ERAA Public Webinar: Preliminary Input Data – Call for Evidence

9 March 2022





≻ Introduction of ERAA 2022

Data Collection Process

≻ Insights on ERAA 2022 preliminary data + Q&A

Conclusion and next steps



Introduction







Background

ERAA is an ENTSO-E legal mandate, which aims to understand how the rapid changes to our energy system will affect security of supply.

It is a full pan-European monitoring assessment of power system resource adequacy, based on a state-of-the-art, globally unparalleled probabilistic analysis looking up to a decade ahead.

Stepwise implementation of the ACER methodology already begun with ERAA 2021, and aims for a full target methodology to be applied as of ERAA 2024.

ERAA 2022 aims to be an effective tool to identify adequacy risks, and includes
an enhanced Economic Viability Assessment, more specific representation of
demand response, and Flow-Based market coupling incorporated in the central
reference scenarios.

By proactively and factually identifying any system adequacy challenges, ERAA supports decision-makers in ensuring secure, affordable and sustainable energy to citizens and industries.

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Main assumptions

Fit-for-55 & NECPs

- Data collected from TSOs comply with the National Energy and Climate Plans (NECPs)
- Pave the way towards Fit-for-55

Climate

• Climate change accounted through temperature detrending

Interconnection

- Flow-Based in central scenarios at least for the CORE region
- Net Transfer Capacities



Call for Evidence timeline to ensure a robust basis for ERAA 2022



Data Collection





Data collection process







(4) Flow-Based

*ERAA scenarios are published by ENTSO-E, see <u>ERAA Downloads | ERAA 2021 by ENTSO-E (entsoe.eu)</u>

Insights on ERAA 2022 preliminary data





Data Assumptions and Introduction

Call for evidence on preliminary dataset, still subject to partial updates or changes

Dataset constituted by TSOs data prior to the Economic Viability Assessment

Data available for the pivotal years of ERAA 2022: 2024, 2025, 2027, 2030

Installed Capacity reported prior to unit- or technology-specific derating

Electrolysers, Batteries & DSR reported include only explicit capacity on the market





ERAA 2022 Capacity evolution: overall mix



- Steady increase of generation capacity over the horizon
- Renewables increase their share in the total mix up to more than 50% in 2030
- Consistent growth of flexibility (Electrolysers, Batteries and DSR)

THERMAL RES HYDRO FLEXIBILITY

ERAA 2022 Capacity evolution: focus on Thermal capacity



- Thermal capacity is almost steady up to 2027, with a faster decrease up to 2030
- Gas as primary fossil source partially replacing coal and lignite
- New nuclear capacity compensate its phase-out in some of the member states

ERAA 2022 Capacity evolution: focus on Hydro



- Mild linear increase in hydro reservoir capacity, with only minor increase in storage size
- New hydropower includes higher pumping capacity
- Run of River and Pondage capacity stays steady as almost the full potential has been exploited

ERAA 2022 Capacity evolution: focus on Renewables



- Almost doubled total RES capacity over the horizon
- Highest growth driven by solar PV and onshore wind
- 2027 to 2030 experience the highest expansion with more than 200 GW of new capacity

ERAA 2022 Capacity evolution: focus on Flexibility



- Exponential trend with tripled capacity over the horizon
- Main drivers are batteries and electrolysers
- DSR shows rather linear development

ERAA 2022 Capacity evolution: by technology



- Solar PV as the highest contributor, followed by onshore wind
- Important increase of flexibility, especially electrolysers (first time included in the ERAA model)
- Decrease of thermal capacity, especially solid fossil fuels

ERAA 2022 Capacity evolution: comparison with ERAA 2021



- Higher total capacity in 2025 compared to ERAA 2021 (pre-EVA) data
- Main contributor are RES, especially solar PV
- Higher available gas capacity, although offset by solid fossil fuels and other non-RES

*Data aggregated for the whole perimeter (EU 27 + 10);

Electrolyser capacity excluded as not accounted in ERAA 2021; Run of River and Pondage capacity merged in compliance with ERAA 2021 data collection



ERAA 2022 Capacity evolution: comparison with ERAA 2021



- Higher total capacity in 2030 compared to ERAA 2021 (pre-EVA) data
- Main contributor are RES, especially solar PV, as well as higher hydropower expansion
- Higher available gas capacity, although offset by solid fossil fuels and other non-RES

*Data aggregated for the whole perimeter (EU 27 + 10);

Electrolyser capacity excluded as not accounted in ERAA 2021; Run of River and Pondage capacity merged in compliance with ERAA 2021 data collection



ERAA 2022 Capacity evolution: path to FIT for 55 MIX Scenario



- Lower total capacity in 2025 compared to FIT for 55 MIX data
- Lower RES expected, especially wind onshore and other RES, partially offset by hydropower
- Lower thermal, although offset by the other non-RES category

*Data aggregated for EU 27 member states only; aggregation per fuel and technology type follows at best the data available for FF55 MIX scenario *The FIT for 55 MIX is one of the EU policy scenarios to serve as a tool for the impact assessments of the "Fit for 55" policy package.



ERAA 2022 Capacity evolution: path to FIT for 55 MIX Scenario



- Lower total capacity in 2030 compared to FIT for 55 MIX data
- Lower RES expected, especially wind onshore and other RES, partially offset by hydropower
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ERAA 2022 Demand Evolution: Annual Demand



Average and maximum annual demand levels over the **35 climate** scenarios used in ERAA 2022 (i.e. **35 climate years**).

- Annual demand increases steadily from 2024 to 2030
- Similar trend for both average and peak
- Trends driven by the electrification of the power system (EVs, Heat Pumps etc.)

ERAA 2022 Demand Evolution: comparison with ERAA 2021



Average annual demand levels over the 35 climate scenarios used in ERAA 2022 (i.e. 35 climate years).

- Higher annual demand projections for both target years
- Mainly driven by Central Western EU countries

ERAA 2022 Demand Evolution: path to FIT for 55 MIX Scenario



Average annual demand levels over the 35 climate scenarios used in ERAA 2022 (i.e. 35 climate years).

- Average annual demand is projected higher in ERAA 2022 compared to FIT for 55 MIX data
- Similar levels of demand increase in both datasets from year 2025 to 2030

*Data aggregated for EU 27 member states only

*The FIT for 55 MIX is one of the EU policy scenarios to serve as a tool for the impact assessments of the "Fit for 55" policy package.



Conclusion and next steps





Call for Evidence on the ENTSO-E consultation hub



)verview

/ith the integration of Europe's electricity markets, large-scale renewable spacity integration and shifting demand patterns on the path to European imate neutrality goals, resource adequacy will be in the spotlight for coming ecades. Following the release of ERAA 2021 in November 2021, ENTSO-E is reparing the second edition of this annual product, i.e. ERAA 2022. ENTSO-E id its TSO members are continuously striving to enhance each ERAA edition ith the feedback received by stakeholders, to ensure a swift and efficient plementation. The stepwise approach endorsed by ACER on 2 October 020 is the basis for the evolution and implementation of ERAA. In line with ie methodology and the agreed implementation approach, ENTSO-E plans ir a full implementation by end 2023, namely with ERAA 2024, which will

art in Autumn 2023[1].

olicy developments

he ongoing negotiations on the EU's Fit for 55 Package will lead to changes in urope's climate and energy objectives for 2030 that will need to be anslated to national assumptions in each National Energy and Climate Plan IECP). The ERAA builds on bottom-up data collection by TSOs that reflects test NECPs and most recent national ambitions and projections. It also uilds on input data from the wider stakeholder community, striving to reflect he latest/ best-available national and European-wide data reflecting the nergy transition in Europe.



Related

- O Preliminary ERAA 2022 Demand Dataset
- Preliminary ERAA 2022 PEMMDB National Estimates
- Preliminary ERAA 2022 Net Transfer Capacities
- Preliminary ERAA 2022 list of CNECs

Call for Evidence by 5 April 2022

7 domains to provide your feedback

Download the data package

Climate Data, PEMMDB Data, Demand, Transfer Capacities, CNECs



Don't forget to join us for the next public webinars & workshops



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Thank you for your attention



Cooperation



Coordination

Planning, cooperation and targeted measures are key for a secure electricity system.

Adequacy issues deeply interlinked; regional coordination is crucial.

Visit <u>www.entsoe.eu/outlooks/eraa</u> for more information on the ERAAs, the interactive data visuals, past and future stakeholder interactions

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