Session 1 - Leveraging Interconnections for a Sustainable Energy Transition in the Mediterranean

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Reliable Sustainable Connected

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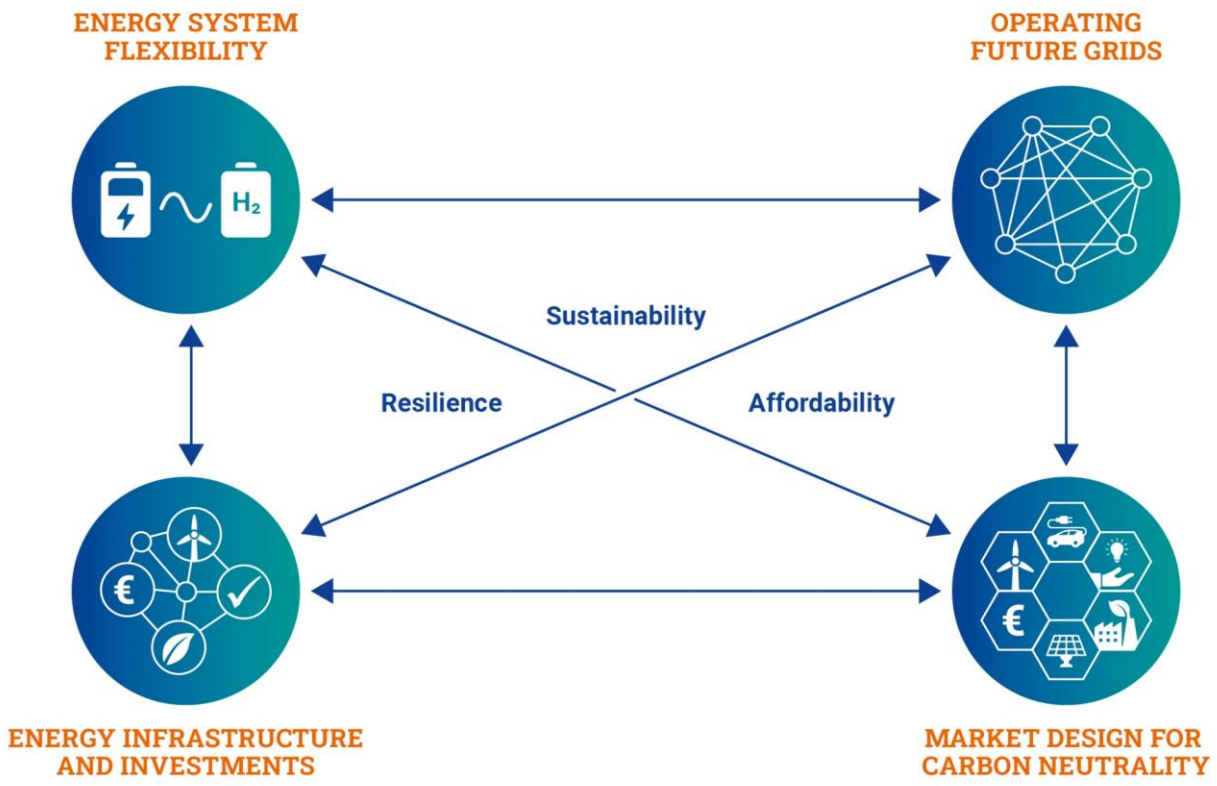
ENTSO-E: 39 TSOs operating one of the world's largest interconnected grids

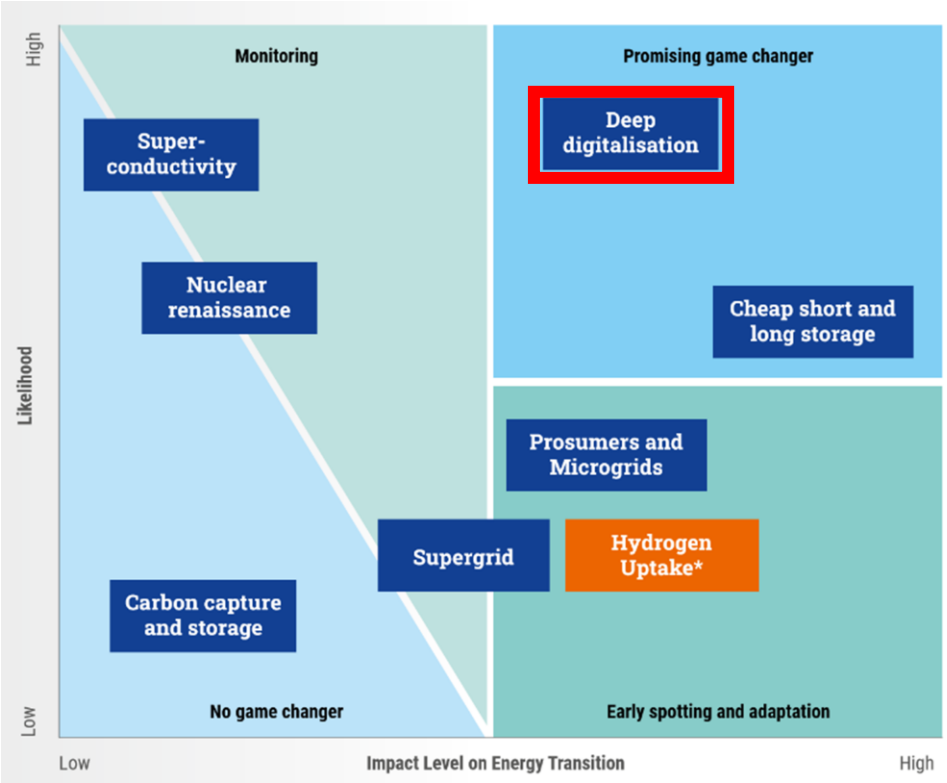
ENTSO-E is the association for the cooperation of the European transmission system operators (TSOs)

Enabling a secure and sustainable **European energy transition** through:

- European long-term grid planning
- European security analysis
- Technical/market rules
- European platforms
- Standardisation & research
- Regional cooperation

ENTSO-E Vision: a Power System for a Carbon Neutral Europe
4 Key "Building Blocks" + Game changers





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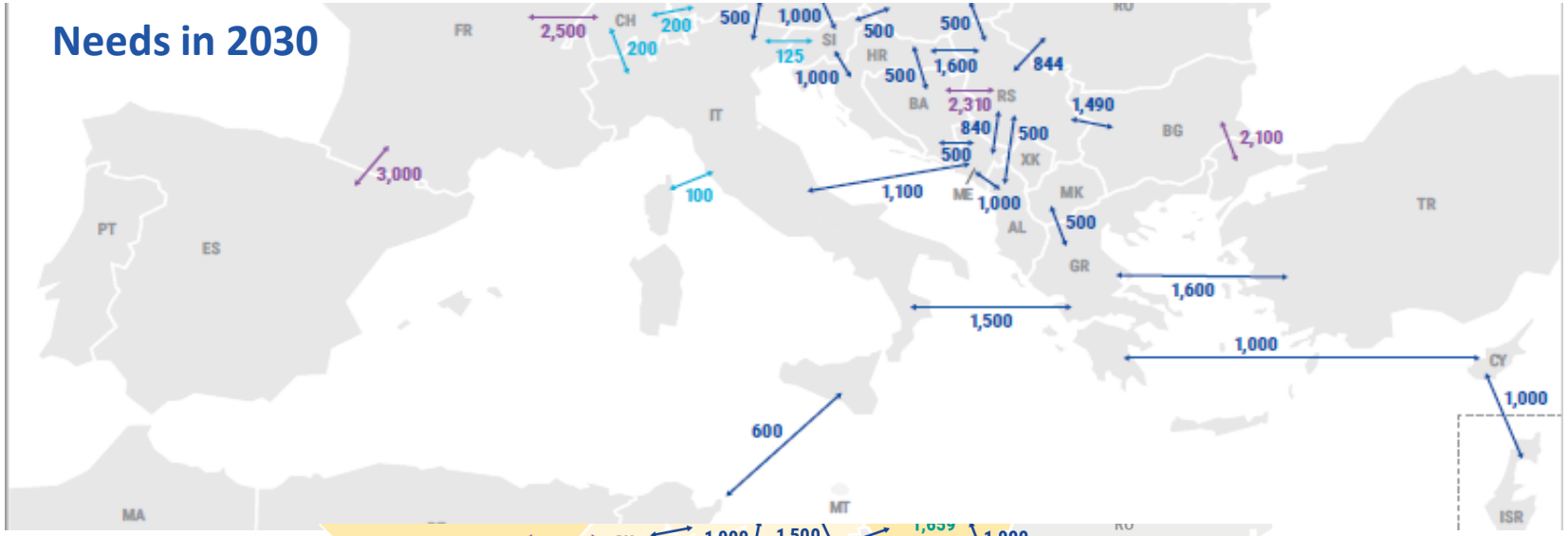
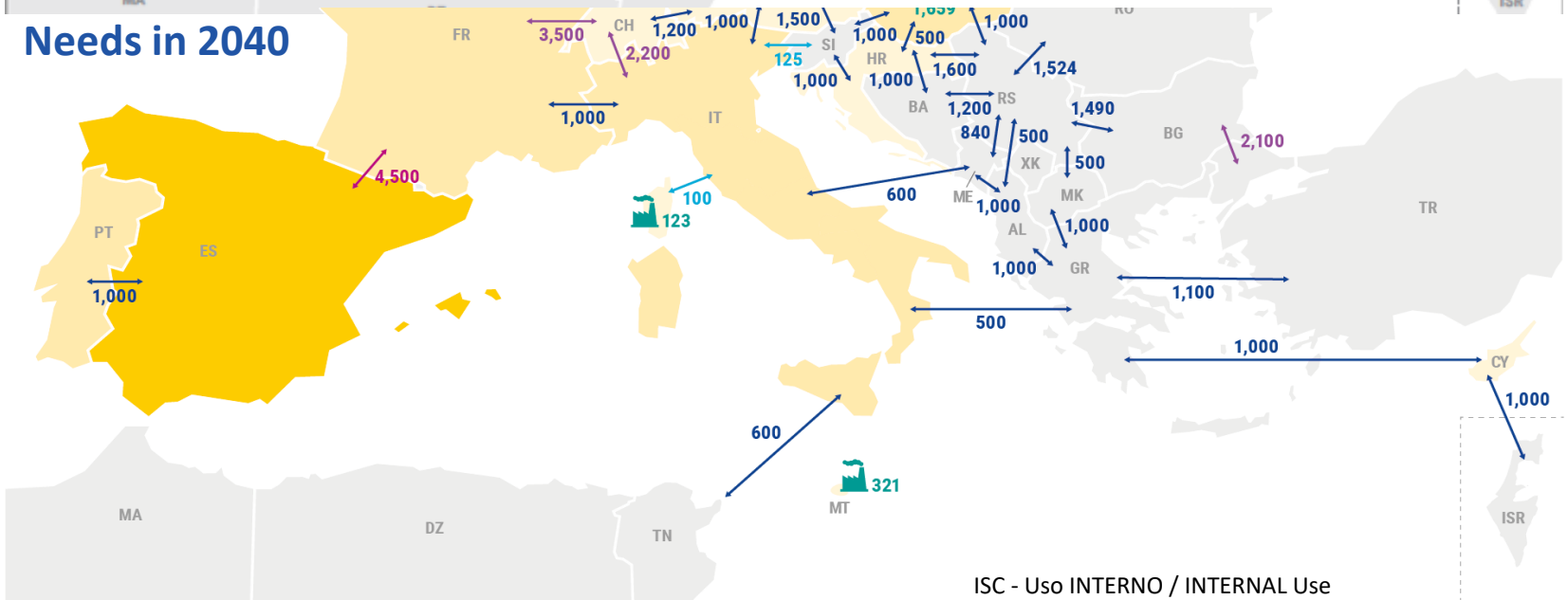
TYNDP2022 highlights socio-economic benefit of investing in cross-border grids around the Mediterranean Sea





TYNDP 2022 System needs study

CROSS-BORDER CAPACITY INCREASES NEEDS IN MW (ADDITIONAL TO THE STARTING GRID 2025)

- < 500 MW
- 500 → 2,000 MW
- 2,000 → 4,000 MW
- > 4,000 MW

STORAGE NEEDS IN MW (ADDITIONAL TO BATTERY CAPACITIES IN NT2030 AND TO 2040 CAPACITIES FOR OTHER STORAGE TECHNOLOGIES)

- < 1,000 MW
- 1,000 → 5,000 MW
- 5,000 → 10,000 MW
- > 10,000 MW

CO_2-FREE PEAKING UNIT NEEDS PER COUNTRY IN MW

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The Process behind the ‘Ten Year Network Development Plan’ at ENTSO-E

Process of European Projects of Common & Mutual Interest led by the European Commission

Scenarios
as a set of plausible future pathways

Project collection
and identification

EU Projects of Common and Mutual interest

Scenario → Needs → Collection → Cost Benefit → Selection

Identification of the needs
based on our scenarios

Cost benefits
analysis of projects

IOSN

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Reinforcing cooperation between ENTSO-E and MedTSO

2017

Cooperation agreement

Mutual data sharing on long-term scenarios and grid maps

2021

Renewed MoU

TODAY

Exchanges on methodologies and best practices

Collaboration on infrastructure planning and adequacy

IN FUTURE

Towards shared use of tools and platforms.
Further joint studies

Our values define who we are, what we stand for and how we behave.
We all play a part in bringing them to life.

EXCELLENCE

We deliver to the highest standardss. We provide an environment in which people can develop to their full potential.

TRUST

We trust each other, we are transparent and we empower people. We respect diversity.

INTEGRITY

We act in the interest of ENTSO-E

TEAM

We care about people. We work transversal and we support each other. We celebrate success.

FUTURE THINKING

We are a learning organisation. We explore new paths and solutions.

We are ENTSO-E

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Back-up

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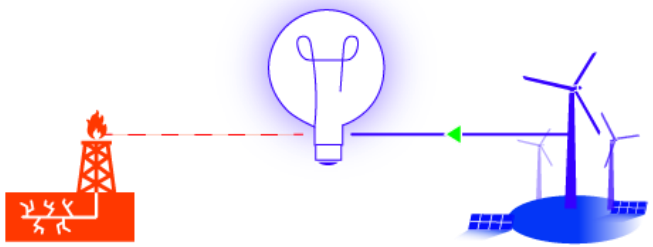
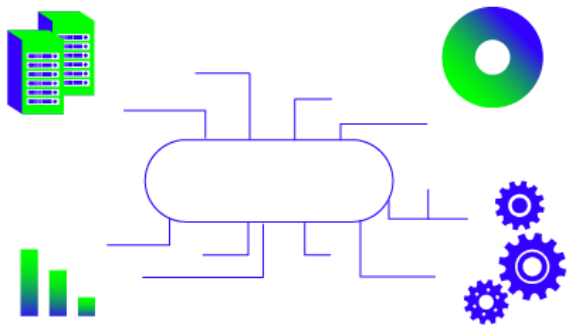
Three key findings of TYNDP 2022

1. Opportunities for improving the power system exist all over Europe.

2. Addressing system needs reduces Europe's dependance on gas-based power generation



3. Coordinated planning will be needed across sectors.



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Key takeaways

Benefits for Europe

What would happen in 2040 if…

We stopped investing in the power system in 2025?

- EU Energy bill rising to **132 Billion euro per year**
- System **instability** and risk of **blackout**
- **78 TWh of renewable energy curtailed each year**
- **Dependence on gas with 366 TWh** of gas-based power generation per year
- **Grid not sufficient** → Leads to no decarbonisation

What would happen in 2040 if…

We addressed system needs?

- Investing 6 Billion euro per year cuts generation costs by 9 Billion each year
- **Ensuring stability** and security of electricity supply in Europe, with 1.6 TWh of avoided energy-not-served
- **Avoiding the curtailment of 42TWh** of renewable energy each year
- Gas-based power generation is **reduced by 75TWh per year**
- **Grid facilitating the development of renewables**
  → CO2 emissions cut by 31Mton per year

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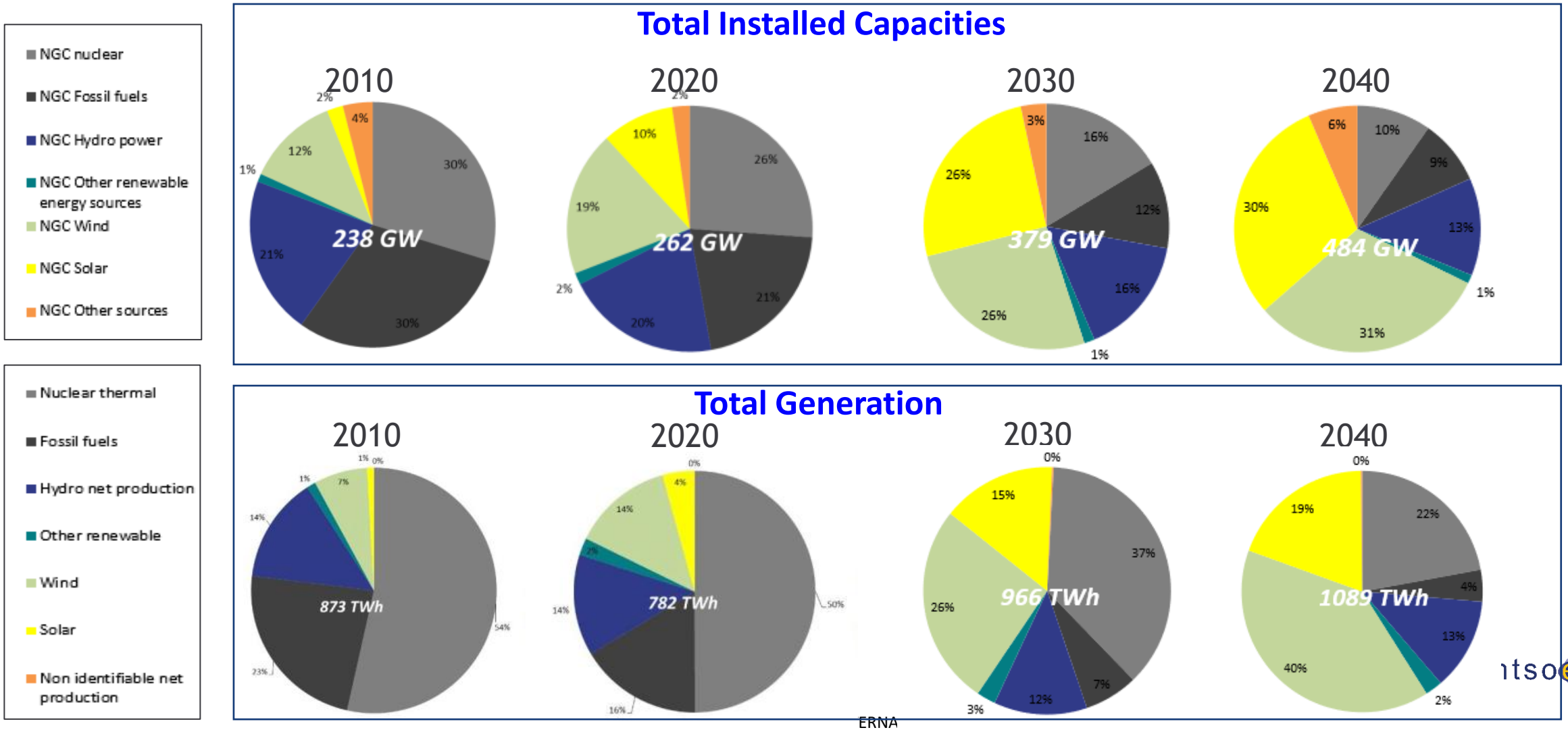
Change in generation portfolio towards a carbon-free system – Example of France, Spain and Portugal

The 2030 and 2040 scenarios show a **transition from thermal to renewable generation**, including the partial phase-out of nuclear in France, a complete phase-out of nuclear in Spain and a complete phase-out of coal in the Iberian Peninsula