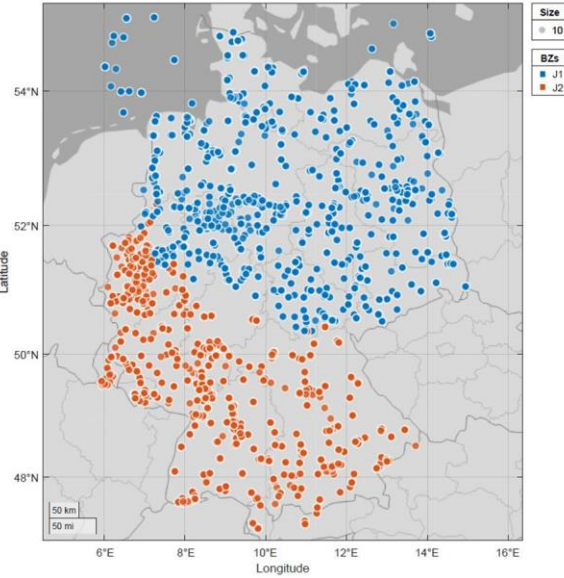
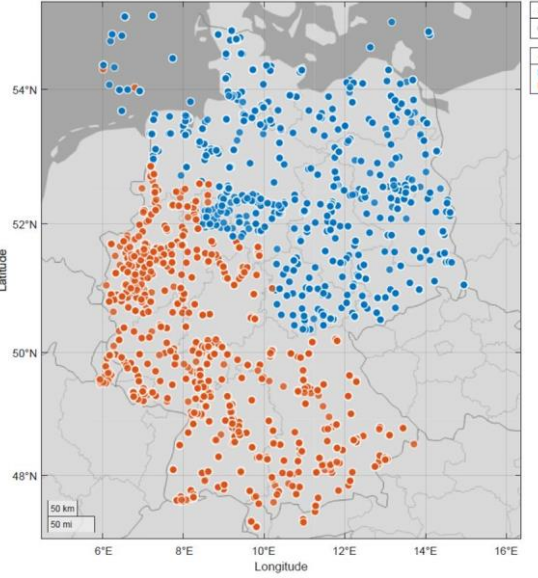
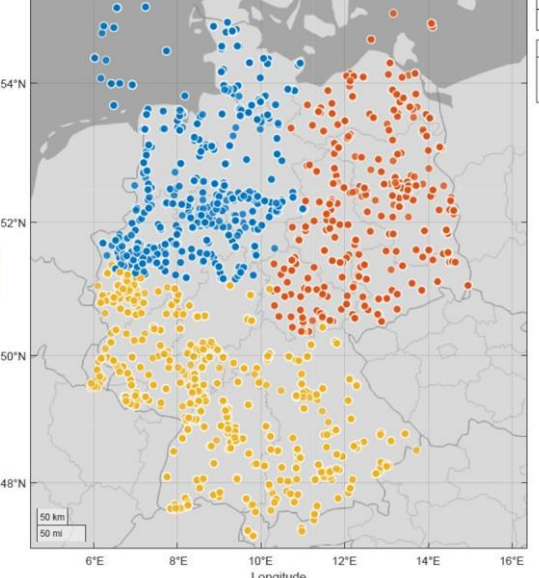
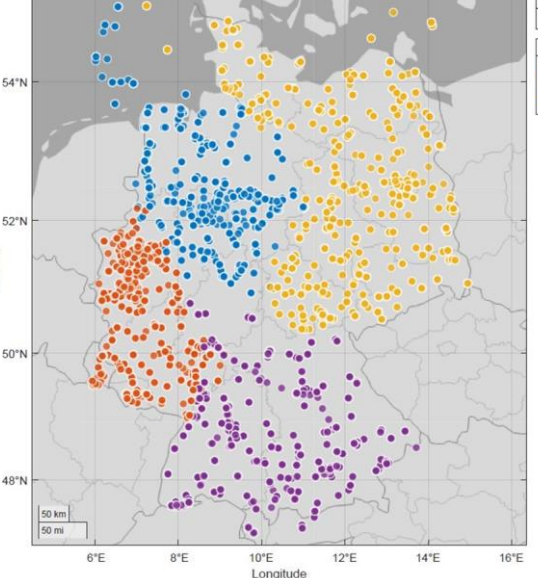


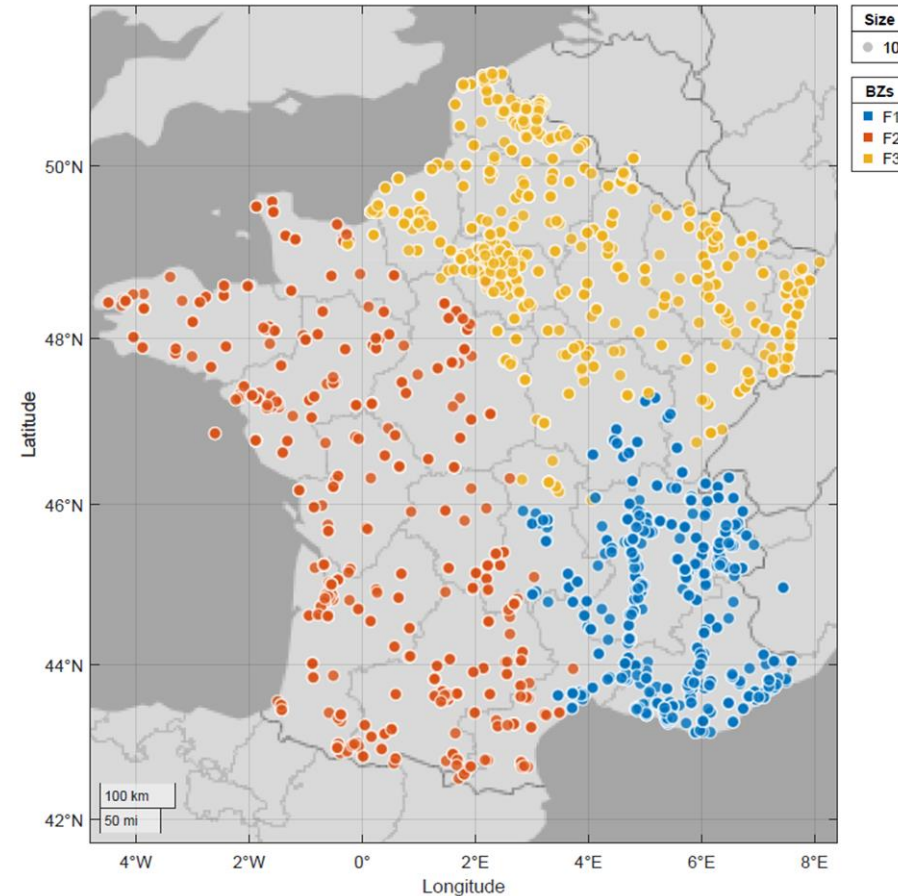


# Annex: Maps of the alternative BZ configurations to be studied

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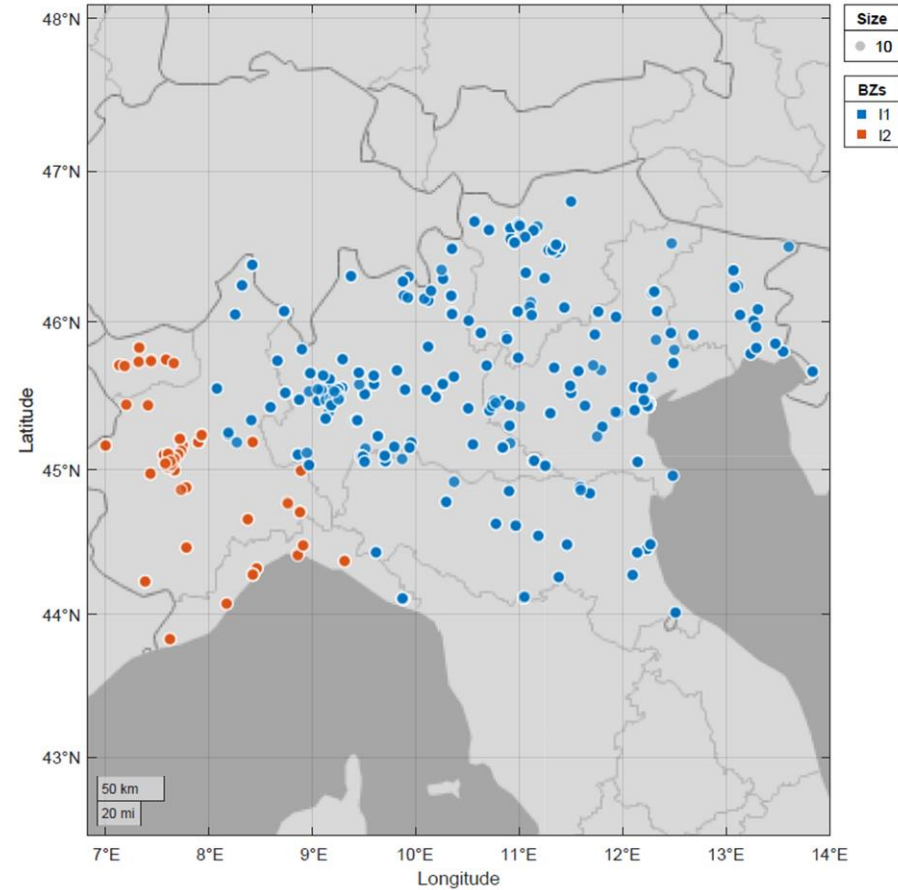
# Alternative BZ configurations for Germany

DE2	DE2	DE3	DE4
k-means	Modified version of Spectral P1 following remarks provided by the German TSOs	Spectral P1	Modified version of Spectral P1 following remarks provided by the German TSOs
			
<p>Split of Germany into 2 BZs along the border identified to reduce loop flows and price dispersion within Germany the most.</p>	<p>Modified configurations to accommodate TSOs' comments to facilitate the unique assignment of generation and load units to BZs.</p>	<p>Split of Germany into 3 BZs along the borders identified to reduce loop flows and price dispersion within Germany the most.</p>	<p>Modified configurations to accommodate TSOs' comments to facilitate the unique assignment of generation and load units to BZs.</p>



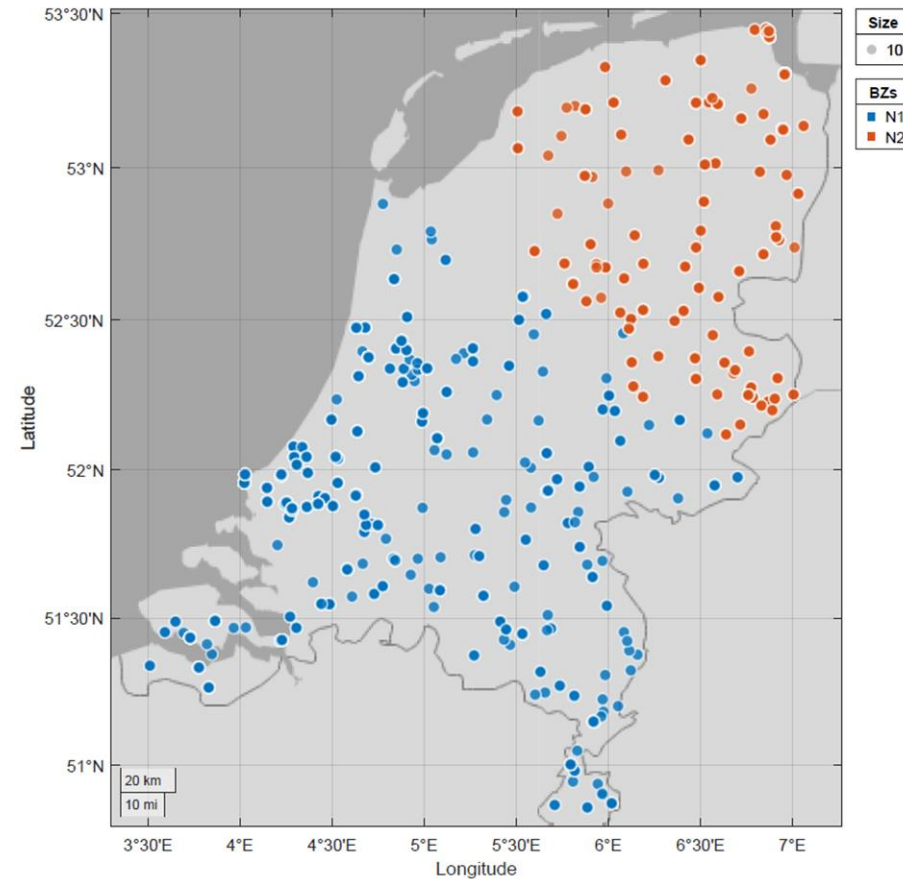
Split of France into 3 BZs (ACER clustering algorithm Spectral P1) along the borders identified to reduce loop flows and price dispersion within France the most. Some small refinements suggested by TSOs were also considered.

# Alternative BZ configurations for Italy (North)



Split of Italy North into 2 BZs (ACER clustering algorithm k-means) along the borders identified to reduce loop flows and price dispersion within Italy the most. Some small refinements suggested by TSOs were also considered.

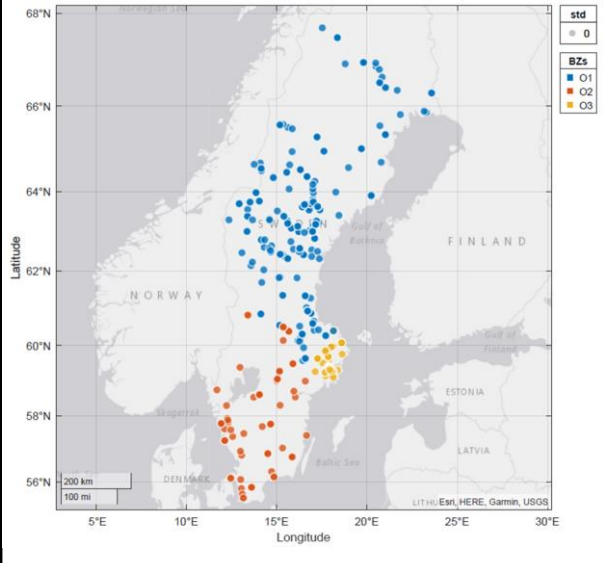
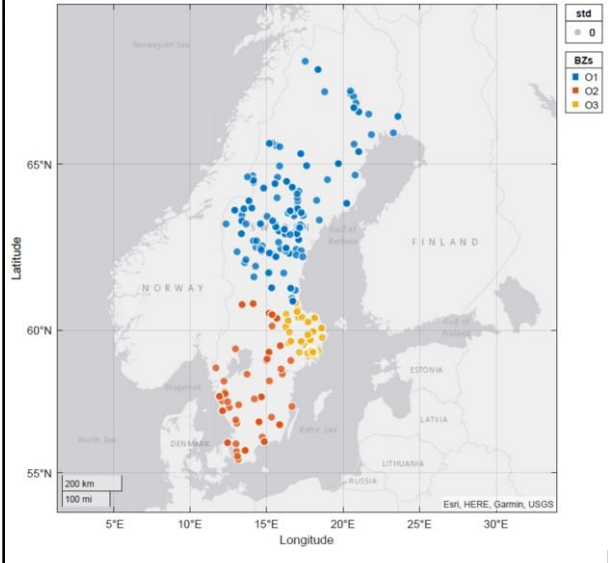
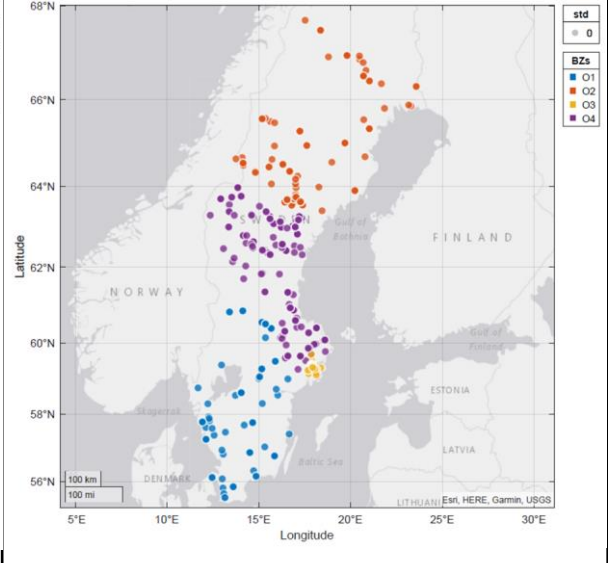
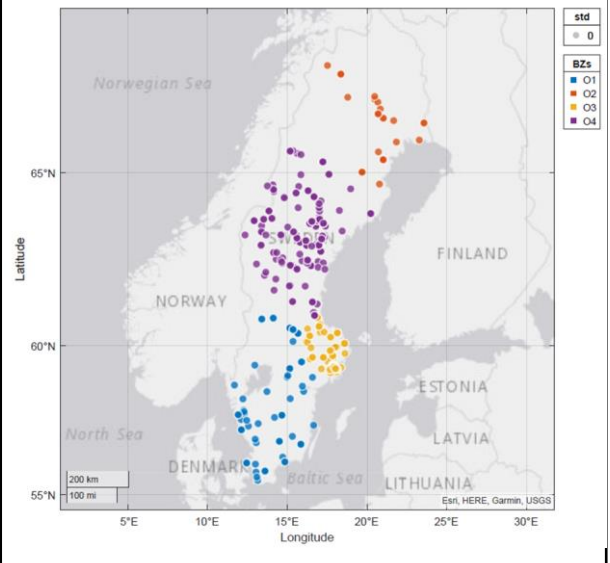
# Alternative BZ configurations for the Netherlands



Split of the Netherlands into 2 BZs (ACER clustering algorithm Spectral DIRC) along the borders identified to reduce loop flows and price dispersion within the Netherlands the most.



# Alternative BZ configurations for Sweden

SE3	SE3	SE4	SE4
Spectral P1	Modified version of Spectral P1 following remarks provided by Svenska Kraftnät	Spectral P1	Modified version of Spectral P1 following remarks provided by Svenska Kraftnät
 <p>A map of Sweden showing three Balancing Zones (BZs) defined by geographical borders. Zone O1 (blue) covers the northern and central parts. Zone O2 (orange) covers the southern coastal region. Zone O3 (yellow) covers the southern inland region. A legend indicates 'std' = 0 and 'BZs' O1, O2, O3. The map includes latitude and longitude coordinates and a 200 km scale bar.</p>	 <p>A map of Sweden showing a modified Spectral P1 configuration. The Stockholm area is merged with the southern zone (O2). The legend includes 'std' = 0 and 'BZs' O1, O2, O3. The map includes latitude and longitude coordinates and a 200 km scale bar.</p>	 <p>A map of Sweden showing four Balancing Zones (BZs) defined by geographical borders. Zone O4 (purple) covers the central region. The legend includes 'std' = 0 and 'BZs' O1, O2, O3, O4. The map includes latitude and longitude coordinates and a 100 km scale bar.</p>	 <p>A map of Sweden showing a modified Spectral P1 configuration with four zones. The Stockholm area is merged with the southern zone (O2). The legend includes 'std' = 0 and 'BZs' O1, O2, O3, O4. The map includes latitude and longitude coordinates and a 200 km scale bar.</p>
<p>Split of Sweden into 3 BZs along the borders identified to reduce loop flows and price dispersion within Sweden the most. It includes a specific 'Stockholm BZ'.</p>	<p>Merge of current SE1 and SE2. The 'Stockholm BZ' includes the Forsmark power plants and the Fennoskan interconnector.</p>	<p>Split of Sweden into 4 BZs along the borders identified to reduce loop flows and price dispersion within Sweden the most.</p>	<p>Current SE1 and SE2 BZs are kept. The 'Stockholm BZ' includes the Forsmark power plants and the Fennoskan interconnector.</p>

# Thank you. Any questions?

The contents of this document do not necessarily reflect the position or opinion of the Agency.



European Union Agency for the Cooperation  
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# Organisation of the BZR and timeline update

# Overview of the current process of the Bidding Zone review

The All TSOs proposal of methodology and configurations submitted in October 2019 ended in ACER ' desk...

## Methodology and assumptions

- by ACER decision
- Approved: 24 November 2020

## LMP

- by All TSOs
- Delivered: March 2022

## Alternative Configurations

- by ACER
- Approved: expected 1 July

We are here

## Bidding Zone Review

- by the TSOs of the BZRRs
- From 8 August 2022 to 8 August July 2023

Relevant MSs unanimous decision to maintain or amend the BZ in 6 months

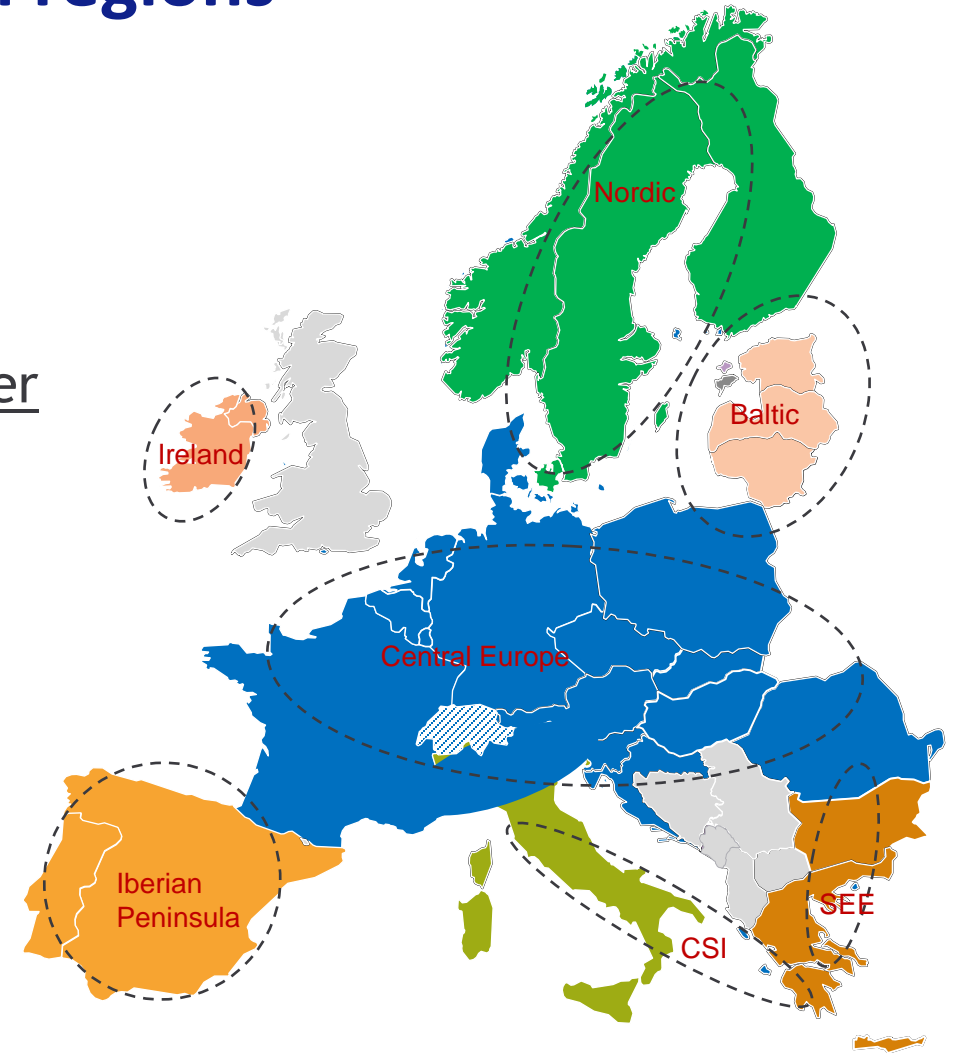
ACER methodology approved has 2 steps:  
1. Methodology + request to TSOs to deliver LMP  
2. Definition of alternative configurations

# The Bidding Zone Review is organised in regions

## Overview of Bidding Zone Review Regions (BZRRs)

- For the Bidding Zones Review
  - On all TSO level, for pan-EU studies and stakeholder management
  - On regional level, for modelling activities

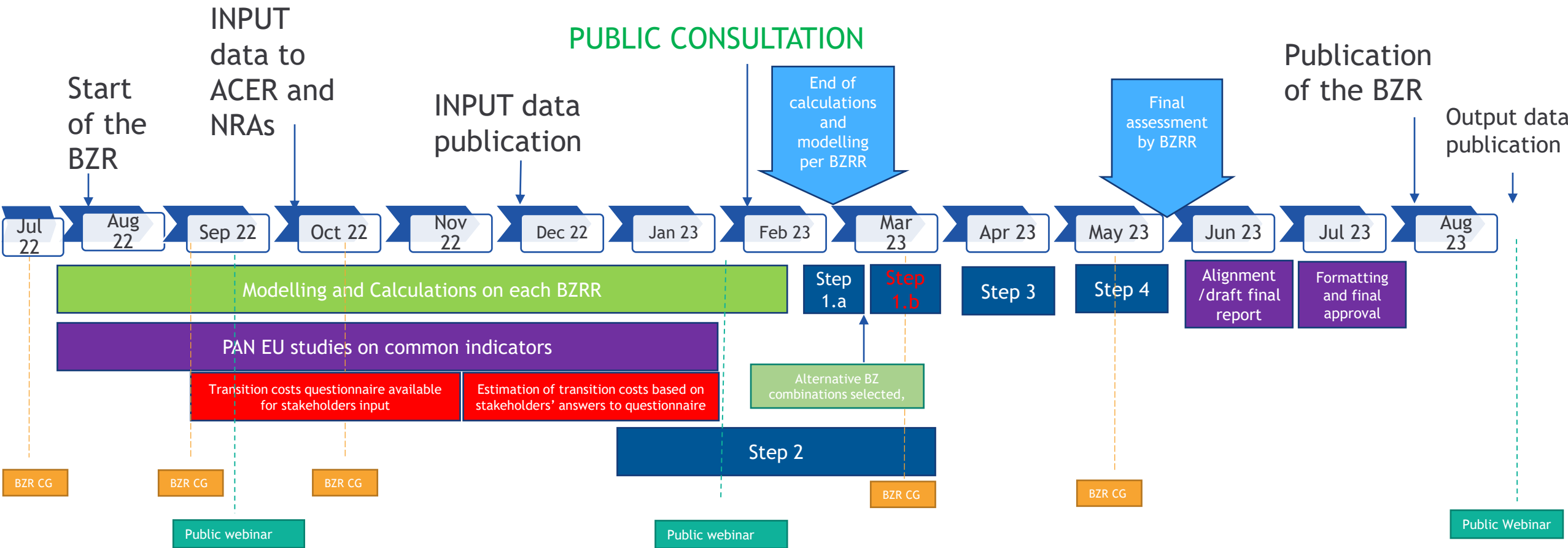
→ The regional setup for modelling was chosen to reduce model complexity and to be able to consider regional specificities / sensitivities.



# BZR general timeline



- Step 1a: monetised benefits of individual splits
- Step 1b: monetised benefits of derived combinations



# General timeline (for stakeholder interactions)

• The dates proposed are indicative



★ Start of the BZR : 8 Aug 2022

	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023
<b>Main milestones</b>	Apr: LMP results delivered to ACER	8 Aug: Alternative configurations by ACER	8 Oct: Input data to NRAs 8 Dec: Input data publication Jan-Feb: Public consultation		8 Aug: Publication of the BZR report	Sep-Oct*: Output data publication
<b>ACER &amp; NRAs interaction</b>		5 Sep Explanation of ACER decision	7 October: explanation of input data to be delivered to ACER and published			
<b>BZR Consultative Group Meetings</b>		5 July Kick-off call 1 Sep Online call	13 October: physical workshop (WS)	WS Jan/Feb		WS April
<b>Public Webinar - PAN EU with Regions</b>	21 April (explain the BZR process and present LMP results)	16 September		Webinar before or during public consultation		Webinar after publication of the BZR
<b>MESC</b>	1 June	14 September	7 December	TBD	TBD	TBD
<b>Public consultation</b>			Launch between Dec 22 - Jan 23			
<b>Regional meetings</b>	TBD	TBD	TBD	TBD	TBD	TBD
<b>PAN EU studies</b>		Questionnaire on transition costs: Available for input: 6 Sep - 31 Oct Analysis: after 31 Oct		TBD	TBD	TBD

# Pan-EU studies: Transition costs questionnaire

1. Introduction
2. Methodology
3. Questionnaire
4. Next steps
5. Q&A



# Introduction



# Back-ground for the pan EU studies

22 indicators to be assessed in the BZR

Network security	Market efficiency	Stability & robustness of BZs	Energy transition
<ol style="list-style-type: none"> <li>1. Operational security</li> <li>2. Security of supply</li> <li>3. Uncertainty in cross-zonal capacity calculation</li> </ol>	<ol style="list-style-type: none"> <li>4. Economic efficiency</li> <li>5. Firmness costs</li> <li>6. Market liquidity &amp; transaction costs</li> <li>7. Market concentration &amp; market power</li> <li>8. Effective competition</li> <li>9. Price signals for building infrastructure</li> <li>10. Accuracy &amp; robustness of price signals</li> <li>11. Transition costs</li> <li>12. Infrastructure costs</li> <li>13. Market outcomes in comparison to corrective measures</li> <li>14. Adverse effects of internal transactions on other BZs</li> <li>15. Impact on operation and efficiency of balancing</li> </ol>	<ol style="list-style-type: none"> <li>16. Stability &amp; robustness of price signals over time</li> <li>17. Consistency across capacity calculation time frames</li> <li>18. Assignment of generation and load units to BZs</li> <li>19. Location and frequency of congestion, market and grid</li> </ol>	<ol style="list-style-type: none"> <li>20. Short-term effects on carbon emissions</li> <li>21. Short-term effects on RES integration</li> <li>22. Long-term effects on low-carbon investments</li> </ol>

## Key

Green: Assessed in pan-European studies

- 2 indicators (6 and 11) have to be assessed by the TSOs at pan-EU level (i.e. across the BZRRs) via 2 pan-EU studies;
- TSOs via ENTSO-E have subcontracted Compass Lexecon to perform these studies on their behalf;
- Focus of today's presentation is on criterion 11 (**transition costs**);
- Questionnaire on transition costs has been published on September 6th 2022 on the ENTSO-E consultation website ([Link](#));
- Input from EU stakeholders is crucial for the assessment of this criterion and shall be provided until **October 31st 2022**.

# Questionnaire on transition costs : <https://consultations.entsoe.eu/markets/bidding-zone-amendments-transition-costs/>

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## Bidding Zone Study - Questionnaire on Transition Costs

### Overview

In accordance with the ACER decision 29/2020 of 24 November 2020 on the methodology and assumptions that are to be used in the Bidding Zone Review process and for the alternative bidding zone configurations to be considered (BZR Methodology), Transmission System Operators ("TSOs") of all Bidding Zone Review Regions shall jointly perform a study in order to estimate transition costs occurring from a bidding zone reconfiguration. TSOs are therefore now launching a questionnaire on transition costs. Through this questionnaire, information on transition costs inherent to the specific bidding zone reconfigurations to be analysed in the bidding zone review will be gathered.

**Closes 31 Oct 2022**  
**Opened 6 Sep 2022**

**Contact**  
Gjorgji Shemov  
(Market Specialist)  
ENTSO-E  
[gjorgji.shemov@entsoe.eu](mailto:gjorgji.shemov@entsoe.eu)

### Why your views matter

We are seeking input from EU stakeholders and market participants on their transition costs. Based on this input, TSOs will estimate the transition costs linked to each specific bidding zone reconfiguration as set forth in ACER decision 11/2022. In accordance with the BZR Methodology, the resulting estimates shall be considered to calculate the minimum life time of a BZ configuration.

**Give us your views**  
[Online Survey >](#)

### Related

- [Transition Costs Questionnaire \(overview of all questions\).docx](#)  
112.6 KB (Office Word 2007 XML document)
- [Transition Costs Questionnaire \(overview of table\).xlsx](#)  
4.0 MB (Office Excel 2007 XML workbook)

2 documents can be downloaded here to facilitate the internal assessment within each company **BUT** answers are to be provided in the consultation tool (accessible via the URL **Online Survey**)

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# Methodology

# Methodology: Overview and legal basis

Recap on what the BZ-methodology says: mandatory and optional aspects for consideration in the bidding zone review process.

## Transition cost definition

Transition costs refer to the **one-off costs expected to be incurred** in case the BZ configuration is amended.

Shall relate to **adaptations** that are inherently and unambiguously **related to a specific BZ configuration change**.

[...]

Shall **not relate to adaptations** that are, in general, **necessary to ensure sufficient flexibility** of the systems to cope with a variable number of BZs due to a potential amendment of the BZ configuration in the future.

## Aim of the Study

In order to identify and possibly estimate transition costs, a study shall be jointly performed for all BZRRs. The study shall aim to **provide an overview of necessary adaptations and possibly a range of related cost estimates**. The study shall also consider stakeholders' replies to the public consultation conducted pursuant to Article 17.4.

The resulting estimates shall be considered to **calculate the minimum 'lifetime'**, in years, of a BZ configuration, as described in Step 4 in Article 13.1(d)

# Methodology: Stepwise approach

The study is conducted in four steps. We are currently relying on your input as a result from step 2.

## Our approach and where we stand:

- Step 1 Define groups of market participants
- Step 2 Develop questionnaire
  - Break down costs into cost categories
  - Pre-questionnaire consultation with BZR consultative group
- Step 3 Method for cost estimation
  - Costs are estimated separately for
    - Each group of recipients
    - Each proposed BZ re-configuration
    - Each BZ directly or indirectly affected by specific re-configuration
- Step 4 Process data and draft report to be consulted



*We have defined exhaustive categories and TSOs and ENTSO-E will push-out an online questionnaire to a large number of market participants.*



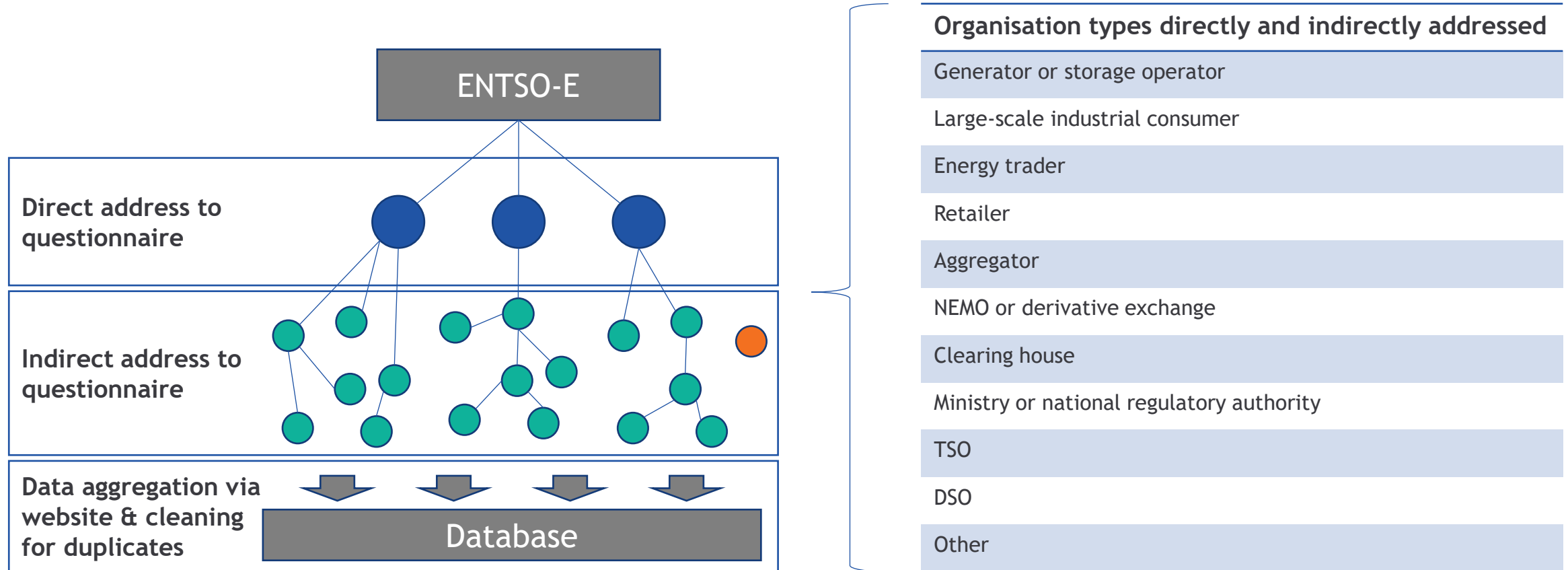
The [questionnaire](#) has been published on September 6<sup>th</sup> 2022 on the ENTSO-E consultation website.



We will elaborate on the method for extrapolation that will be used to estimate the transition costs per alternative bidding zone configuration.

# Methodology: Step 1 - Define group of market participants

The data for the transition cost study is aggregated through a publicly available questionnaire, distributed in the industry



# Methodology: Step 2 - Develop questionnaire

The cost categories were identified and discussed with the BZR consultative group.

Cost category	Definition	Transition cost examples
<b>Changes to internal business processes and IT systems</b>	Costs incurred by changes to organization and coordination specifically attributable to BZ re-configuration	<ul style="list-style-type: none"> <li>Adapting existing IT systems to specific BZ configurations</li> <li>Costs associated to the efforts (FTE) linked to changing of processes like for example:               <ul style="list-style-type: none"> <li>splitting or merging teams that are responsible for a specific BZ</li> <li>changing trading or algorithmic trading processes</li> <li>going through the process of revaluating assets</li> <li>adopting portfolio optimisation processes</li> <li>adopting processes around the payment of renewable subsidies like feed-in-tariffs</li> <li>testing changed processes</li> <li>informing employees about the changed processes</li> </ul> </li> <li>changes to other ongoing exchanges between market participants and TSOs and public bodies, for example balancing and electricity balancing accounts</li> </ul>
<b>Adjustment to or termination of contracts and regulation</b>	Costs incurred by amending existing contracts to BZ re-configuration including. legal costs	<ul style="list-style-type: none"> <li>Re-negotiation, or termination of contracts, depending on their complexity. Particularly, if the reference location of price changes or is not accepted by contract parties anymore (incl. GOs, PPAs, legal arrangements)</li> <li>Re-drawing of legislation, for instance contracts/legislation that refer to a single bidding zone, that does not exist anymore after a BZ reconfiguration</li> <li>Possible costs, because electricity sold forward is affected (will apply mainly in case of shorter lead times)</li> </ul>
<b>Adjustments of processes with NEMOs, TSOs and public bodies</b>	Costs incurred by adapting interaction with NEMOs, TSOs or public bodies	<ul style="list-style-type: none"> <li>Reporting obligations that must be adjusted to be specific for each new BZ</li> </ul>
<b>Additional costs</b>	Any costs directly related to the BZ configuration not covered by any of the categories above	<ul style="list-style-type: none"> <li>Any examples not covered above</li> </ul>



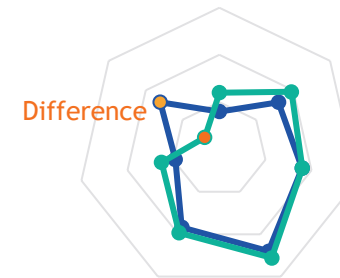
# Methodology: Step 3 - Method for cost estimation and data quality check

The cost estimates are aggregated and checked for quality and robustness. Below, a high-level excerpt is provided.

## Quality checks

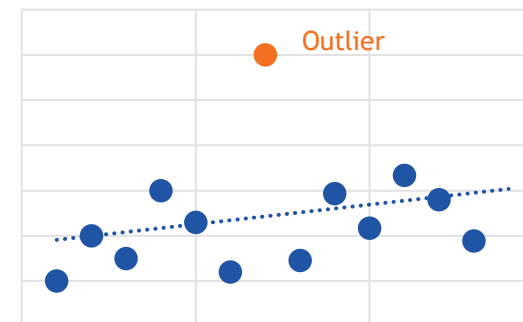
- Depending on the sample size, different quality checks will be applied to:
  - **Identify the best method** for finding total transition costs
  - Estimate the **expected error** and transition cost range
  - Clean the data for data entry errors
- **Typical checks** that will be applied are:
  - Model specificities test
  - Matching tests (see top right)
  - Outlier tests (see bottom right)
  - Estimates against benchmarks
  - Calculation of the regression power
- The results of the quality check give indication to where a close **examination of the explanation of the cost estimates** is most important

### Example matching Analysis



- Two entries of similar companies are compared.
- Differences between them are analysed for plausibility.
- This approach is used for small data sets

### Example outlier Analysis

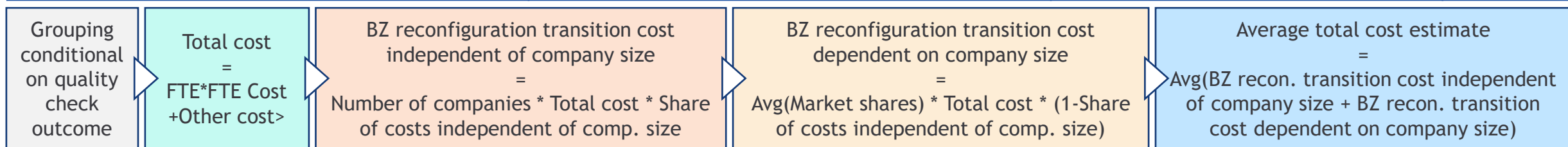


- A trend between entries of all or many companies is identified through statistical methods.
- Outliers are analysed for plausibility.
- This approach is used for large data sets.

# Methodology: Step 3 - Method for cost extrapolation

Total cost extrapolation follows a scaling approach and results in a bandwidth of costs per BZ reconfiguration.

Data coordinates				Cost data				Market metrics			
Company ID	BZ reconfiguration	Company type	Cost category	FTE	FTE Cost	Other cost	Share independent of comp. size	Market share (physical)	Market share (revenue)	Number of companies	Prior experience
1	1 (DE2)	A	IT Systems	2	55 000	500 000	50%	5% of A in 1		100	Yes
2	1 (DE2)	A	IT Systems	4	60 000	400 000	50%	5% of A in 1		100	No
3	1 (DE2)	A	IT Systems							100	
4	1 (DE2)	B	IT Systems							600	
1	2 (DE2)	A	IT Systems	1	55 000	300 000	50%			100	Yes
2	2 (DE2)	A	IT Systems	4	60 000	400 000	50%			100	No
...	...	...	...	...	...	...	...	...	...	...	...



# Questionnaire

# Questionnaire: Structure and guidelines

The questionnaire includes 8 steps and may be completed in multiple sessions.

	1. Introduction	2. Cost categories	3. General questions	4. Cost estimation	5. Intra-company transactions	6. Additional remarks	7. Confidentiality	8. Submit
<b>What does it entail?</b>	<ul style="list-style-type: none"> <li>Explanation of the context and content of the questionnaire and study</li> <li>Refers to relevant documents</li> </ul>	<ul style="list-style-type: none"> <li>Definition of cost categories and provision of examples</li> </ul>	<ul style="list-style-type: none"> <li>Questions about the company</li> <li>Questions about prior experience with BZ reconfigurations</li> </ul>	<ul style="list-style-type: none"> <li>Central data submission of estimated transition costs</li> <li>BZ-specific data sheets</li> </ul>	<ul style="list-style-type: none"> <li>Case scenario for impact on liquidity</li> </ul>	<ul style="list-style-type: none"> <li>Section for additional comments</li> </ul>	<ul style="list-style-type: none"> <li>Decision on how your data should be treated</li> </ul>	<ul style="list-style-type: none"> <li>Submission of answers</li> </ul>
<b>How to fill it in?</b>	<ul style="list-style-type: none"> <li>Nothing to fill in</li> </ul>	<ul style="list-style-type: none"> <li>Nothing to fill in</li> </ul>	<ul style="list-style-type: none"> <li>Provide company information as requested on the website</li> </ul>	<ul style="list-style-type: none"> <li>Download excel table</li> <li>Fill in company information sheet</li> <li>Fill in cost estimates for all relevant BZ reconfigurations</li> <li>Upload final excel</li> </ul>	<ul style="list-style-type: none"> <li>Provide estimates as requested on the website</li> </ul>	<ul style="list-style-type: none"> <li>Add any comment you consider relevant</li> </ul>	<ul style="list-style-type: none"> <li>Tick boxes as you see fit</li> <li>Note: the agreement to the ENTSO-E's Consultation Hub privacy policy is required</li> </ul>	<ul style="list-style-type: none"> <li>Enter your e-mail, if you want to receive a copy of your answers</li> <li>Don't forget to press "submit response"</li> </ul>

## General remarks:

- Please contact Gjorgij Shemov (gjorgji.shemov@entsoe.eu) in case of any questions
- The button "continue" works only if the required data is filled in
- The button "Save and come back later..." creates a unique link such that you do not need to fill in the questionnaire in one session. For this, you need to provide you e-mail.



## Next steps

# Questionnaire on Transition Costs study: timeline

- Deadline for [filling in the questionnaire](#): **31 October 2022** (8 weeks after publication).
- First estimation of transition costs will be consulted in January-February (date TBC).



# Q&A



## **BZRR CENTRAL EUROPE – STATUS UPDATE**



# Status update BZR Central Europe

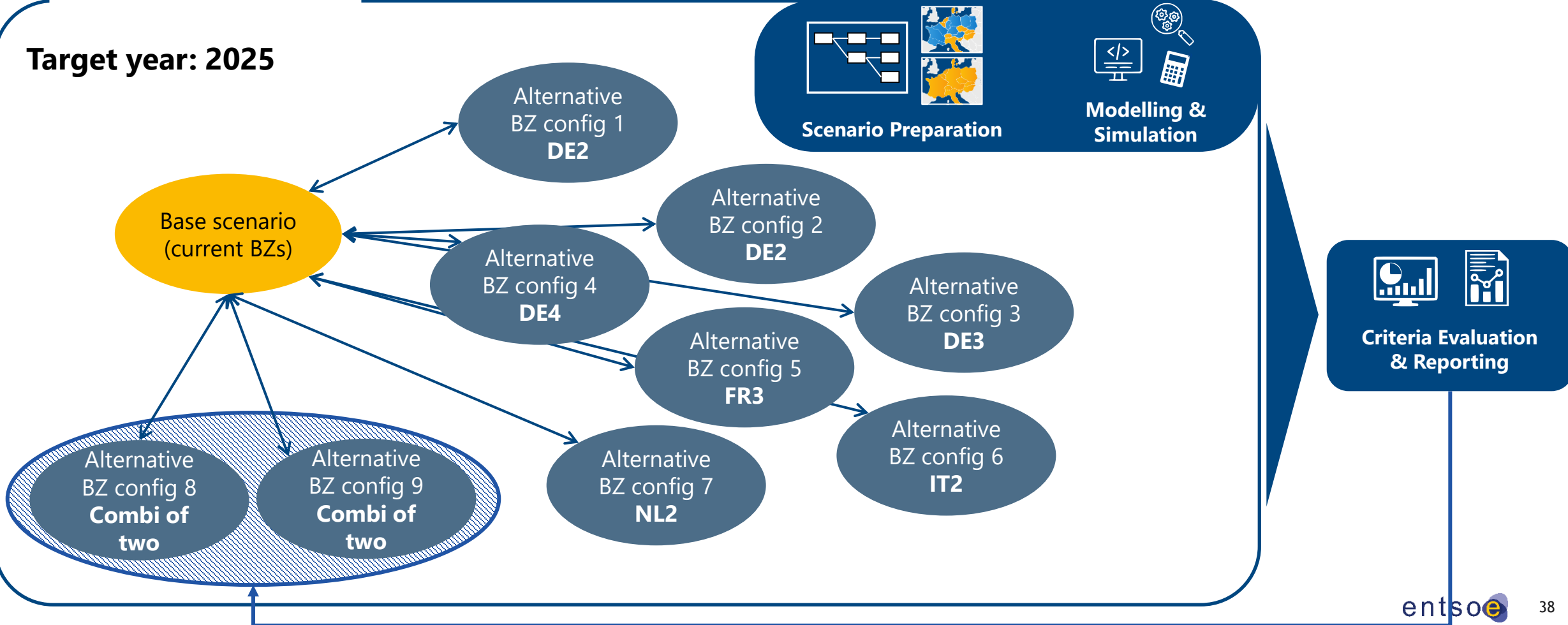
## Central European BZR in a nutshell

Base setup

3 climate years

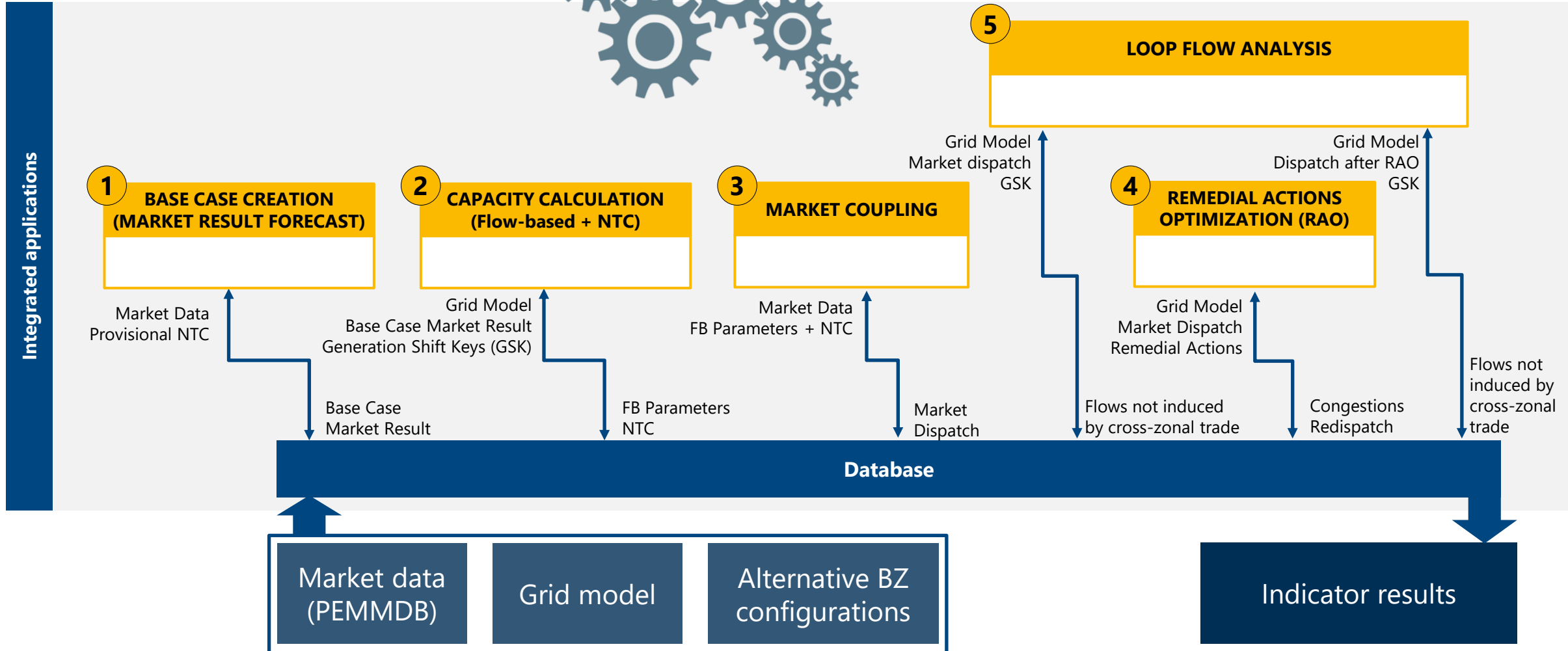
Sensitivity analysis

Target year: 2025



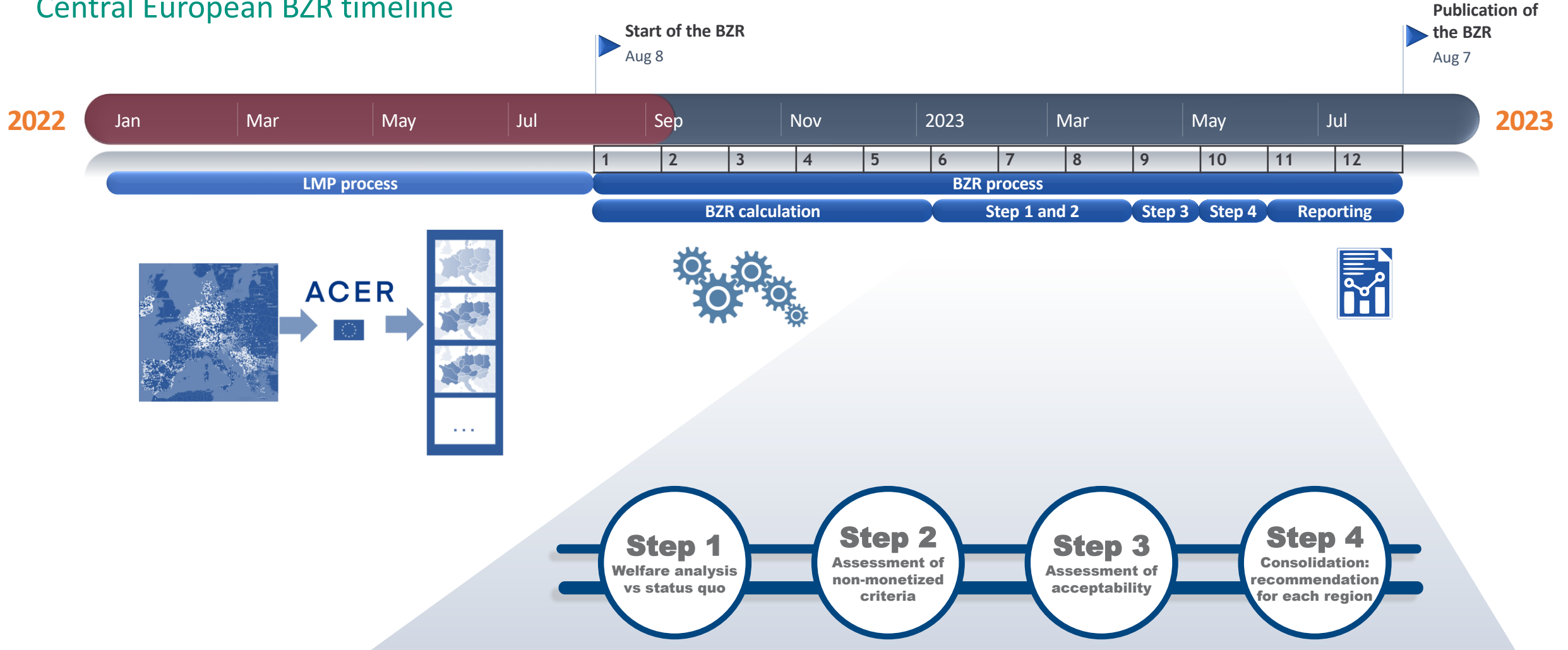
# Status update BZR Central Europe

## Central European BZR toolchain



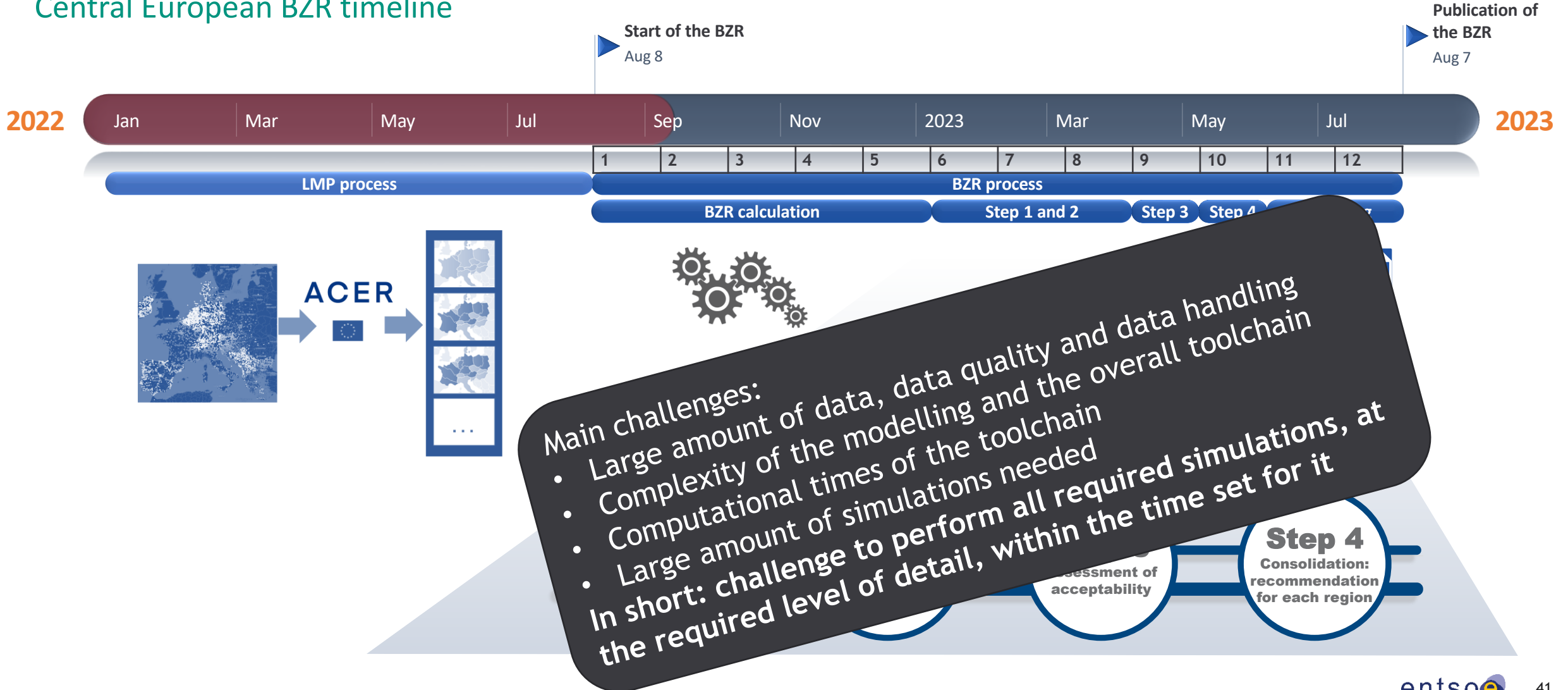
# Status update BZR Central Europe

## Central European BZR timeline



# Status update BZR Central Europe

## Central European BZR timeline



# BZR Regions: Introduction of the BZRR NORDIC

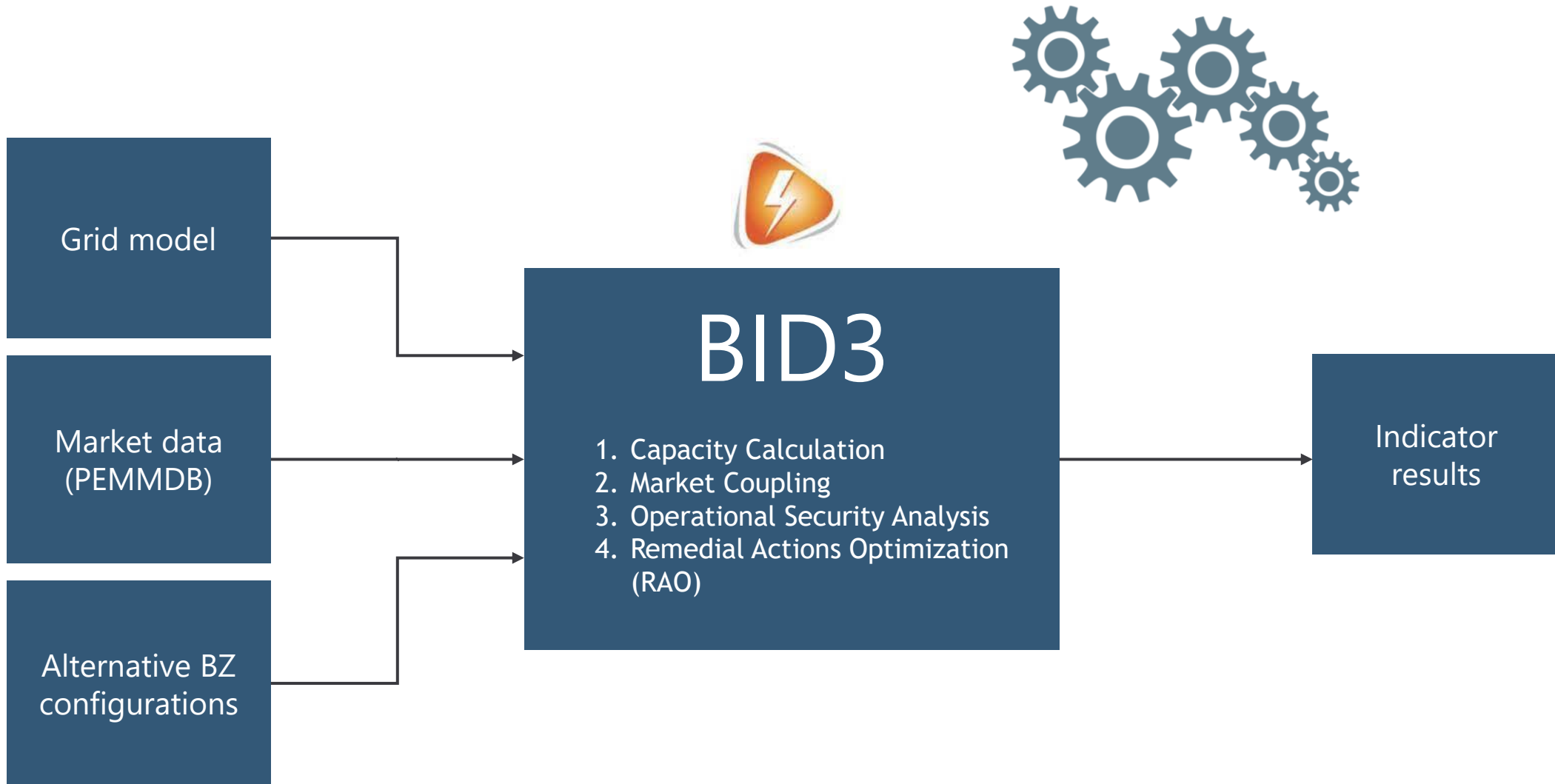
- Nordic team members come from
  - Svenska kraftnät
  - Fingrid
  - Statnett
  - Energinet
- Project's organization
  - Task force: handles requirements and coordination across TSOs
  - Group of modelling experts: handles practical implementation, analyses, etc.



# BZR Nordics: Development of the modelling tool for Nordics

- Nordic BZRR continued with BID3 from LMP study as the main modelling tool
- Necessary further development of the model was started early to prepare for BZRR
  - Redispatch module
  - Implementation of flow based functionality similar to real life operations
- BID 3 development finalized.
- Last data preparations are currently taking place before start of simulations.
- All four Nordic TSOs are users of BID3, and the dataset can be shared or passed around
  - Allow all TSOs to contribute efficiently
  - Different TSOs can take lead according to when there are available resources

# BZ Review Region Nordic: Tool Chain





# Back-Up



# Questionnaire: optional data submission

The questionnaire includes questions that are not required from the methodology , but would be useful for the analysis.

## Rationale for inclusion of questions

- **Make explicit the difference between transition costs** to be included **and those costs that are relatable** to a BZ reconfiguration but should not be included
- System flexibility and prior experience may be a **confounding factor** to transition costs. Information on its existence may inform the robustness checks and method to be used for total cost scaling
- Historic data and explanations such as the effect from lead time may **substantiate the estimation rationale** behind the difference in cost estimates conditional on lead time

## Treatment of answers

- The description of the previous effect of the lead time will be used to **qualitatively substantiate** the difference in cost estimates per lead time and assess the robustness of the estimates in case of a small response rate
- It will be generally assessed, **if companies with experience** in BZ reconfigurations **expect lower costs** than companies without experience. Within the experienced group, this will be further elaborated through a linear relationship between cost estimates and prior costs (conditional on company size). This further helps in **making informed decisions** on the scaling process

## Optional data

1. Have you been affected by a past BZ re-configuration in a way that incurred transition costs?  Yes  No
  - a. If yes, please note the specific re-configuration that affected you:
  - b. If yes, was your main area (the area where you are most active in in terms of generated/ traded/ throughput/ consumed/ overseen volume) of business subject to re-configuration or have you been affected by a re-configuration outside your main area of business?
  - c. If yes, what was the lead-time for this re-configuration and how did the lead-time affect your transition costs?

### Prior Process: Making systems / processes flexible\*\* (such that BZ-change is possible)

FTE (existing staff) [total #]	FTE (new staff) [total #]	Cost per FTE*** [EUR / #]	Other cost (in total during lead time) [EUR]
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# ENTSO-E Mission Statement

## Who we are

ENTSO-E, the European Network of Transmission System Operators for Electricity, is the **association for the cooperation of the European transmission system operators (TSOs)**. The 42 member TSOs, representing 35 countries, are responsible for the secure and coordinated operation of Europe's electricity system, the largest interconnected electrical grid in the world. In addition to its core, historical role in technical cooperation, ENTSO-E is also the common voice of TSOs.

ENTSO-E **brings together the unique expertise of TSOs for the benefit of European citizens** by keeping the lights on, enabling the energy transition, and promoting the completion and optimal functioning of the internal electricity market, including via the fulfilment of the mandates given to ENTSO-E based on EU legislation.

## Our mission

ENTSO-E and its members, as the European TSO community, fulfil a common mission: Ensuring the **security of the interconnected power system in all time frames at pan-European level and the optimal functioning and development of the European interconnected electricity markets**, while enabling the integration of electricity generated from renewable energy sources and of emerging technologies.

## Our vision

ENTSO-E plays a central role in enabling Europe to become the first **climate-neutral continent by 2050** by creating a system that is secure, sustainable and affordable, and that integrates the expected amount of renewable energy, thereby offering an essential contribution to the European Green Deal. This endeavour requires sector integration and close cooperation among all actors.

Europe is moving towards a sustainable, digitalised, integrated and electrified energy system with a combination of centralised and distributed resources. ENTSO-E acts to ensure that this energy system **keeps consumers at its centre** and is operated and developed with **climate objectives** and **social welfare** in mind.

ENTSO-E is committed to use its unique expertise and system-wide view – supported by a responsibility to maintain the system's security – to deliver a comprehensive roadmap of how a climate-neutral Europe looks.

# ENTSO-E Mission Statement

## Our values

ENTSO-E acts in solidarity as a community of TSOs united by a shared responsibility.

As the professional association of independent and neutral regulated entities acting under a clear legal mandate, ENTSO-E serves the interests of society by optimising social welfare in its dimensions of safety, economy, environment, and performance.

ENTSO-E is committed to working with the highest technical rigour as well as developing sustainable and innovative responses to prepare for the future and overcoming the challenges of keeping the power system secure in a climate-neutral Europe. In all its activities, ENTSO-E acts with transparency and in a trustworthy dialogue with legislative and regulatory decision makers and stakeholders.

## Our contributions

ENTSO-E **supports the cooperation** among its members at European and regional levels. Over the past decades, TSOs have undertaken initiatives to increase their cooperation in network planning, operation and market integration, thereby successfully contributing to meeting EU climate and energy targets.

To carry out its **legally mandated tasks**, ENTSO-E's key responsibilities include the following:

- Development and implementation of standards, network codes, platforms and tools to ensure secure system and market operation as well as integration of renewable energy;
- Assessment of the adequacy of the system in different timeframes;
- Coordination of the planning and development of infrastructures at the European level (Ten-Year Network Development Plans, TYNDPs);
- Coordination of research, development and innovation activities of TSOs;
- Development of platforms to enable the transparent sharing of data with market participants.

ENTSO-E supports its members in **the implementation and monitoring** of the agreed common rules.

**ENTSO-E is the common voice of European TSOs** and provides expert contributions and a constructive view to energy debates to support policymakers in making informed decisions.

Our values define who we are, what we stand for and how we behave.  
We all play a part in bringing them to life.



## EXCELLENCE

We deliver to the highest standards.  
We provide an environment in which people can develop to their full potential.



## TRUST

We trust each other, we are transparent and we empower people.  
We respect diversity.



## INTEGRITY

We act in the interest of  
ENTSO-E



## TEAM

We care about people. We work transversal and we support each other.  
We celebrate success.



## FUTURE THINKING

We are a learning organisation.  
We explore new paths and solutions.

**We are ENTSO-E**