# Mid-Term Adequacy Forecast MAF 2018

## European Network of Transmission System Operators for Electricity (ENTSO-E)

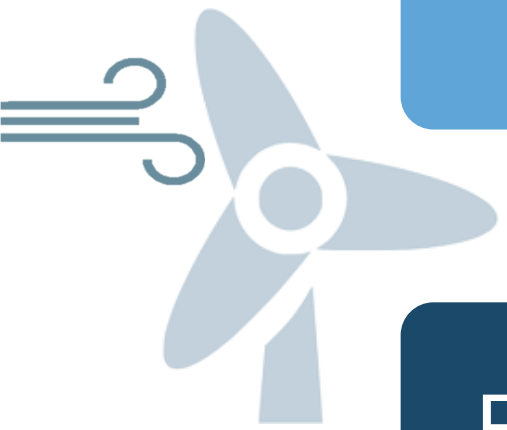
**Alban Joyeau, Adequacy Team Leader**
**Lazaros Exizidis. Market Modelling and Adequacy Advisor**
**Lea Dehaudt, Strategy and Communication Advisor, Moderator**

# Programme

1. Adequacy at ENTSO-E
2. MAF 2018 methodology and outcomes
3. Q & A
4. Take-aways

# Adequacy at ENTSO-E

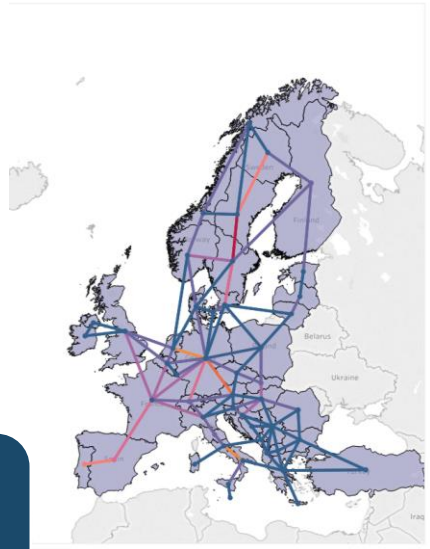
# Energy transition requires a robust methodology



High ***temporal*** volatility

Probabilistic (hourly)

High ***spatial*** volatility



Interconnections (Pan European)

# Different risks addressed with different timeframes





**Long term**

**>10 years**

**Mid term**

**Several years**

**Short term**

**Several months** **1 week**

**Policy decisions**

**Investment decisions**

**Operational decisions**

**REAL TIME**

**UNCERTAINTY INCREASES**

# MAF 2018 scope and limitations

## Addressed by MAF

- ☑ Identification & quantification of **resource scarcity risk** in day-ahead market in 2020 and 2025 (LOLE, EENS)
- ☑ **Accelerated low-carbon** sensitivity analysis for 2025
- ☑ Single or multiple areas with **scarcity and contribution of interconnections**

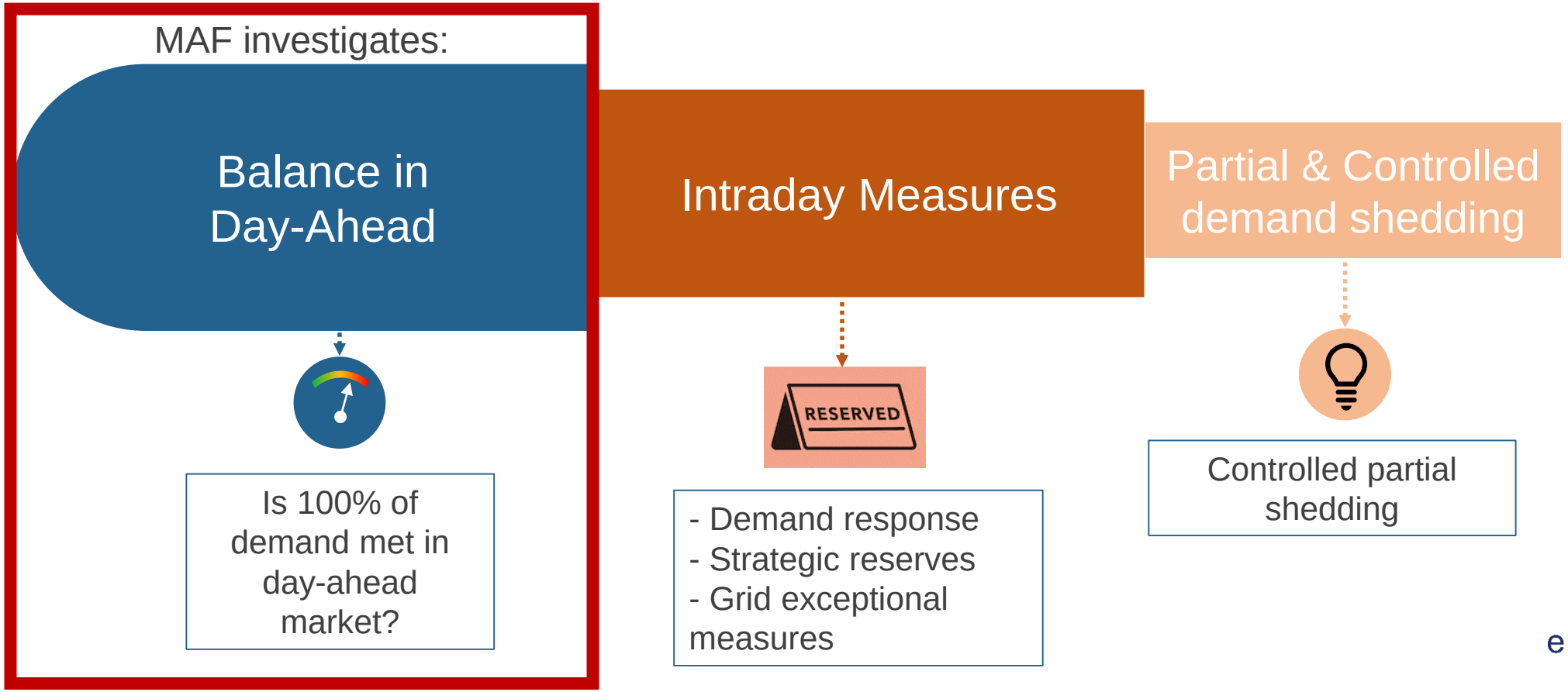
## Not addressed by MAF

- ☐ **Economic viability** of power plant units and risk of decommissioning
- ☐ Suitability of **regulatory framework** & **market design** (e.g. rightness and dimensioning of Capacity Mechanism)
- ☐ **Internal congestion** within a Bidding Zone (considered as copper plate)

# Loss of Load Expectation is not a blackout

**What does LOLE show us?**

LOLE (h) is not a blackout prediction. It is an indication of inadequacy risks looking only at the day-ahead market (intraday and out-of-market resources and measures are not considered).



# MAF 2018 methodology and main outcomes

# Resource Adequacy: General Methodology

**Storage**

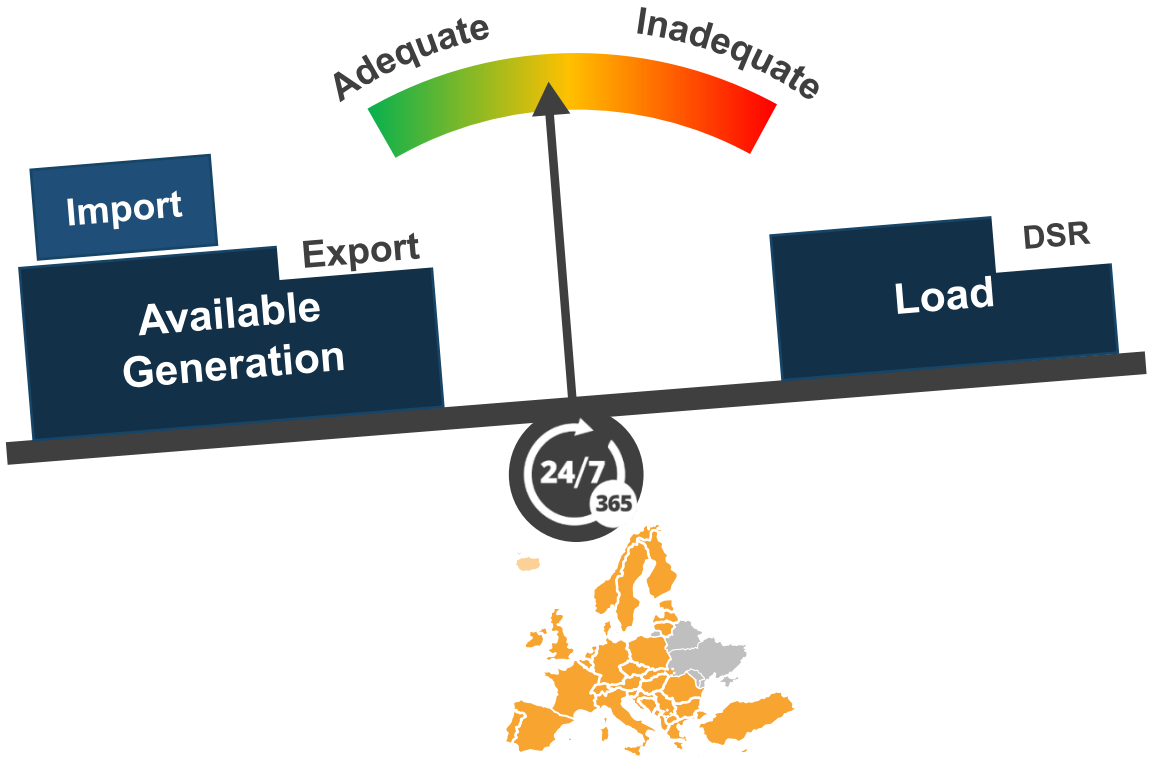
**Available Generation** | **Network Infrastructure** | **Demand**

=

**Deterministic Forecast:**
- ENTSOs' Scenarios
- Planned Outages

+

**Uncertainty:**
- Wind generation
- Solar generation
- Forced outages



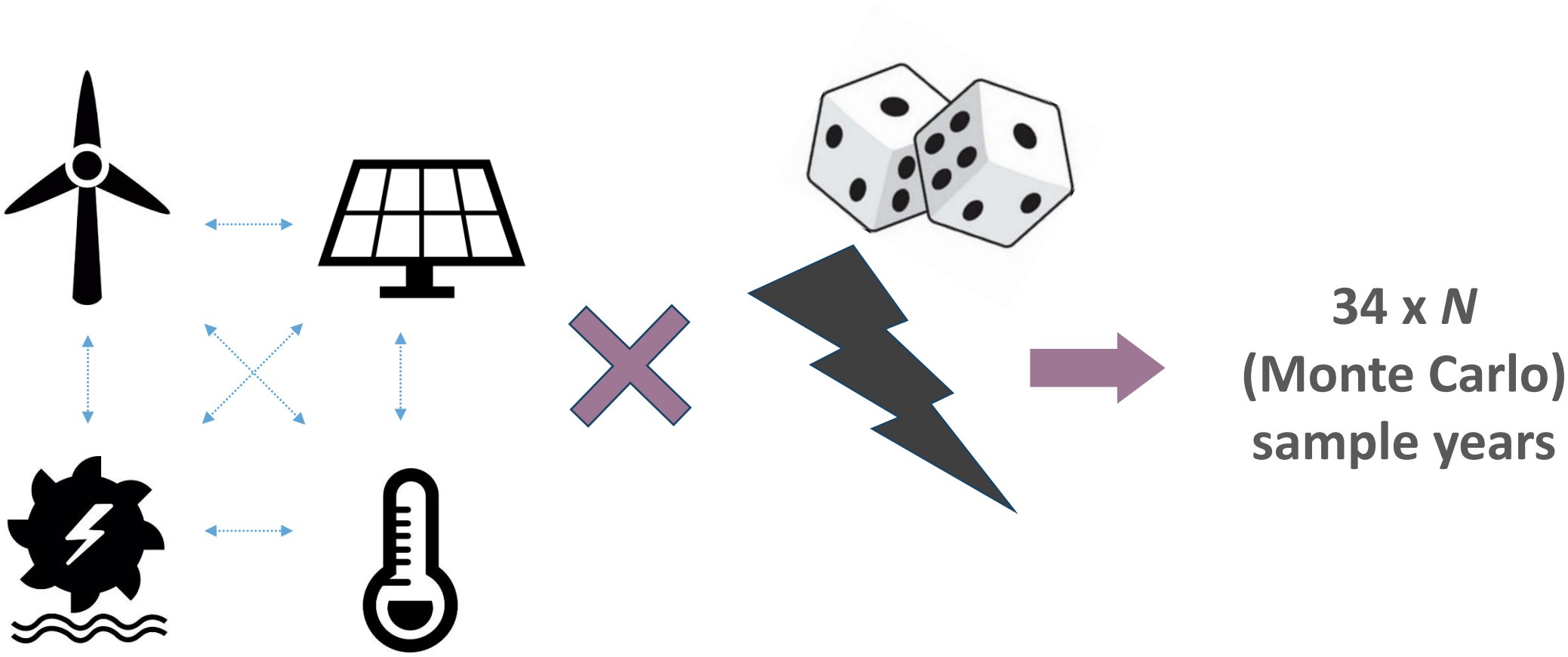

=

**Deterministic Forecast:**
- ENTSOs' Scenarios

+

**Uncertainty:**
Temperature

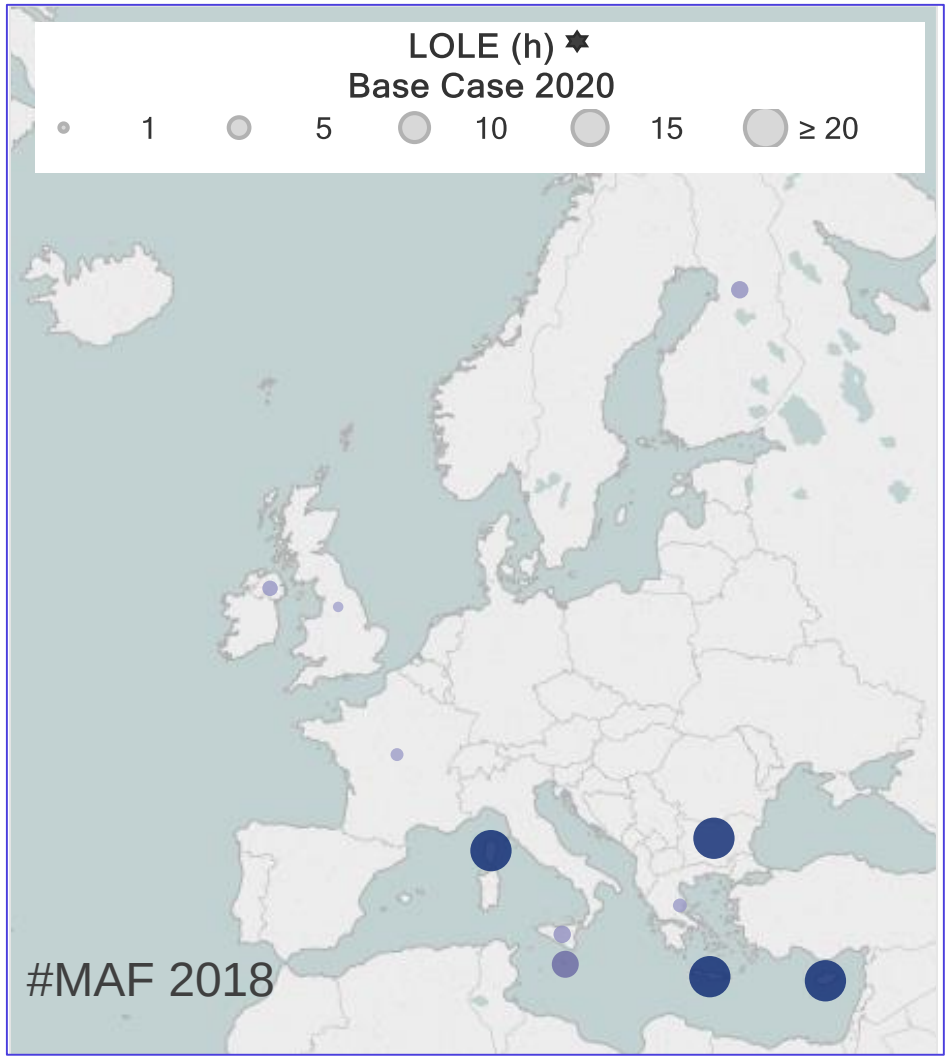
# Resource Adequacy: Construction of Sample Years

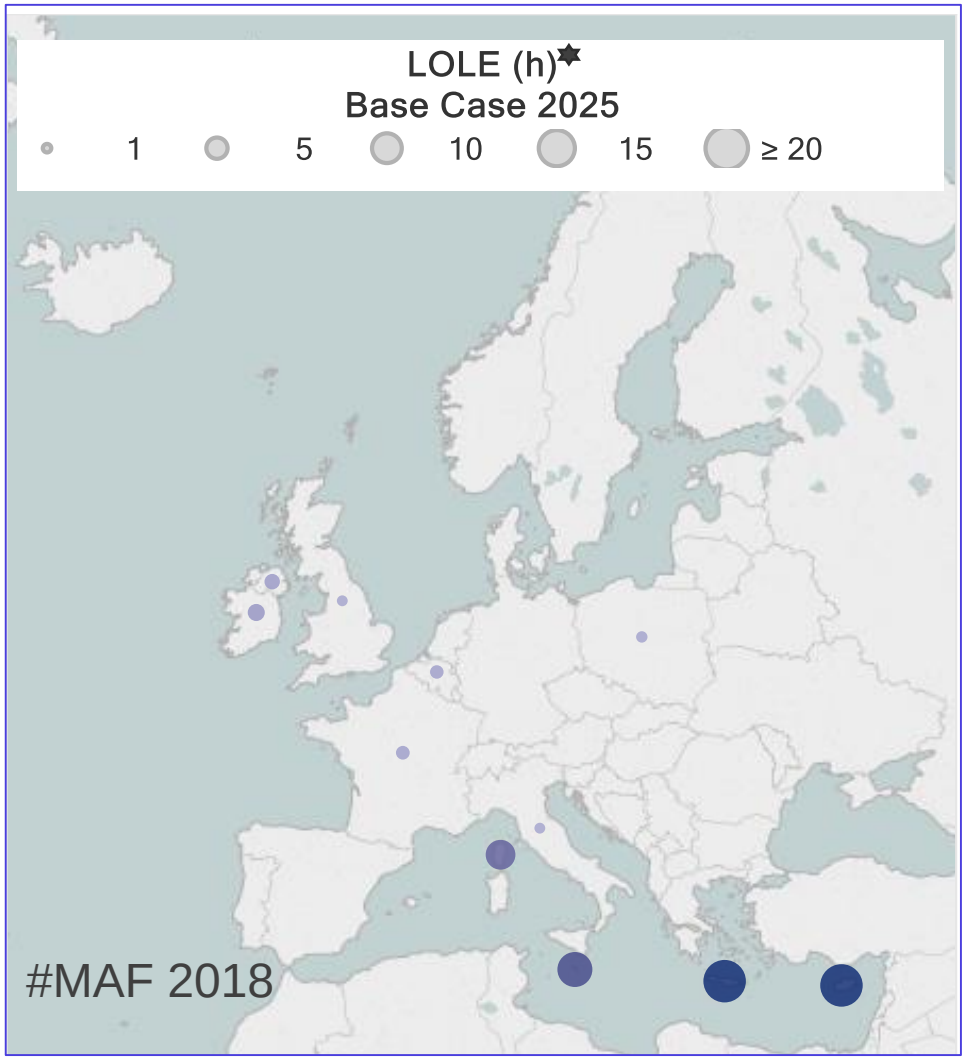



34 years of interdependent climate data

*N* random draws for unplanned outages

# Base case results: Comparison of year 2020 and 2025

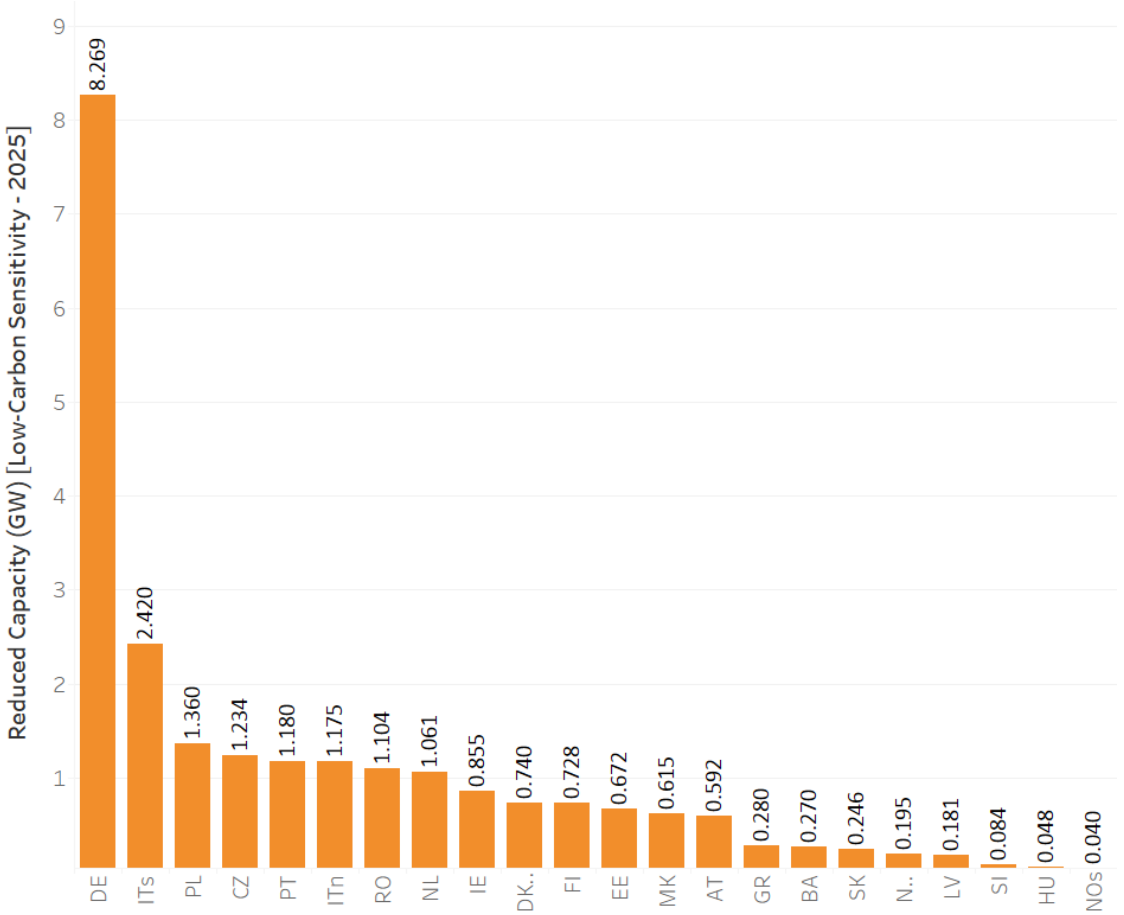


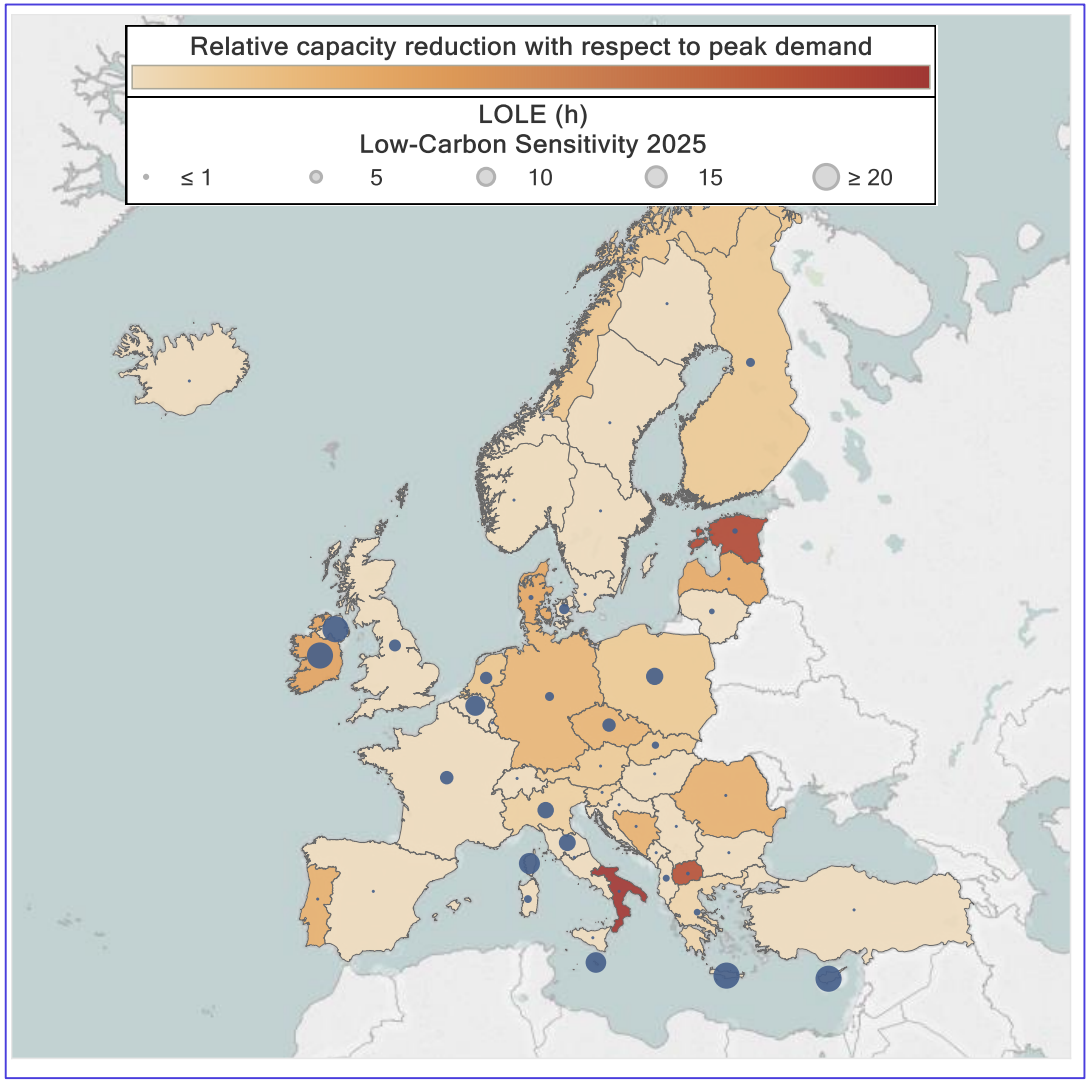




By 2025 adequacy gets tighter, but LOLE remains **below national thresholds in most zones**

✸ *Loss of Load Expectation (LOLE) is the expected number of hours per year with adequacy risk*

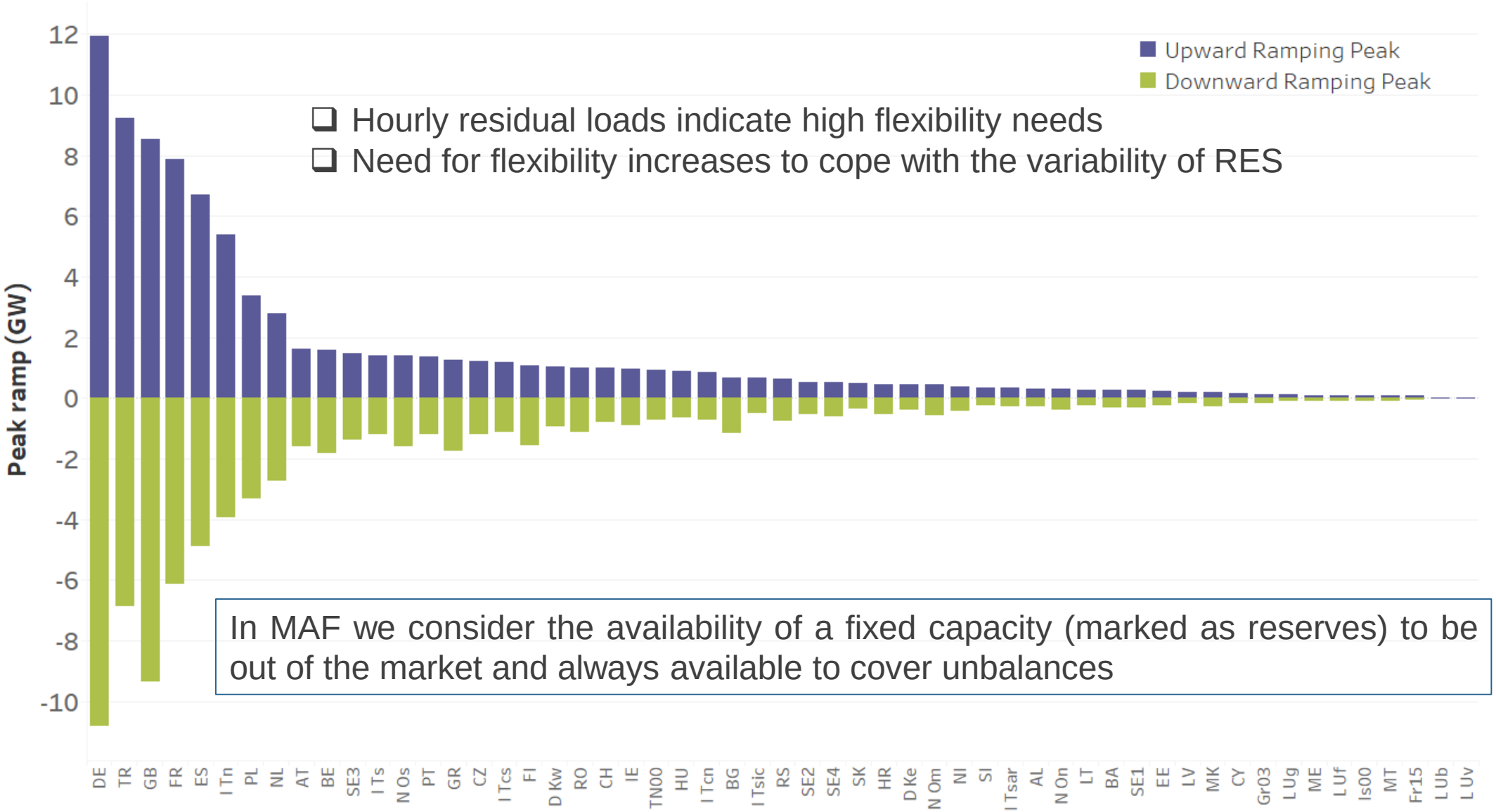
# Low-Carbon Scenario for 2025: Input and Results




Need to adjust the resource mix in case an “accelerated carbon phase–out” takes place

# Flexibility needs: Year 2025



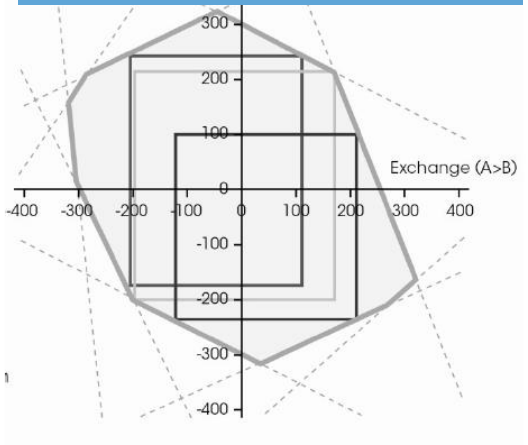

- Hourly residual loads indicate high flexibility needs
- Need for flexibility increases to cope with the variability of RES

In MAF we consider the availability of a fixed capacity (marked as reserves) to be out of the market and always available to cover unbalances

# Future Perspectives & Improvements

## Methodology

**Flow-based approach**




**Flexibility assessment**



DSR

**Missing capacity investigation**

## Data and Models

- Improve/update data and assumptions
- Increase data granularity

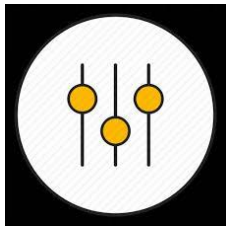
# Time for questions/answers

# Take-aways

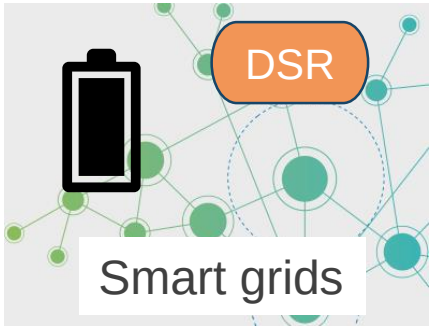
# MAF 2018 key take-aways

**Improved adequacy results compared to MAF 2017** → **Key monitoring role of MAF**

**Low-carbon sensitivity analysis** → **Need to adjust the resource mix**



**MAF methodology becoming a reference in Europe** → **Complementary regional/national studies to investigate specific solutions**



# What's next?

Public consultation of MAF 2018 until 9 November

Stakeholders' feedback used for next MAF preparation

Future Clean Energy Package Resource Adequacy may extend MAF scope

**Upcoming: Common TYNDP MAF launch event to be announced shortly**

# THANK YOU
# FOR YOUR ATTENTION!