

TSO INNOVATION ALLIANCE

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Why innovation is crucial for TSOs

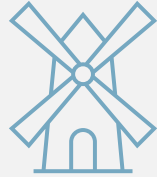
Innovation is crucial for TSOs to lead the energy transition by ensuring system resilience, efficiency, flexibility, and societal acceptance in a rapidly evolving geopolitical, technological, and regulatory landscape.



Strategic Framing

Innovation as a geopolitical and economic Imperative

- Safeguarding Europe's competitiveness and autonomy
- Driving strategic resilience and shaping global leadership
- Powering electrification – TSOs as enablers of innovation and growth



System Transformation

Adapting to the future of energy

- Adapting to a fundamentally different system
- Time is of the essence
- Keeping the system affordable – utilizing the grid better
- Maintaining system security
- Fostering regulatory and legislative innovation



Operational Excellence

Innovating how we plan, operate, and maintain

- Improving operational efficiency
- Accelerating grid deployment
- Enhancing cross-border system integration
- Protecting critical infrastructure – strengthening physical security
- Ensuring cybersecurity in a digitalized energy system



Enabling Flexibility

Participation and new roles

- Integrating distributed flexibility – digitalizing the sector
- Unlocking new business models and system services
- Integrating energy-intensive emerging sectors like data centers



Scaling Up

Capacity, skills, and societal acceptance

- Future-proofing skills and workforce
- Strengthening social acceptance and environmental sustainability
- Enabling scale through standardization and interoperability

TSO Innovation Alliance

Why the TSO Innovation Alliance exists

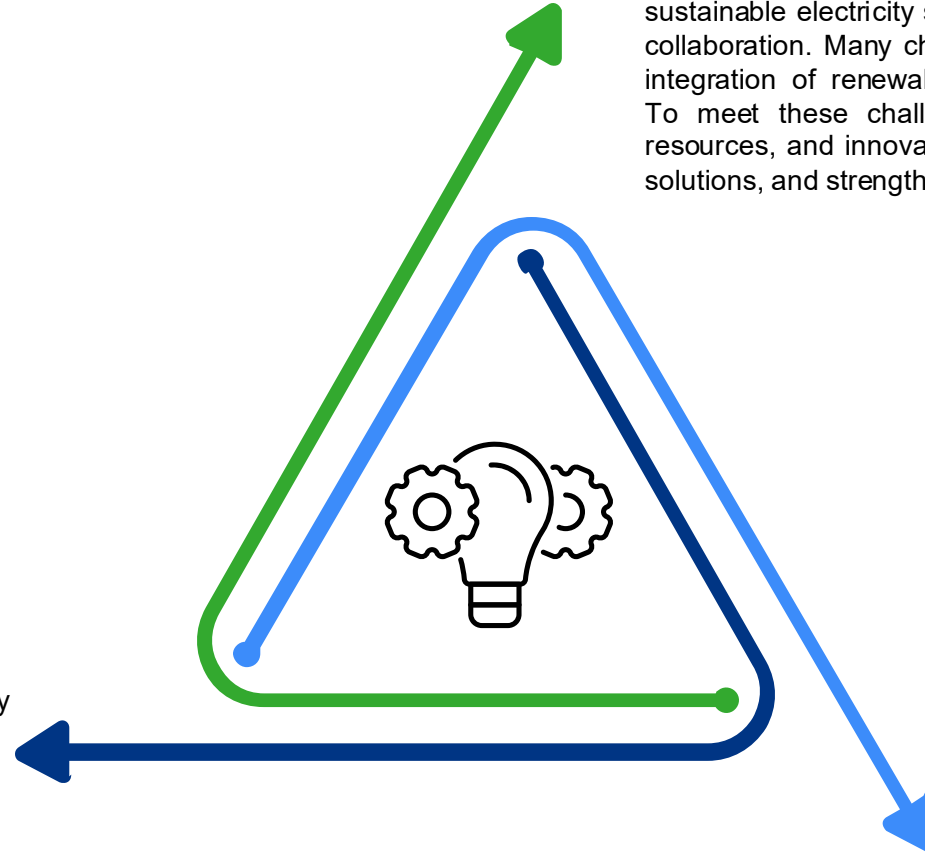
Europe's energy transition is accelerating, bringing unprecedented challenges for Transmission System Operators (TSOs). Ensuring a stable, reliable, and sustainable electricity supply requires not only national action, but also European collaboration. Many challenges, from grid resilience to weather impacts and the integration of renewables, cross both technical and geographical boundaries. To meet these challenges effectively, TSOs must combine their expertise, resources, and innovation efforts. By joining forces, they can move faster, scale solutions, and strengthen the resilience of Europe's electricity grid.

How the Alliance will make it happen

The Alliance operates through structured yet agile collaboration across several key dimensions:

- **Strategic Topic Alignment** – jointly define and prioritise high-impact innovation topics.
- **Facilitation & Execution** – organise efficiently while keeping an execution-driven mindset.
- **Scouting & Selection** – identify and evaluate technology providers to tackle shared challenges.
- **Joint Project Coordination (PMO)** – coordinate Proofs of Concept (PoCs) and scale successful solutions.
- **Project Management** – monitor progress and transparently share outcomes and insights.
- **Communication** – deliver clear and aligned messages to internal and external stakeholders.

Through this open, hands-on approach, the TSO Innovation Alliance fosters rapid testing, shared learning, and cross-border collaboration, accelerating innovation that strengthens Europe's power grid for the future.



What the Alliance aims to achieve

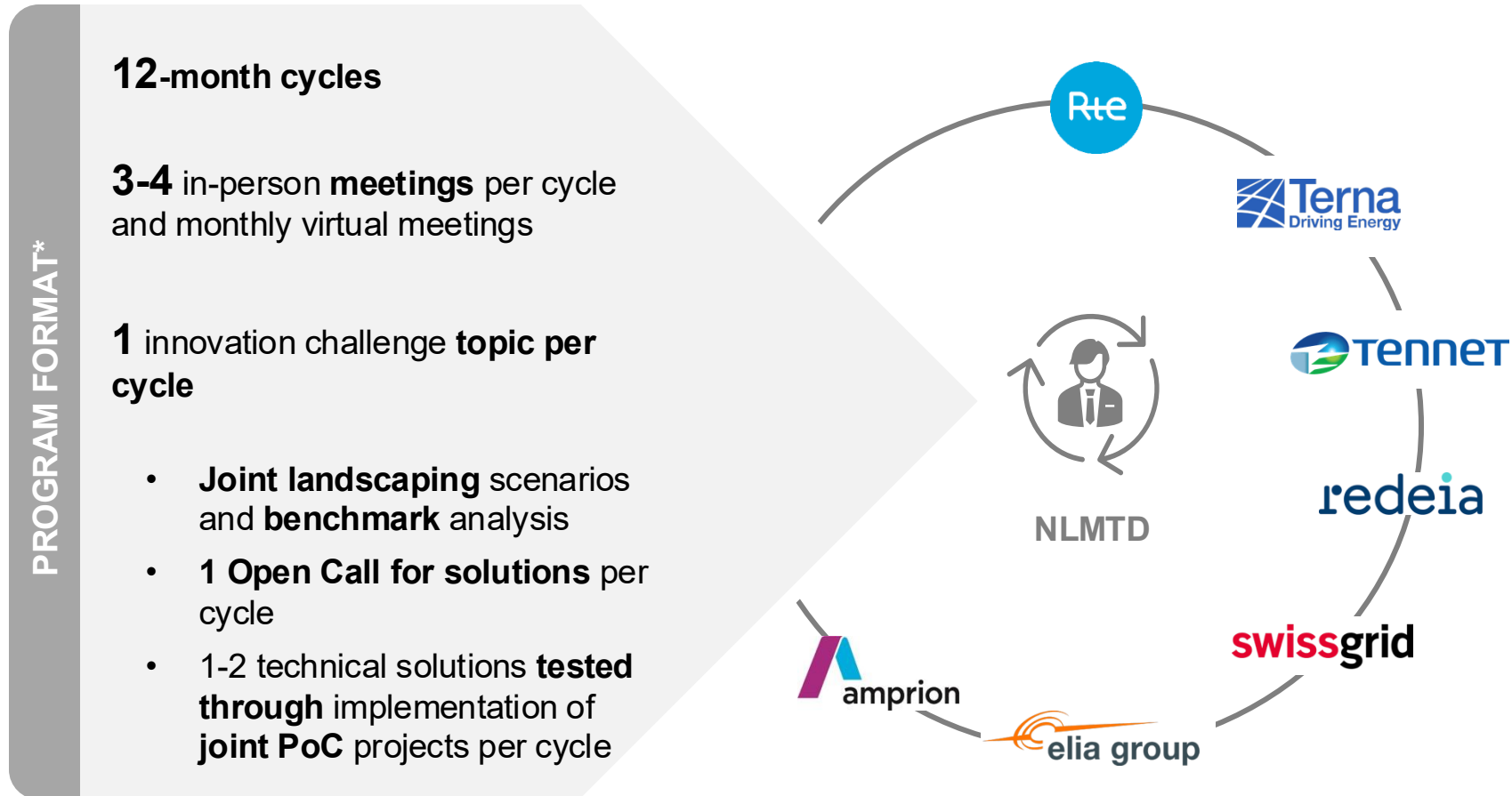
The **TSO Innovation Alliance** is a collaborative initiative among leading European TSOs, created to jointly develop and implement innovative solutions that:

- Enhance **grid flexibility** and **cross-border capacity**;
- Support the **energy transition** by integrating more renewable energy sources;
- Improve **weather and grid resilience** through shared tools, frameworks, and joint pilots;
- Enable **scalable innovation** by sharing lessons learned, technologies, and best practices.

Through joint exploration and execution, the Alliance seeks to close the gap between individual innovation efforts and collective European progress.

Program, activities and resources

The program encompasses a range of activities, including **exploring, comparing, and testing innovative technologies** to address and overcome key innovation challenges faced by TSOs. The **TSO Innovation Alliance** will concentrate on the **technical and implementation aspects**. To support and **facilitate** the program's execution, an **external provider** will be selected.



2025 The Two Key Challenges

Extreme-Weather Forecasting and Decision Support for Control Rooms

Innovative tools that provide early warnings, impact assessments, and actionable recommendations to help grid operators anticipate and respond to extreme weather events — from month-ahead planning to real-time operations.

Climate-Proof Network Planning and Investment

Advanced models, risk maps, and decision-support methods that integrate climate data into long-term grid planning, helping TSOs make resilient and cost-efficient investment choices for the decades ahead.



[Open call: Building a Climate-Resilient Power Grid \(Pages\) - Rethinking Energy](#)

