CROSS BOrder management of variable renewable energies and storage units enabling a transnational Wholesale market

TECHNICAL AND REGULATORY IMPACT OF CROSSBOW PRODUCTS

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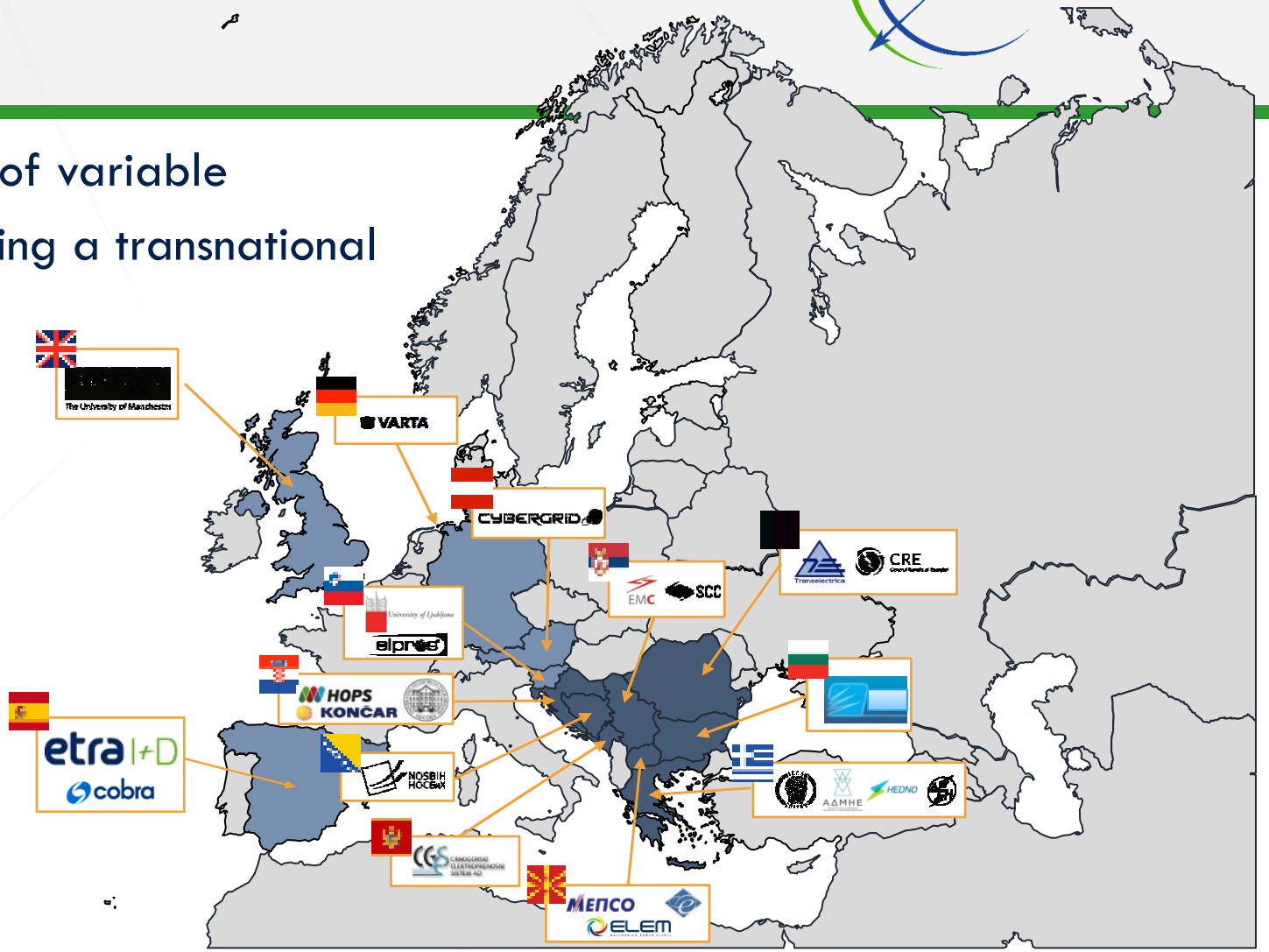
CROSSBOW CONSORTIUM

CROSSBOW - CROSS BOrder management of variable renewable energies and storage units enabling a transnational Wholesale market

- 8 TSO
- 1 DSO
- 1 RSC
- 2 (+1) Large producers
- 5 (+1) Universities
- 6 Industrial partners
- 1 Industrial Association



CROSSBOW Project has recived funding from EU Horizon 2020 reserarch and inovation programme under grant nº 773430
ORIGIANL Slide prepared by: Manuel Serrano Matoses & ANTONIO MARQUÉS, ETRA

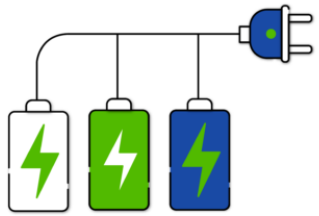
CROSSBOW PRODUCTS

CROSSBOW Regional Operation Centre Balancing Cockpit

CROSSBOW Regional Storage Coordination Centre

CROSSBOW Regional DSM Integration Platform

CROSSBOW RES Regional Coordination Centre



CROSSBOW Virtual Storage Plants

CROSSBOW Wholesale and Ancillary Market toolset

CROSSBOW Hybrid RES Dispatchable Unit

CROSSBOW WAMAS

CROSSBOW Cooperative Ownership of Flexibility Assets Platform

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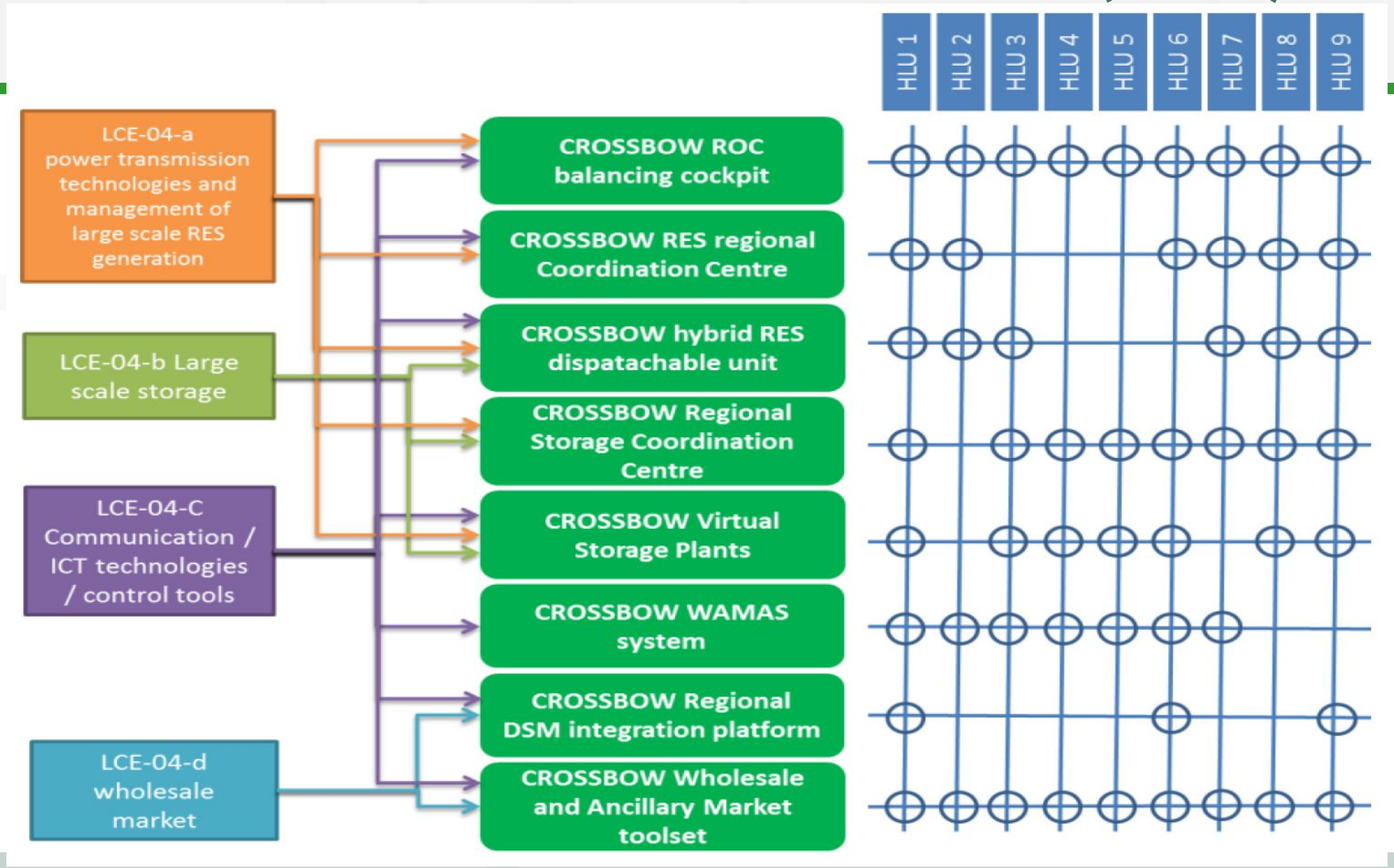
CROSSBOW HIGH LEVEL USE CASES (HLUS)



ELECTRICITY REGULATORY FRAMEWORKS IN THE CROSSBOW REGION

- EU member states
  - Single regulatory system
  - Focus on decarbonisation and a just energy transition
  - Clean Energy Package (CEP)
  - Removing barriers to several enabling technologies
  - Network Codes (NCs)

- Western Balkans countries
  - Contracting Parties to the Energy Community Treaty
  - At different stages of structural reforms
  - Third Energy Package
  - Delayed implementation of NCs

→ Highly fragmented regulatory space

OPPORTUNITIES FOR REGULATORY IMPACT

- CROSSBOW proposes innovative solutions that combine several technologies/concepts, using advanced communication tools and for a cross-border application
- Some barriers to the integration of advanced technologies and concepts removed with CEP, but NCs not aligned yet
- Legislation and electricity markets will change in the near future
  - New NCs and amendments to existing ones
  - No precedent for some concepts

→ Opportunity for CROSSBOW regulatory impact

- How?
  - Addressing barriers to implementation of CROSSBOW High-level Use cases (HLUs)
  - Setting examples for the efficient implementation of innovative solutions and translating these to new regulatory and market frameworks

METHODOLOGY

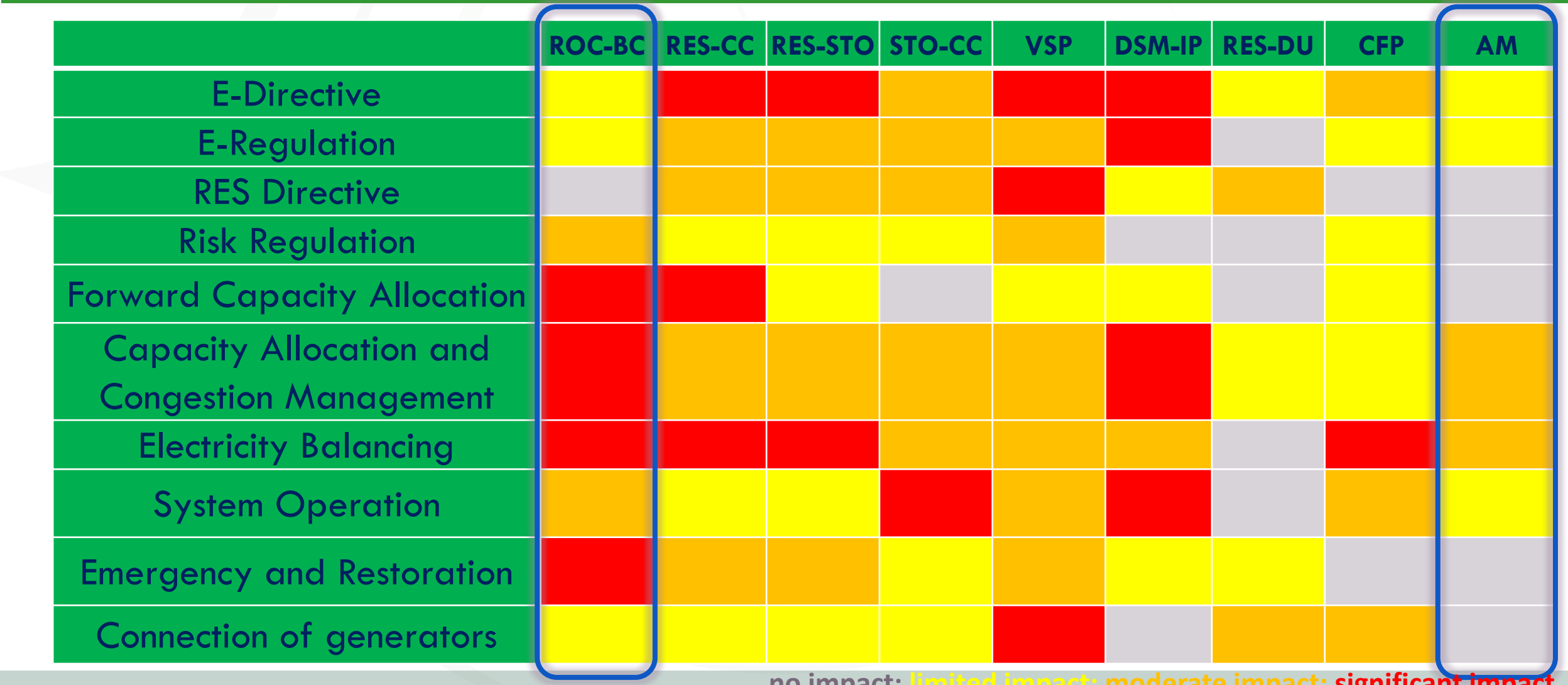
1) Questionnaire adapted to each HLU

- General
  - HLU Novelties
  - Known barriers to the full implementation of the HLU as envisaged
- Impact Score
  - Measure of the extent to which the CROSSBOW HLU could impact each regulation
  - Subjective metric based on expert opinion and supported by calculated KPIs

2) Responses verification and cross-evaluation

- Legislative documents
- Project KPIs
- Moderation

REGULATORY IMPACT RESULTS SUMMARY



no impact; limited impact; moderate impact; significant impact

REGULATORY IMPACT EXAMPLE: **HLU1**

- CEP recognises the value of a more coordinated regional approach to transmission systems operation through Regional Operational Centres (ROCs)
- HLU1 defines and demonstrates new services and functionalities of ROCs by leveraging 8 CROSSBOW products

→ **Addressing regulatory barriers to advanced functionalities of ROCs**

→ **Highlighting areas for improvement in legislation**

- Common methodology for adequacy assessments and steps for responding to extreme weather events → Risk preparedness & ER
- Advanced solutions for capacity allocation, quality assessment of Common Grid Models, and improved method for Preliminary Net Positions estimation → CACM
- Enhanced capacity forecasting method, DLR in day-ahead and intraday coordinated security analyses, co-sizing market mechanism for reserves → SOGL, ER & EBGL

REGULATORY IMPACT EXAMPLE: **HLU9**

- mFRR and ID market platform based on novel solutions and with a cross-border focus
- P2P trading and aggregation enable the market participation of active customers
  - Essential for competitive balancing markets, functional local energy markets, and energy communities
  - TSOs must validate aggregators' ability to provide mFRR services
- HLU9 integrates innovative concepts (blockchain, microservices, APIs)

→ **Providing examples for the drafting of an adequate regulatory framework**

- Compensation mechanism for cross-border power flows, harmonised principles for cross-border transmission charges, and advanced implementation of capacity allocation → CACM & EBGL

→ **The primary challenge would be the harmonization of required NCs**

POLICY FOCUS

1. Harmonising regulatory frameworks and facilitating market coupling
2. Improving measures for mitigating cross-border capacity constraints
3. Developing functional regional wholesale markets
4. Developing functional regional balancing and ancillary services markets
5. System and market integration of flexibility-enabling technologies
6. Enhancing the coordination between TSOs and DSOs
7. Facilitating the creation and market participation of cooperatives
8. Ensuring cybersecurity without deterring the use and efficiency of novel concepts

THANK YOU!

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For more information visit: crossbowproject.eu