

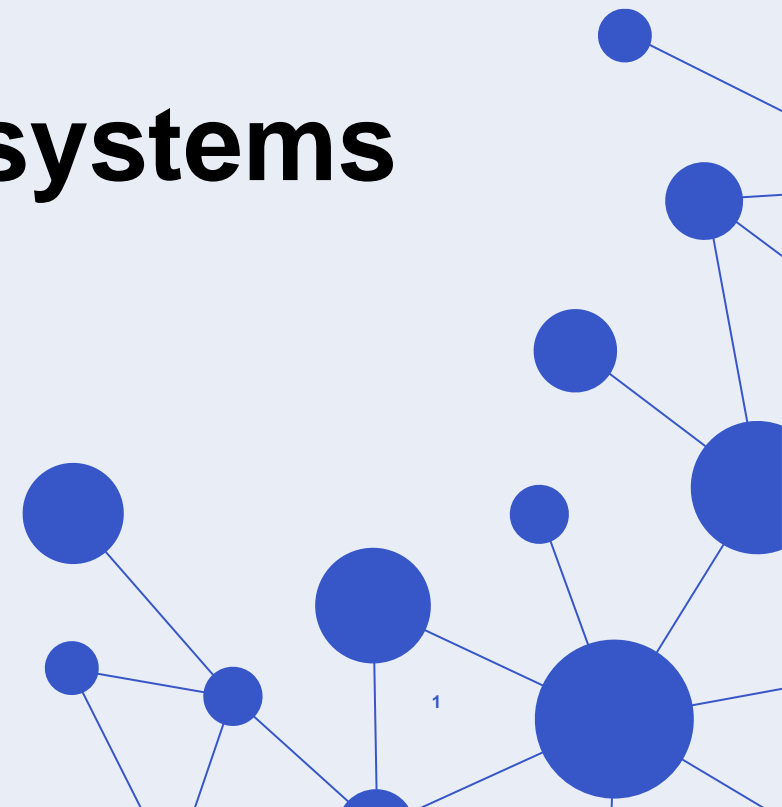
ISGAN Working Group 6

Transmission and distribution systems

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ISGAN Working Group 6

The power grid is an enabler for energy efficiency and a sustainable energy system, but a holistic approach is needed.

→ WG 6 focuses on the potential system-related challenges in the development of future smarter grids by:

- Improving the understanding of Smart Grid technologies + accelerating their deployment
- Promoting solutions that enable power grids to maintain and improve the security, reliability and quality of electric power supply
- Promoting adoption of related enabling regulatory and government policies

→ Goal: facilitate the application of advanced technologies needed for power grids to contribute to the attainment of clean energy and climate goals and sustainable energy access to all.



WG6 main themes

System operation and security

To assess available methods and identify new needs for operational monitoring & control

Flexibility for resilience

Greater resilience to climate change impact, cyber attacks, ... and **critical delivery chains** is essential.

A system becomes resilient from proper risk-management practices but many risks cannot be solved only by extra assets.

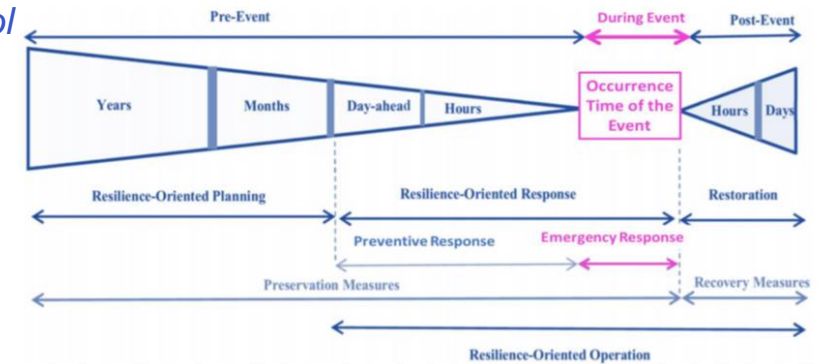
→ system planning must embrace a wide range of network and non-network options.

→ grids need to be flexible and resilient **by design**.

Flexibility resources can also facilitate resilience in operational time frame

→ importance of **TSO-DSO-stakeholder** interaction.

Appropriate **assessment** of resilience level leads to effective strategies.



Key policy messages

Flexibility can support power grid resilience through support for system operation, grid planning and risk management.

Economic values of large scale flexibility solutions motivates resilience-enhancing investments.

WG6 main themes

TSO-DSO-stakeholder interaction

Study how distribution and transmission networks could interact in the future to ensure stable grid operation under high levels of RES.

Stakeholders are important in grid support

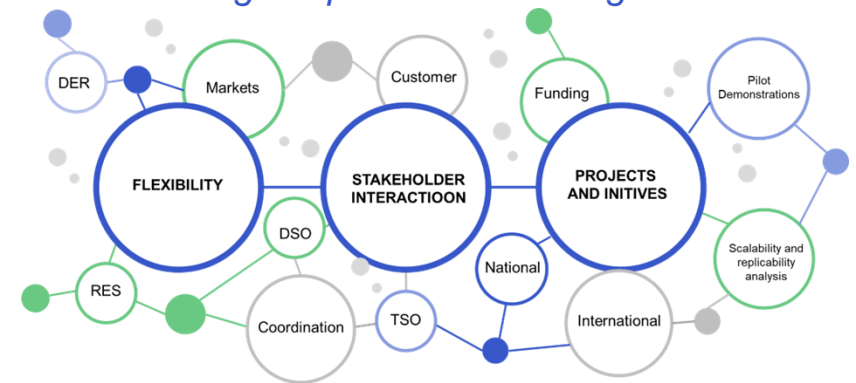
- Digitally-enabled grid benefit potential from promising DER technologies.
- Local energy communities also play an important role in the future.
- Industrial and commercial users are important flexibility providers.
- Aggregator role in facilitating relevant services → need for assistive tools & solutions.

Need for coordinated TSO-DSO markets for the provision of System Services

Large-scale TSO-DSO-Consumer demonstrations have been tested.

→ barriers still exist: regulatory, market, technological and social

→ need for consolidation of project results and support of knowledge transfer.



Key policy messages

Regulatory provisions are needed on the national level to facilitate market implementation of innovative network services support replication / upscaling.

TSO-DSO coordination is a key enabler to create financial gains for all stakeholders through value stacking, without jeopardizing grid stability.

WG6 main themes

Expansion planning and market analysis

Study the functioning of electricity markets and analyse the evolution of the T&D networks and their planning modalities.

Grid planning under uncertainty, with new tools and methodologies

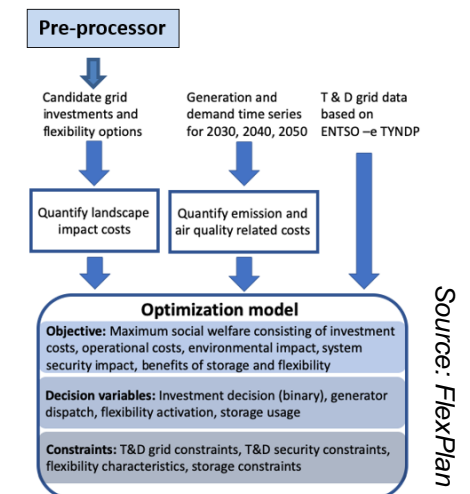
- Planning processes are complex and involve interaction between a large number of stakeholders at different levels.
- In light of the urgency of the energy transition it is critical that these processes are efficient, transparent, legitimate, and based on sound principles and steering mechanisms.
- Further integration of RES requires maximizing flexibility and adaptation of tools and methods.

Coupling of systems

- Co-optimization of electricity, gas and heat.

Coordinated markets for the provision of system services

- Improve incentives for system operators to establish flexibility markets.
- Expand market access and flexibility service provider engagement.



Key policy messages

To enable the potential of flexibility, planning processes should be optimized, coordinated with storage and RES deployment, consider real-time market architectures and products, and engage multiple stakeholders.

Thank you

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