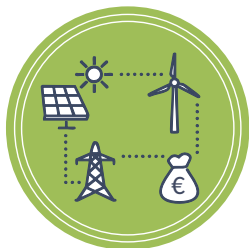


Empowering *grids* from Planning to Practice

STRENGTHENING TSO-DSO COLLABORATION FOR A FLEXIBLE AND RELIABLE ENERGY SYSTEM

Why TSO-DSO Collaboration Matters



As Europe's energy system becomes increasingly decentralised and complex, coordination between Transmission System Operators (TSOs) and Distribution System Operators (DSOs) is no longer optional – it is essential.

Joint planning and operation enable the system to:

- Integrate renewables efficiently
- Optimise existing infrastructure
- Ensure reliability while keeping costs down

The next decade will test how Europe aligns planning across voltage levels through EU-wide planning processes – including the **Ten-Year Network Development Plan (TYNDP)**, **Flexibility Needs Assessments (FNAs)**, and **European Resource Adequacy Assessment (ERAA)**.

From *coordination* to *co-planning*

System optimisation requires TSOs and DSOs to move from simply exchanging data to making decisions together. Integrated planning enables grid operators to:

- Use available resources in an optimal/efficient way
- Anticipate future capacity and flexibility needs
- Avoid investment duplication and unlock cross-level efficiencies
- Strengthen national plans and EU alignment



Expert Insights¹

Sharing data is not enough – avoiding only “theoretical” coordination, needs data for grid operators across voltage levels that fits into real operational systems.

Coordination relies not only on tools, but also on culture and processes.

Aligned, iterative processes across TYNDP, ERAA, FNAs and national studies are needed instead of parallel modelling and planning.

Where TSOs and DSOs share a common operational platform, flexibility can be dispatched in a way that avoids cross-level conflicts.



Operational Collaboration Enables *flexibility*

Coordination at the operational level strengthens grid stability and allows the system to make full use of distributed flexibility resources, such as:



Demand response

Consumer shifting/reducing electricity use to avoid peaks, congestion, needing backup generation



Storage

Batteries et.al. store electricity when surplus and release when demand rises/renewable output drops



Distributed generation

Small-scale renewables adjusting output to support local balancing

Flexible coordination can balance supply and demand locally and system-wide, prevent congestion, and reduce curtailment.



Flexibility

The Flexibility Needs Assessments (FNAs) are the EU-mandated process requiring TSOs and DSOs to jointly identify national flexibility gaps. **This provides a concrete opportunity to test and scale collaborative planning in practice.**

FNAs should reconcile system needs with network needs (to ensure flexibility isn't double-counted or local bottlenecks are missed entirely)

¹Based on RGI's Expert Workshops "Empowering Grids from Planning to Practice" Day 1, held on 19. November 2025.

good practices

from Pilots to Praxis

Across Europe, there are pioneering practices of TSO-DSO collaboration:

TenneT (NL): mature example of TSO-DSO co-planning (not just coordination), in the context of joint scenario building

RTE (FR): regional coordination to enhance visibility of connection capacity

Fingrid (FI): demonstrates how shared congestion signals and transparent operational limits can activate DSO-level flexibility reliably

50Hertz (DE): reactive power coordination framework shows benefits of a TSO's access to DSO flexibility potential in real time

Elia (BE): Elia's integrated flexibility platforms show how market signals and grid needs can converge for mature joint adequacy and flexibility planning

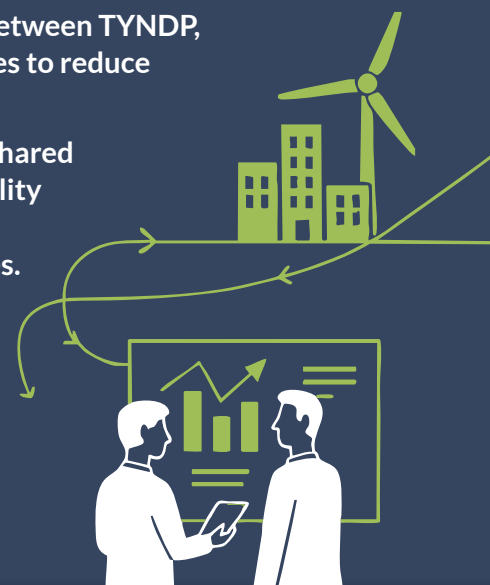


recommendations from the Expert Dialogue²



- Clarify and streamline governance frameworks to support effective TSO-DSO coordination.
- Advance data interoperability and align modelling assumptions across system levels.
- Strengthen joint and transparent stakeholder engagement in planning processes.

- Improve coordination between TYNDP, ERAA and FNA processes to reduce inconsistencies.
- Use the FNA to build a shared understanding of flexibility needs, complementing other planning processes.
- FNA alone cannot deliver coordination, but it can enable it, if embedded in a broader planning chain.



² Based on RGI's Expert Workshops "Empowering Grids from Planning to Practice" Day 2, held on 20. November 2025.

