Elia Grid International

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EU - India Smart Grids Workshop

Day 2 - Session 2

Isabelle GERKENS, Head Regulatory, Market Design & Contract Management, EGI

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Head Regulatory, Market Design & Contract Management
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Education

- LLM in *Environmental Law*
- LLM in *Public International Law*
- *Law Degree* from the University of Liege, Belgium

Experience

Isabelle has more than 20 years of experience in regulatory and markets aspects of transmission electricity sector. She is leading the consulting department Regulatory, Market Design & Contract Management at EGI, at worldwide level.

Isabelle was a key author of various market concepts embedded in the power market such as drafting and governance of grid codes at transmission and distribution levels, congestion management, balancing and ancillaries services frameworks, third party access to the grid, grid connection and use charges, RES integration, grid planning, etc., having worked for multiple years for a TSO active as transmission system operator and assets owner. She supported the implementation of various European policies aimed at redesigning the European electricity market.

Isabelle participated in the set-up of the Belgian TSO by supporting the unbundling and carve-out process out of the then national vertically integrated utility, and was its first compliance officer. She was in charge of the regulatory set-up of the first power exchange in Belgium.

Isabelle has profound knowledge of all day-to-day topics related to grid issues, at national and regional levels.

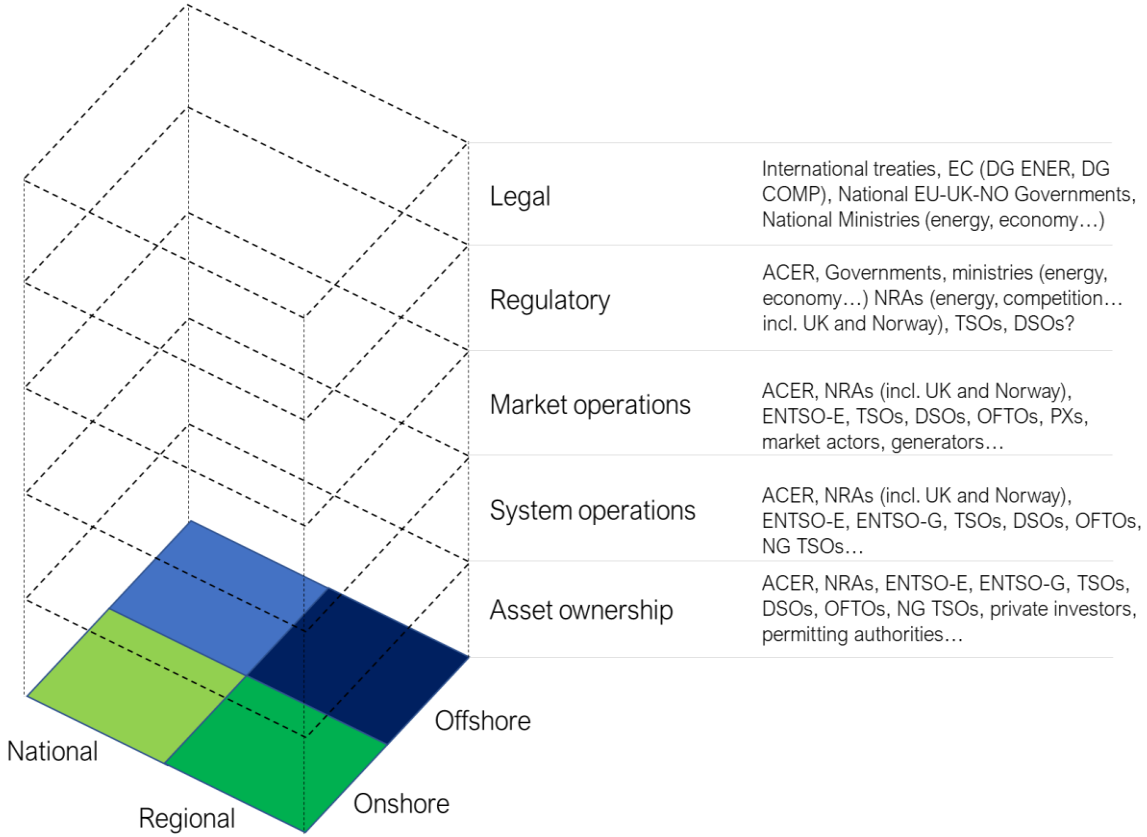
Areas of Expertise

- Market Design (day-ahead wholesale market, ancillaries services, balancing, capacity market, cross-border trade)
- Remuneration scheme (wheeling charges, grid tariffs, incentives schemes
- Contractual management
- Grid codes drafting (national and regional)
- Stakeholders management
- Unbundling process, certification processes
- Compliance Officer and Corporate governance
- RES integration mechanisms and policies
- Policy development & legislation
- Regulatory and market design for offshore and interconnection

Elia’s ‘lessons/experiences’ on offshore developments

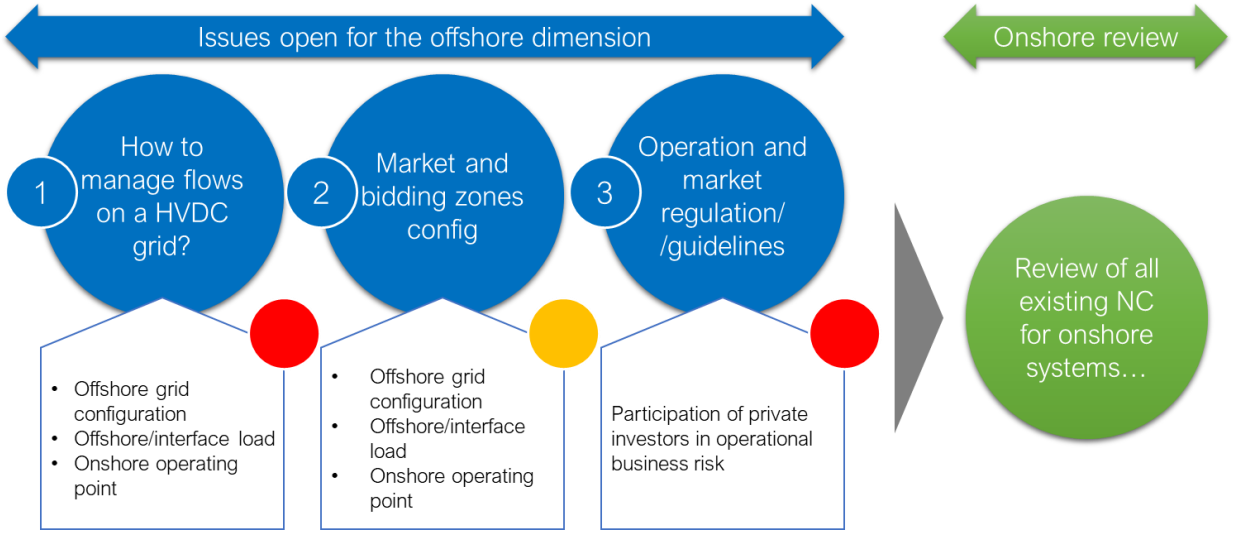
Lessons learned for an offshore grid business model

System operation governance for an offshore grid business model : very complex stakeholders' scenario

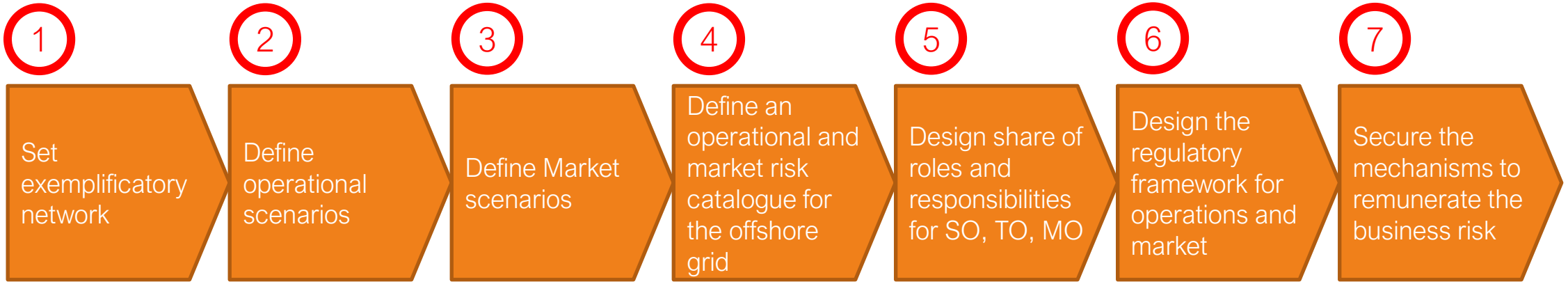


Legal	International treaties, EC (DG ENER, DG COMP), National EU-UK-NO Governments, National Ministries (energy, economy…)
Regulatory	ACER, Governments, ministries (energy, economy…) NRAs (energy, competition… incl. UK and Norway), TSOs, DSOs?
Market operations	ACER, NRAs (incl. UK and Norway), ENTSO-E, TSOs, DSOs, OFTOs, PXs, market actors, generators…
System operations	ACER, NRAs (incl. UK and Norway), ENTSO-E, ENTSO-G, TSOs, DSOs, OFTOs, NG TSOs…
Asset ownership	ACER, NRAs, ENTSO-E, ENTSO-G, TSOs, DSOs, OFTOs, NG TSOs, private investors, permitting authorities…

Design of the offshore grid business model: 3 main domains must be still (partly or totally) investigated



Possible path for the definition of operational and market governance of offshore wind development



A snapshot in time

Support the identification of all elements to be investigated

Sub-scenarios with different organization of the incentive schemes needed

(Impact on further systems)

Market based management of the available capacities

Determine the balancing volumes required

Supports the definition of timing for O&M and dispatching plans/shot term grid planning

(Coordination with onshore systems)

Set the basis for decisional structure, responsibilities, culture and skills, asset management

Legal and regulatory review

(Prepare the revision of existing technical codes structure)

Review the remuneration principles and CAPM

Elia’s ‘lessons/experiences’ on grid interconnections

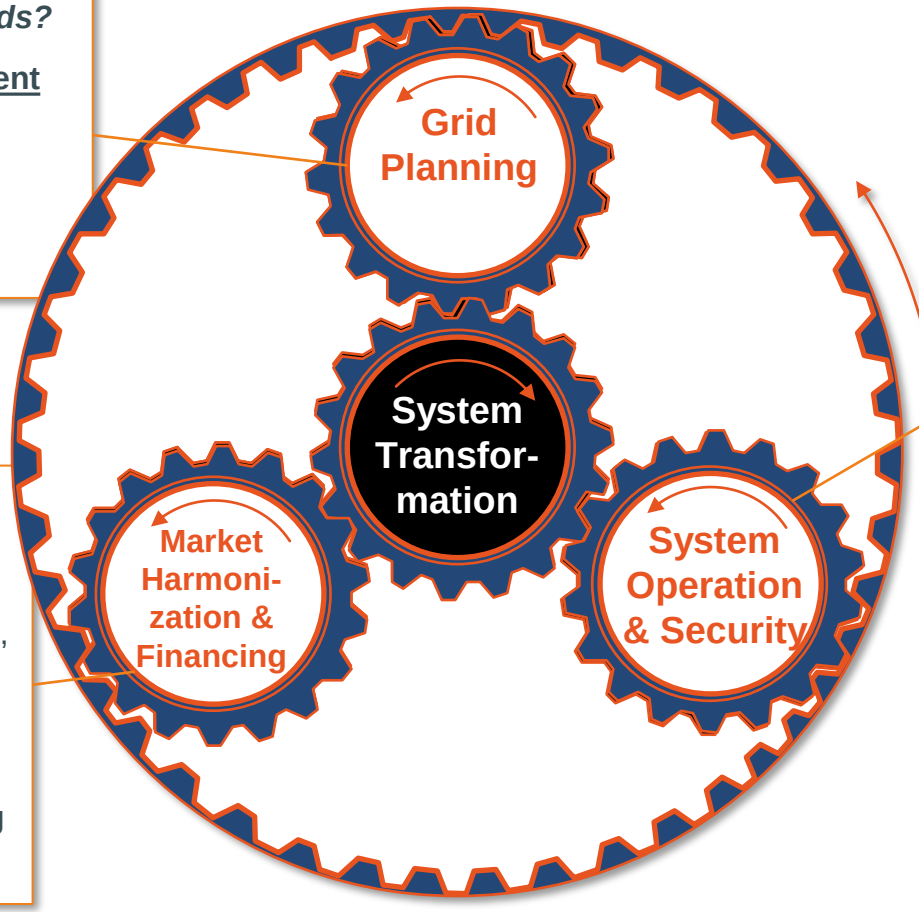
Energy Transition calls for a radical system transformation for interconnections: The technical implementation should manage challenges on three main pillars

How to enable the optimal evolution of regional grids?

Focus on robust planning of **infrastructure development** to facilitate RES uptake. Need to manage increased uncertainties as RES and regionalization become main drivers for grid development.

How to finance infrastructure and enable systems to "talk" to each other?

Focus on the way to ensure **financing** of infrastructure, to create a common **regulatory framework** and **support market mechanism** with increased RES shares. Increased capital intensity calls for new funding mechanisms.



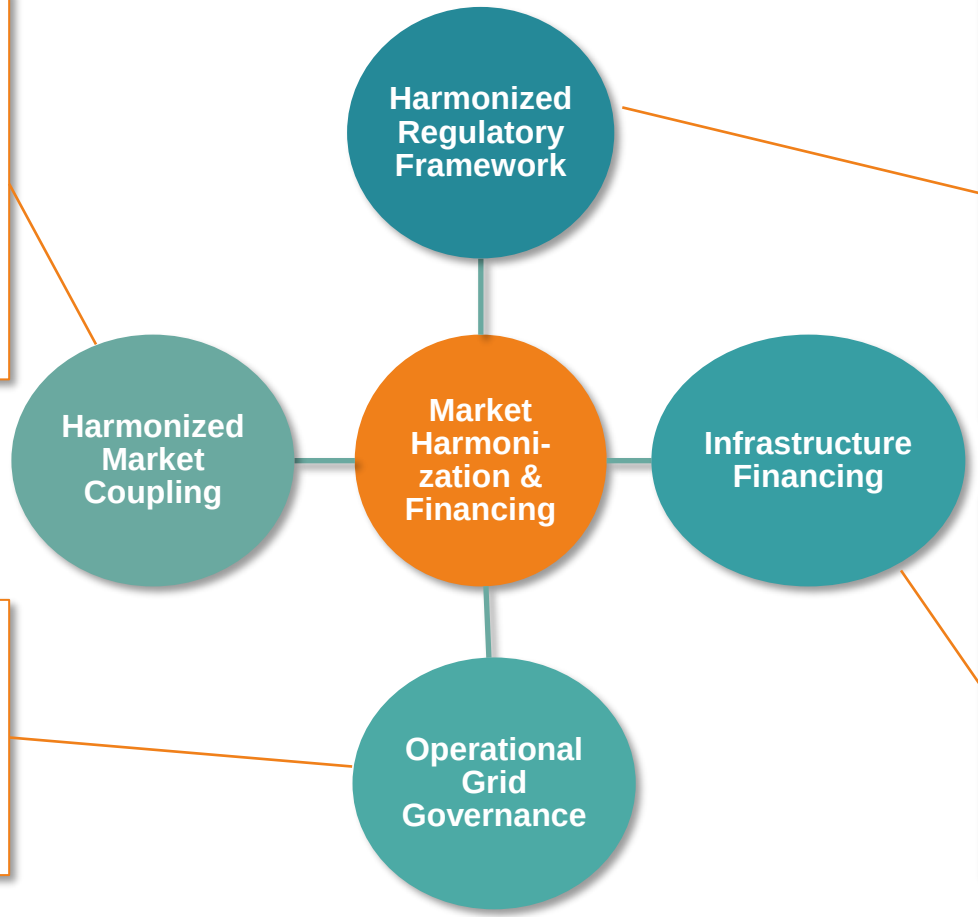
How to ensure operational security and enable operational collaboration?

Radical change of the power system operational framework to **integrate variable renewables and distributed generation** and to allow cross-border exchange of energy and reserves.

To benefit from a coupled electricity market and use interconnections to their maximum, India must develop its global regulatory and technical framework, and optimize financing solutions of its infrastructure

Enhanced **trade cooperation** across region can bring substantial cost savings and emission reductions by sharing flexibility resources more widely. The corresponding **day-ahead market** should be **developed step by step**, based on a detailed roadmap

Develop an **integrated approach on grid governance** to cope, at each TSO, with the entire set of **new challenges at operation and management levels**.

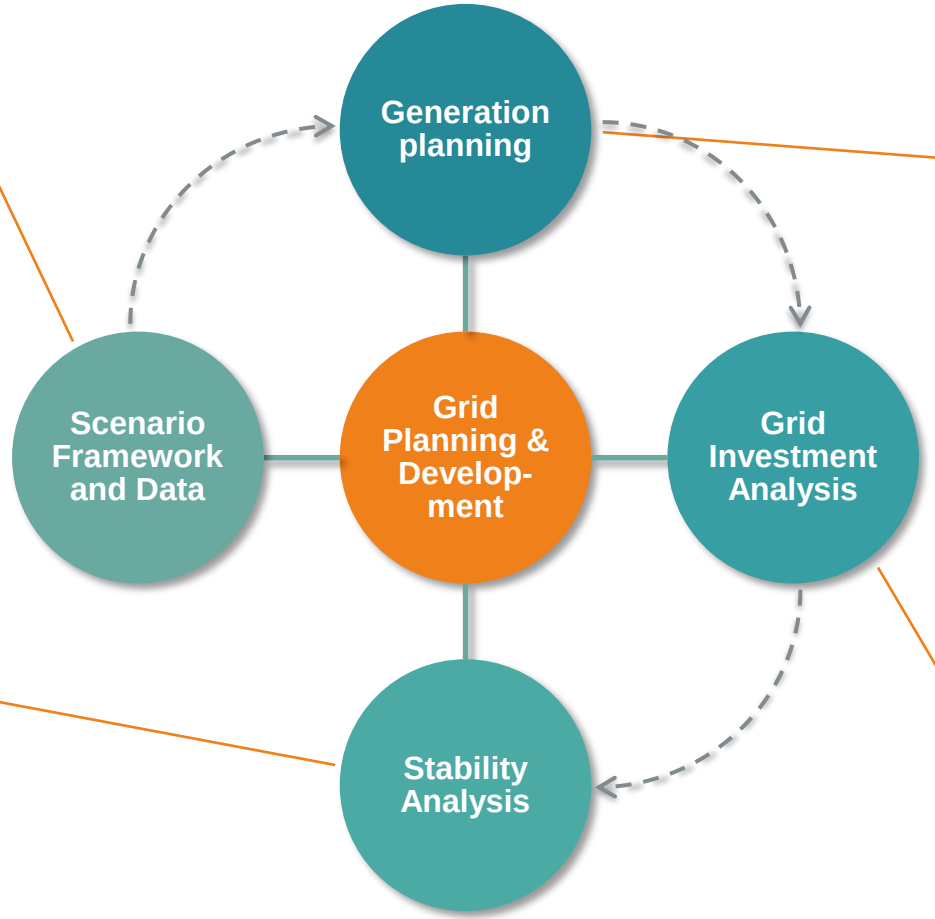


Boost **harmonization of regulatory framework at regional level** and at States members' level. **Reduce the discrepancy** generated by the multiple regulatory models and rules. **Harmonize technical regulation** (adjust national and regional Grid Codes and market rules).

Identify the **optimal grid investment candidates** and support them with **most viable financing/business models solutions**, to ensure optimal decision making (easy to forecast and stable revenues streams to attract investors).

New grid planning paradigm for robust decision making and optimal infrastructure development

Develop **framework and datasets to ensure optimal decision making under increased uncertainty**, based on scenarios that map the different future developments, considering all possible trends and uncertainties.



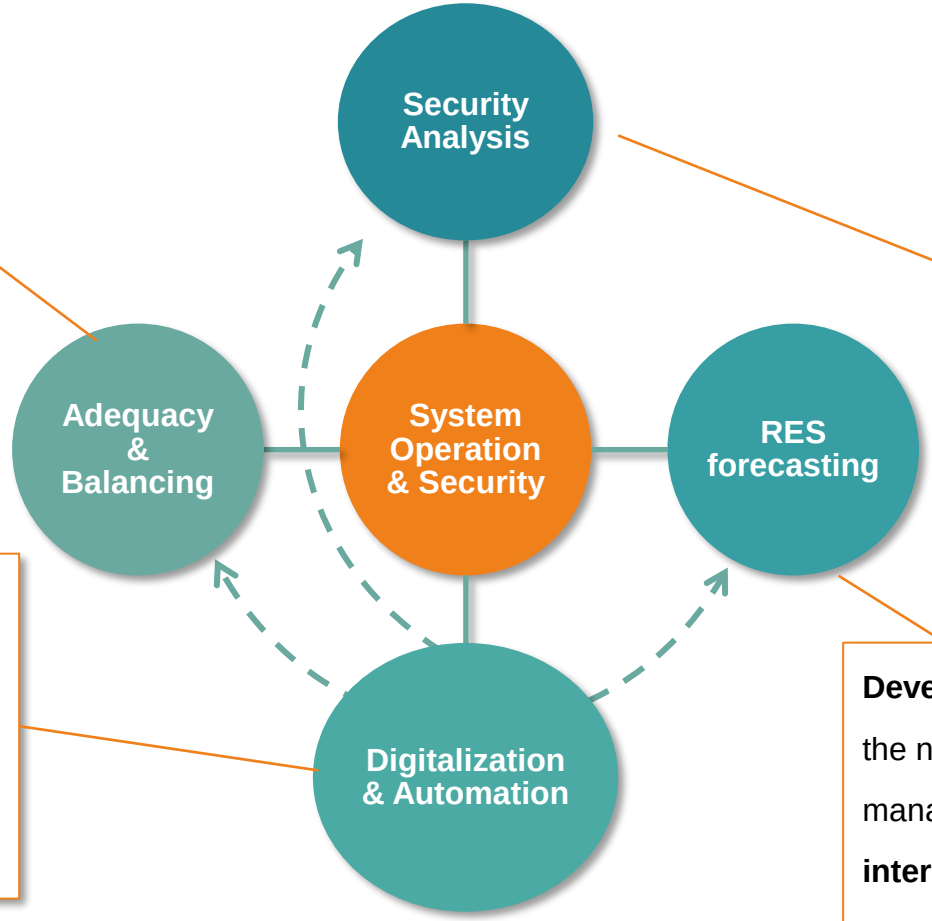
Map system benefits from RES integration, assess **operation of the generation fleet** with RES and increased interconnection, detect **generation adequacy and flexibility** issues and propose solutions.

Check the technical viability of proposed solutions in terms of system stability. Ensure that system security is not endangered with increased RES shares and adopt grid technologies that cover needed system services

Assess the optimal grid investment candidates on a CBA framework, taking into account future framework uncertainties. Increased data analytics requirements and integration of different tools to map variability.

Radical change of system operations to adapt to variable renewables: rolling planning, high data intensity and operational complexity

Redefine the methodologies & tools of **short-term adequacy planning** and **balancing reserve dimensioning** considering the vRES fluctuation. **Probabilistic approach** are key to cope with the higher uncertainty.



Improve the existing **short-term congestion management** practice with a high level of **cross-border coordination and automation** to deal with the increased exchanges between control zones and enable **more regional security assessment e.g. for outage planning and capacity calculation**. Develop new expertise tools and methodologies to manage **stability phenomena** due to **increased loading of the transmission system and lower system inertia.**

Implement new RES-driven and conforming processes enhancing **regional coordination with neighbor TSOs and with DSOs**, **highly automated tools** and **standardized interfaces / data management** between the tools.

Develop forecasting systems for vRES that can cover the need for the system operation, e.g. for congestion management with RES. Define an **approach to internalized/outsourced** process streams, and responsibilities. Keep on **monitoring and enhancing** the process as the RES penetration increases.

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