: Building on existing ENTSO-E methodologies and reports towards more coordinated system adequacy assessments

Stakeholder Forum: Generation adequacy, capacity mechanisms and the internal market in electricity

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entsoe

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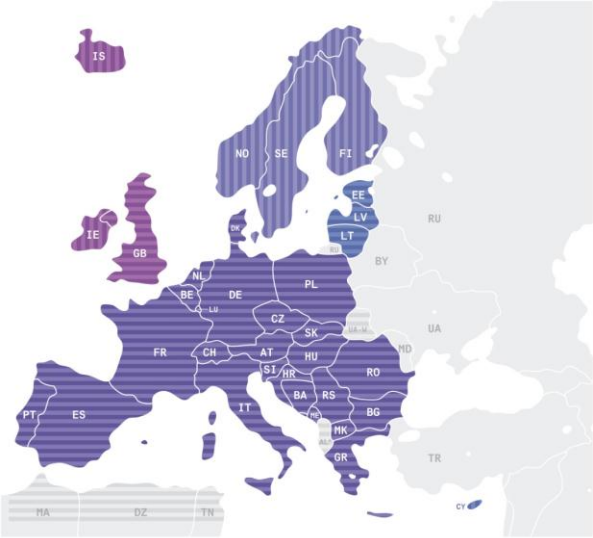
ENTSO-E tasks defined by Regulation (EC) 714/2009: A strong legal mandate for generation adequacy analyses

- **A non-binding Ten Year Network Development Plan incl. a European generation adequacy outlook, every 2 years**
- **Annual summer/winter generation adequacy outlooks**
  - **"The European generation adequacy outlook … shall cover the overall adequacy of the electricity system to supply current and projected demands for electricity for the next five-year period as well as for the period between five and 15 years from the date of that outlook. The European generation adequacy outlook shall build on national generation adequacy outlooks ...**

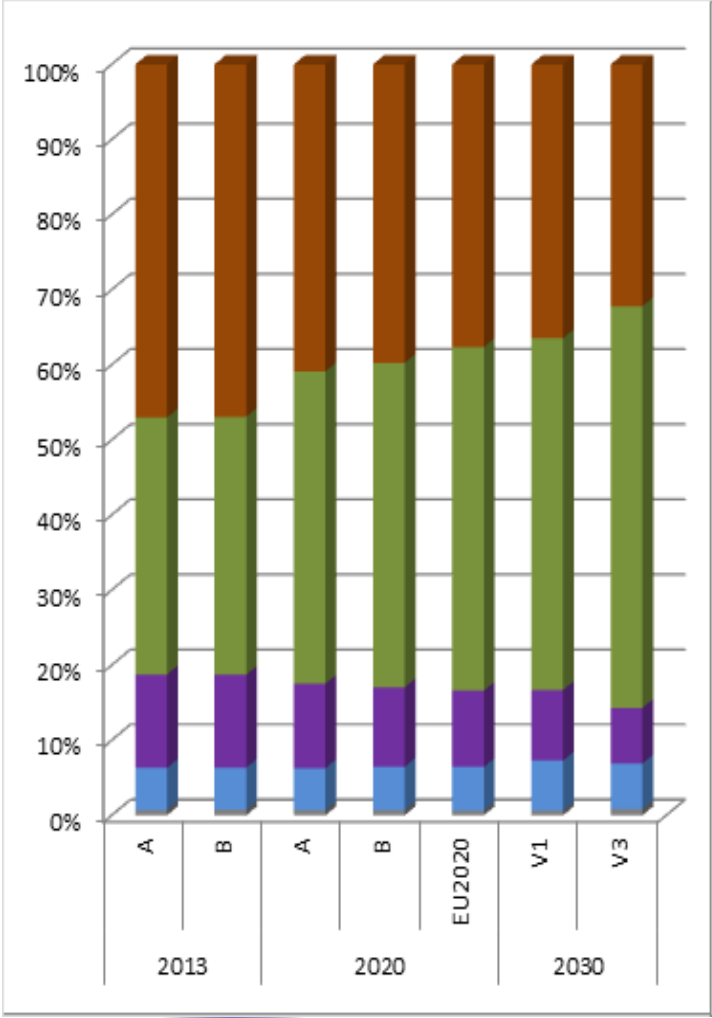


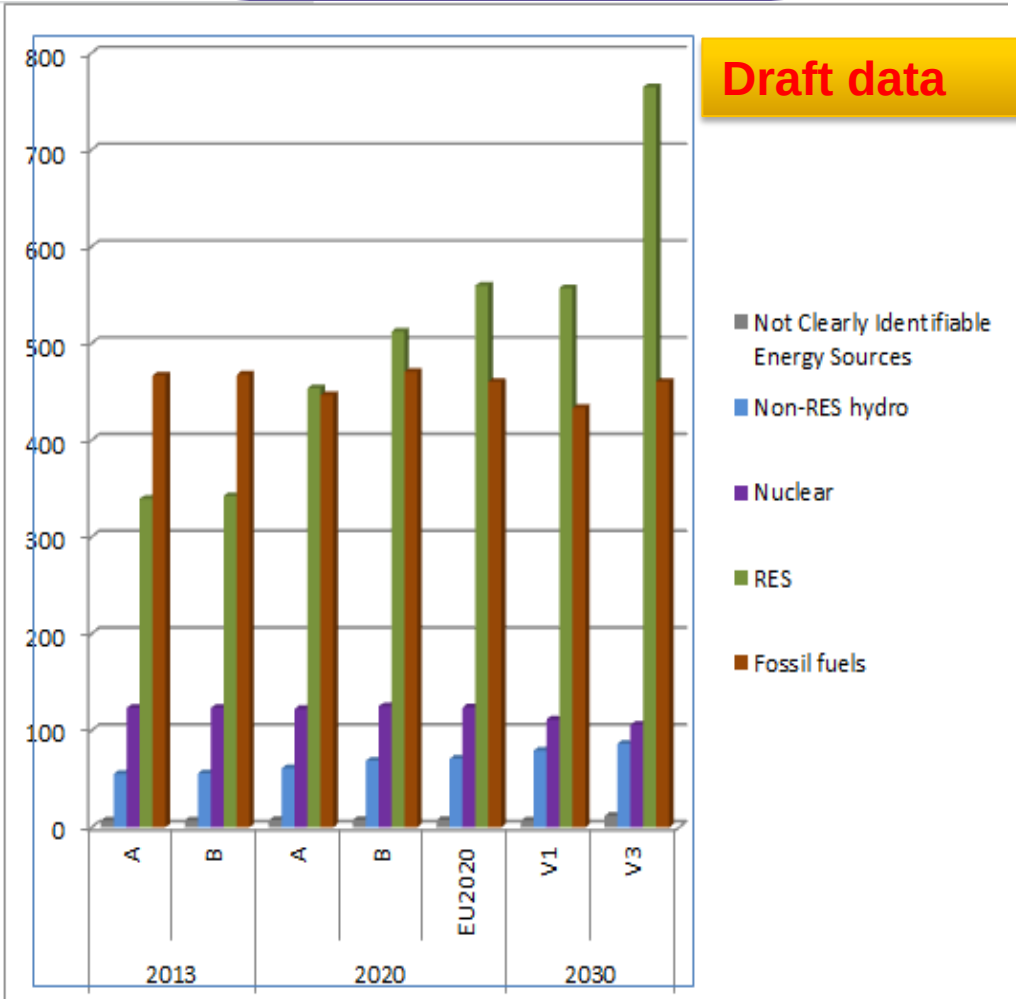
- **And R&D Plans, common network operation tools, and of course drafting network codes.**

ENTSO-E as a source for concrete proposals for well-designed mechanisms to address generation and system adequacy issues

- Levels of security of supply are determined at national level – even more important to complement that with a European approach
  - **ENTSO-E and its TSOs are best placed to provide the necessary expertise and coordinate the industry's input to determine threats to generation adequacy, as well as its associated impacts on security of supply.**
- Implementation of Network Codes and the ENTSO-E Ten-Year Development Plan is a prerequisite for long-term efficient market outcomes and of security of supply.
- The ENTSO-E Scenario Outlook and Adequacy Forecast builds on a long history of well-established methods and a continuity of improvement
- Seasonal Outlooks (winter, summer) to determine potential imminent threats to adequacy and coordinate TSO actions

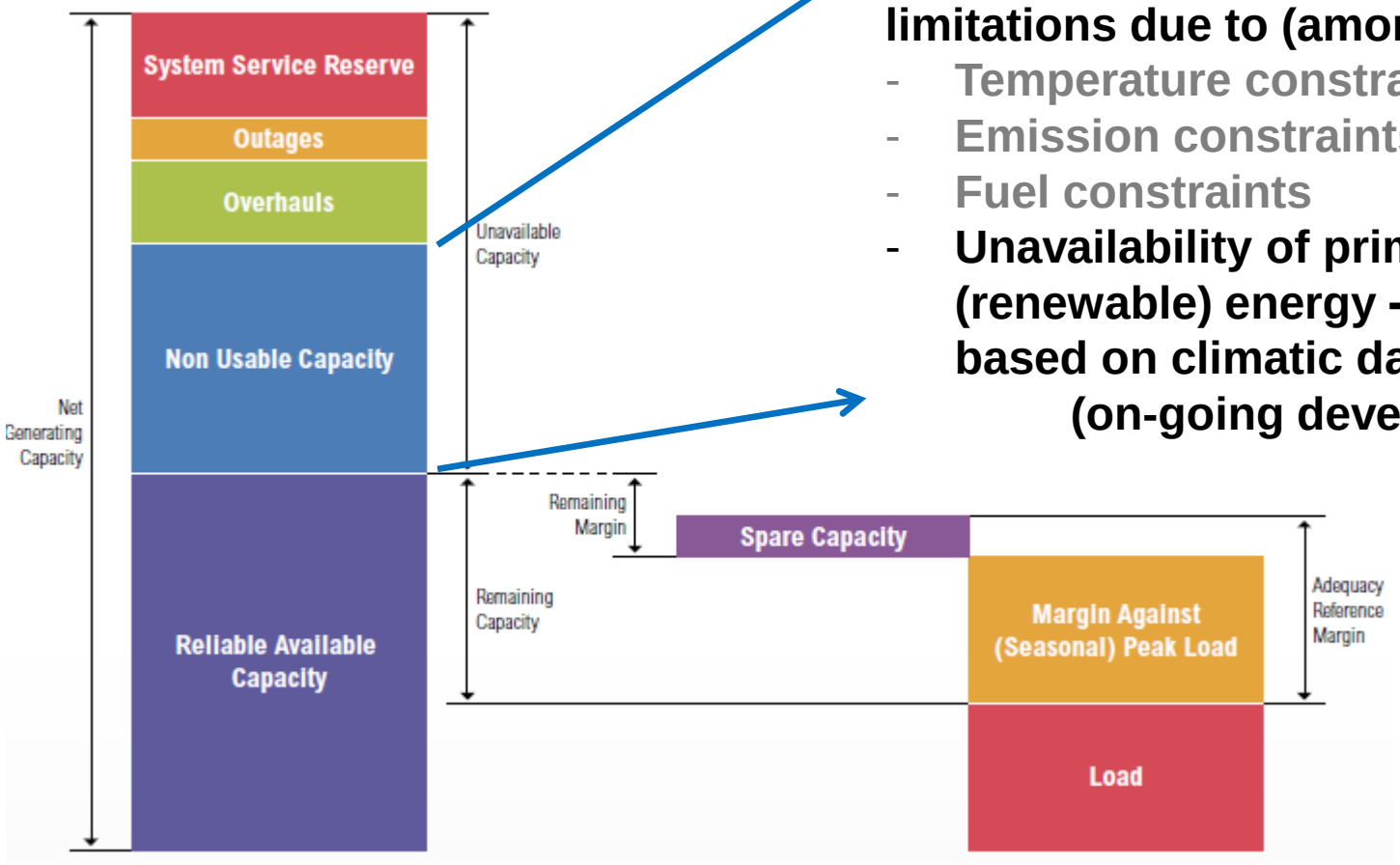
Scenario Outlook and Adequacy Forecast 2013-2030 - Forecasts and challenges





Draft data

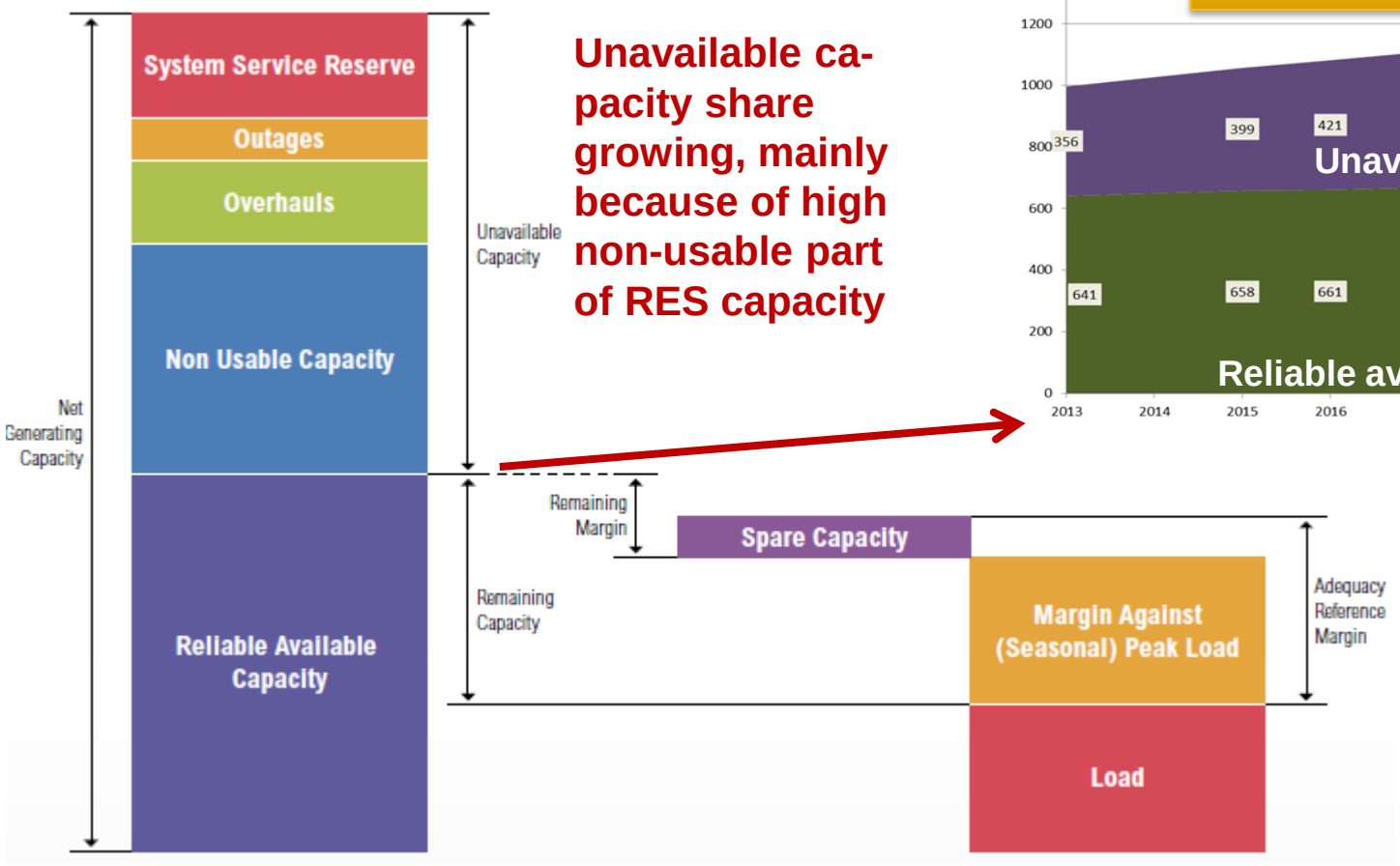
Builds on a transparent adequacy methodology, simple to apply at different time scales - stochastic analyses



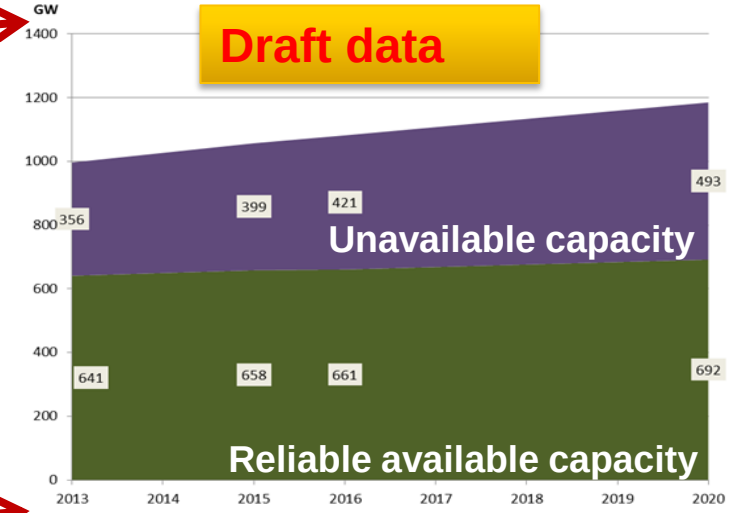
Non-usable capacity includes limitations due to (among others):

- Temperature constraints
- Emission constraints
- Fuel constraints
- **Unavailability of primary (renewable) energy – assessed based on climatic data (on-going development)**

Adequacy methodology – RES effects on non-usable capacity

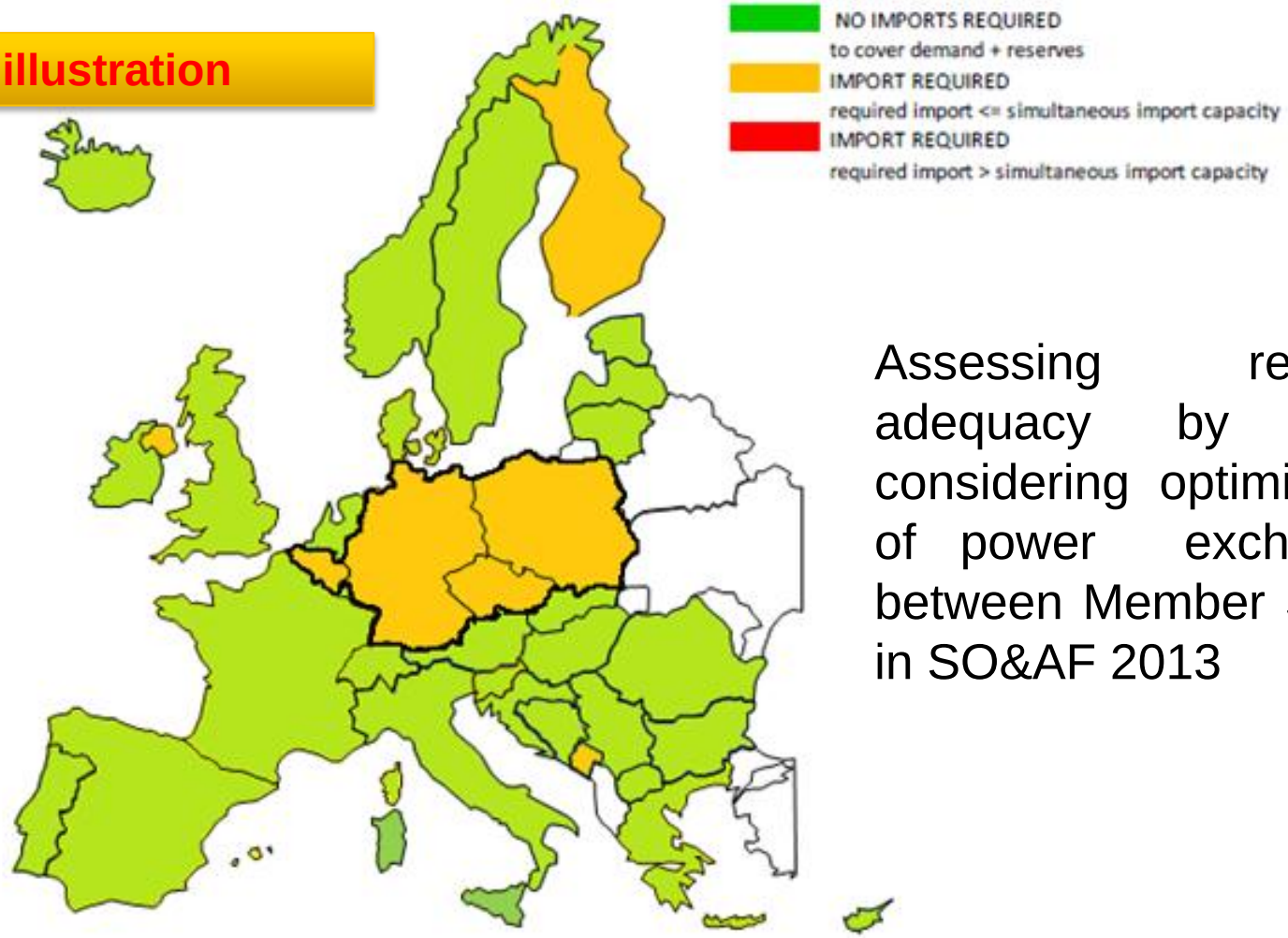


Unavailable capacity share growing, mainly because of high non-usable part of RES capacity



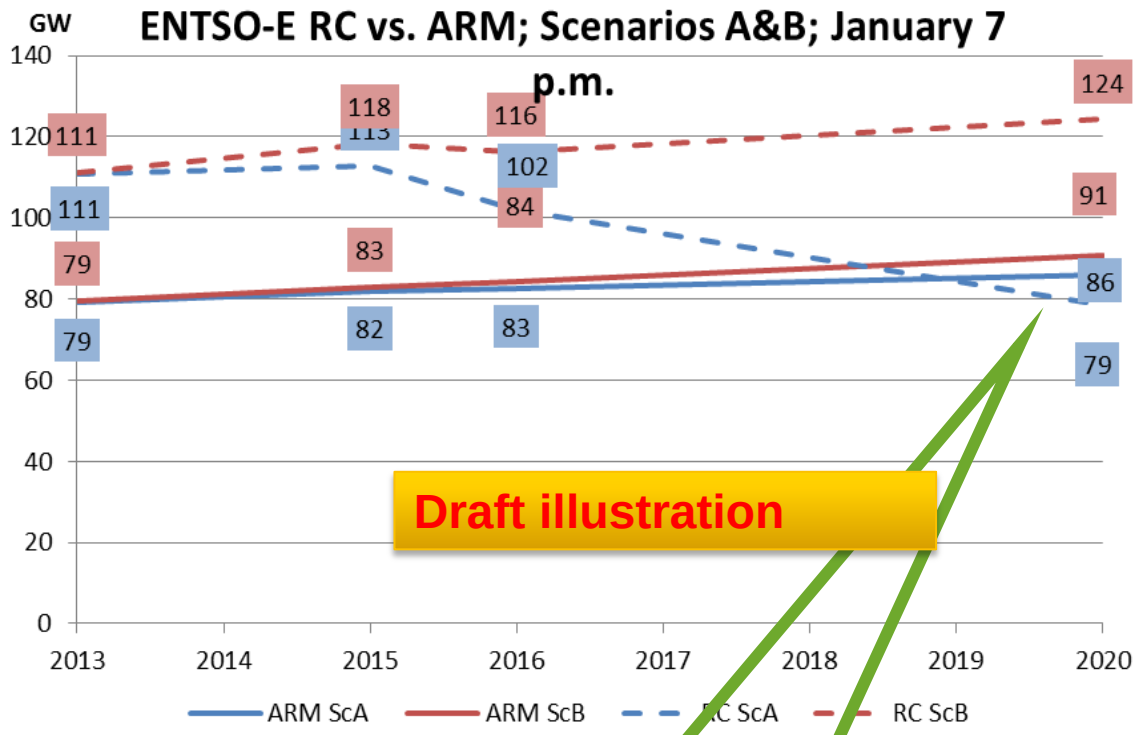
Regional adequacy analysis in long-term outlooks

Draft illustration



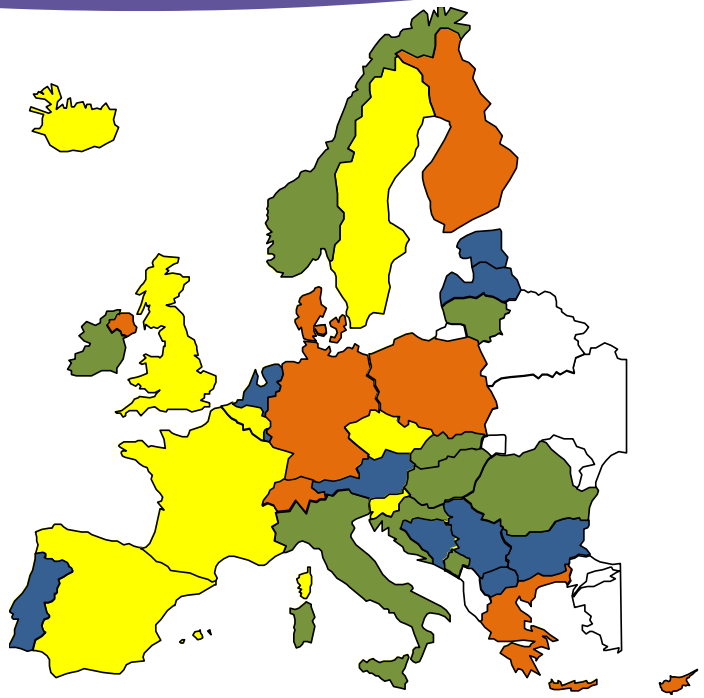
Assessing regional adequacy by 2020 considering optimization of power exchanges between Member States in SO&AF 2013

SO&AF results – ENTSO-E scenarios on remaining capacity vs. adequacy reference margin



Draft illustration

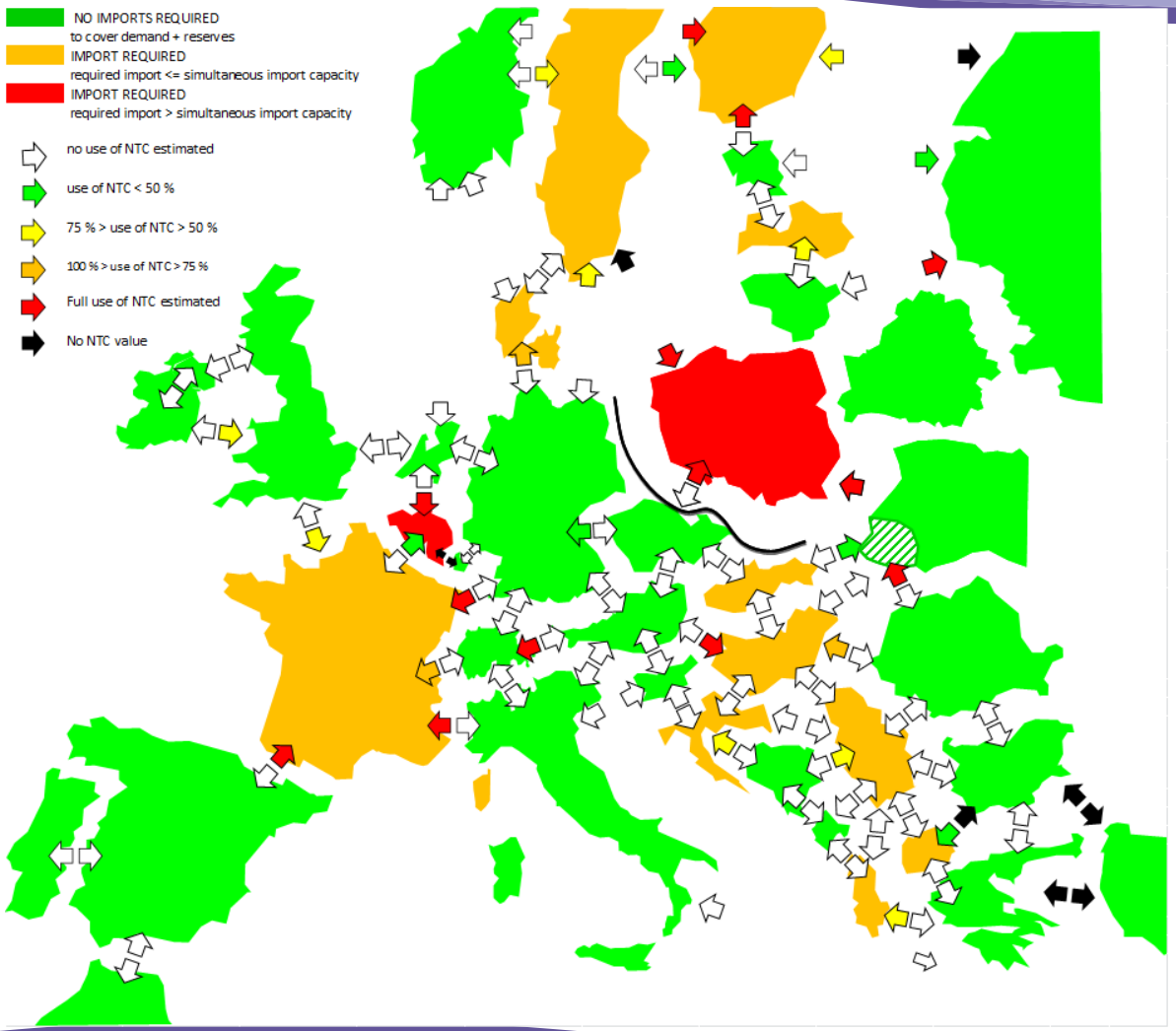
ONLY confirmed new capacities are less than sufficient for 2020



Draft illustration

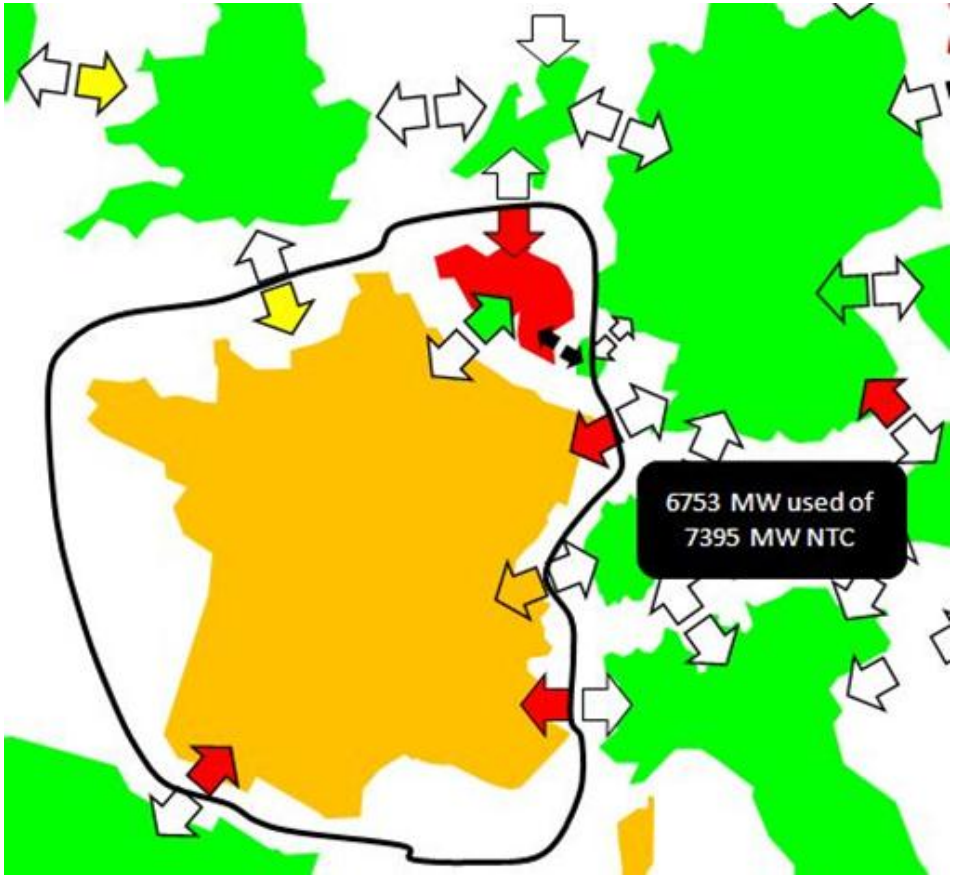
Remaining Capacity minus Adequacy Reference Margin as a part of Reliably Available Capacity per country
Best estimate Scenario for January 2020

Regional adequacy analysis in seasonal outlooks



Group of countries requiring simultaneous imports is identified in the short-term adequacy reports.

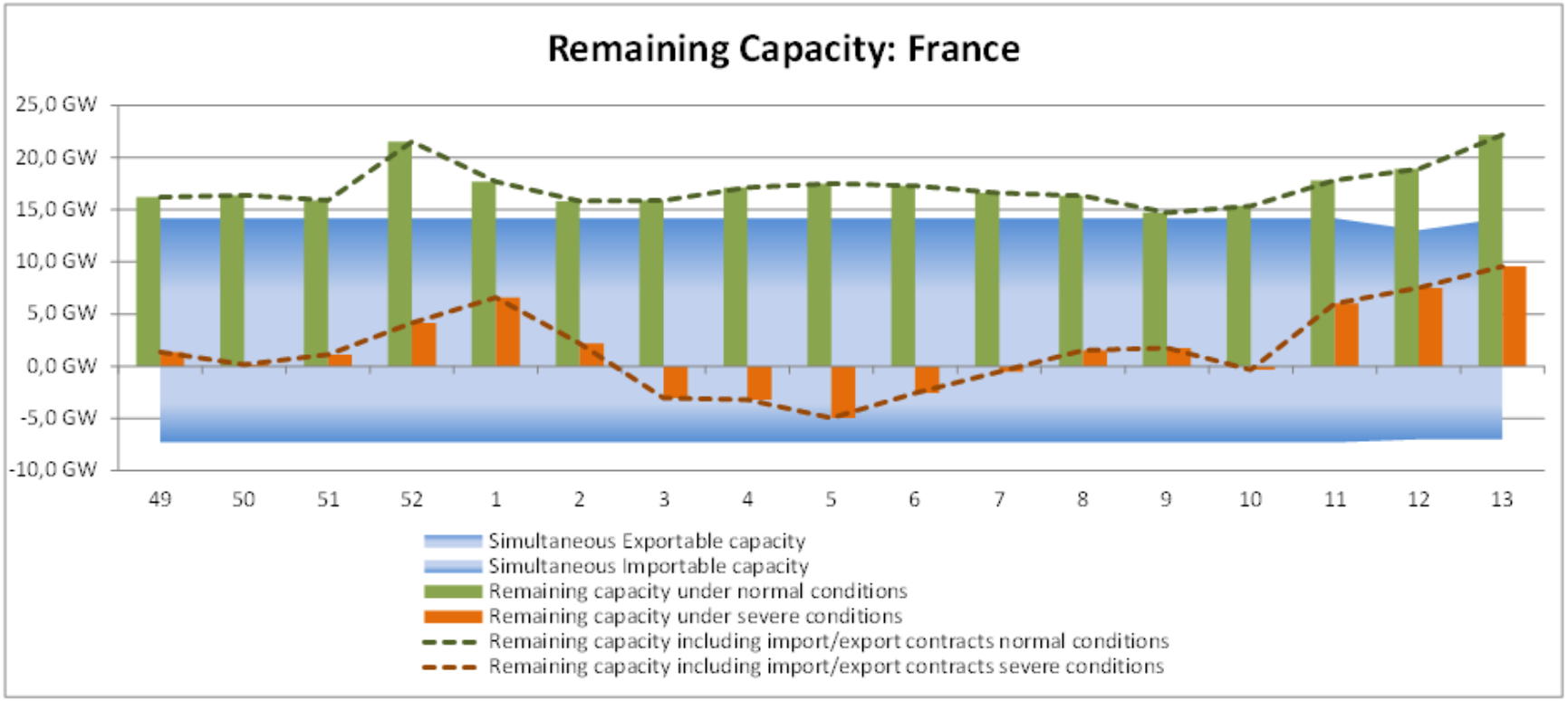
Sensitivity analysis in 15-year and seasonal outlooks



Sensitivity analysis to be further developed in short-term reports

- Common approach of RES availability based on historic climate data
- Temperature sensitivity of load (to be developed)
- Enhanced downward adequacy analysis ongoing development

Seasonal outlooks: Weekly details, normal + severe conditions: Example France Winter 2012/13



Methodology development

The continuous and transparent process of enhancement of adequacy reporting methodology, among others, includes:

- Further harmonisation of the methodology and data structure in short- and long-term adequacy reports, as far as practicable, and bearing in mind the necessary differences.

- Usage of market study results, as far as practicable, in following editions of SO&AF reports, in order to study the effect of market conditions to the viability of certain generators, or to adapt the market model accordingly if necessary

- If needed, explore the application of the adequacy analysis to supplier level (Balance Responsible Party) on well-chosen time horizons compatible with the availability of the necessary information

Our suggestion

The needs of the system should drive decisions on whether, in what region and to what extent capacity mechanisms are needed,

and ENTSO-E has the legal mandate and the methodological basis for it

ENTSO-E has the legal mandate and decades-long experience in following system adequacy down to weekly granularity and at timescales from few months up to 15-years and thus provide the necessary overview and data to assist TSOs in fulfilling their responsibilities for ensuring system adequacy and security of supply

The TSOs are appropriately neutral to provide these statistics and forecasts to policy makers and the market, and their core responsibility of keeping the lights on is very close to this.

ENTSO-E develops its adequacy methodologies further to be fit for purpose as basis for any capacity mechanism decisions

ENTSO-E welcomes the dialogue with EC, ACER, market participants to agree on a high-level vision on the expected scope and content of the adequacy reports, enabling us to further enhance the methodology used.

In conclusion

- System adequacy **is** an issue that needs immediate action
- In fact, generation adequacy on its own (comparing load vs. available generation) is not the only measure of short and long term system security
  - Diminishing share of flexible generation is a significant concern
- Implementation of diverging solutions (e.g. capacity mechanisms) in numerous MS and/or unstable regulation may affect the efficiency of the IEM.
- Incentive and market mechanisms must be well designed, complementary, reflective of the market signals and targeted to address real, and not perceived, issues.
  - The implementation of the Market Target Model and the ENTSO-E Market Network Codes are the solid foundations for this to be achieved
  - TSOs are key actors in supporting and facilitating this design
- ENTSO-E and its TSOs are best placed to provide the necessary expertise to determine threats to generation adequacy, as well as its associated impacts on security of supply.