
ACER
European Union Agency for the Cooperation of Energy Regulators
WEBINAR
Improving EU scenario development to meet future energy needs
Thursday, 11.09.2025
10:00 - 11:00 CEST
Online
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Keep your microphone muted unless the chair gives you the floor

Slides & recording of this webinar will be uploaded to ACER website

Questions from other participants can be 'liked' to increase their visibility

Questions will be addressed during the Q&A session at the end of the workshop; although they can be posed at any point

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Agenda

Time	Topic and speakers
09:50 - 10:00	**Webinar open for log-in**
10:00 - 10:10	**Introductory remarks** Stefano Astorri, ACER
10:10 - 10:35	Presentation of the consultancy study on EU scenario development Christopher Andrey, ARTELYS Paul Brière, ARTELYS
10:35 - 10:55	Q&A
10:55 - 11:00	**Closing remarks** Fay Geitona, ACER

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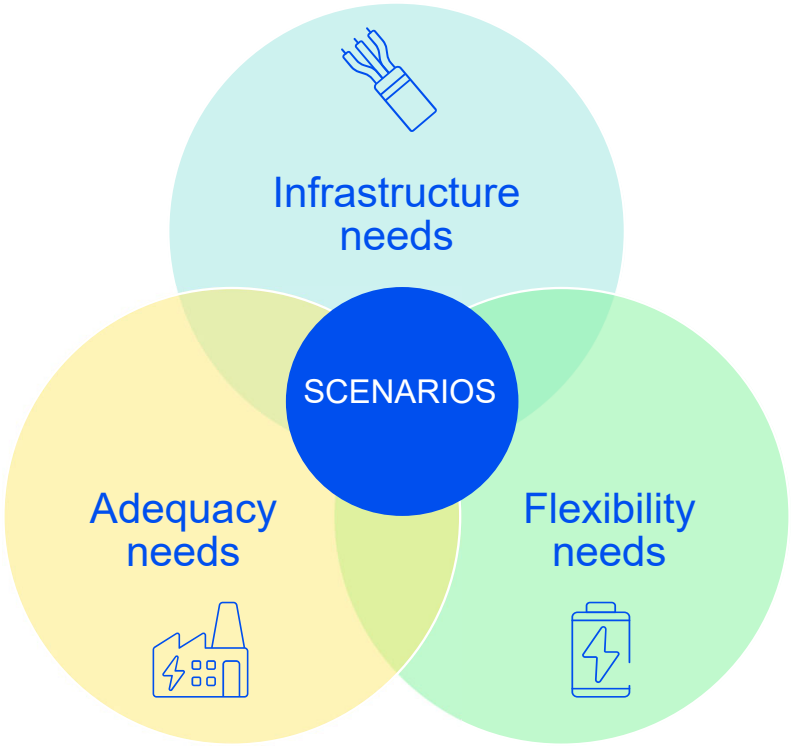
Getting scenarios right is crucial



- Foundation for TYNDP, ERAA and FNA
- Explore future pathways of demand and supply
- Enable transparent and credible decision-making for policymakers and stakeholders
- Robust scenarios underpin a credible assessment
- Can ensure consistency across “planning” exercises

Objectives of this study

✓ Identifying potential **challenges** of scenario building.
✓ Providing **recommendations** tackling these.

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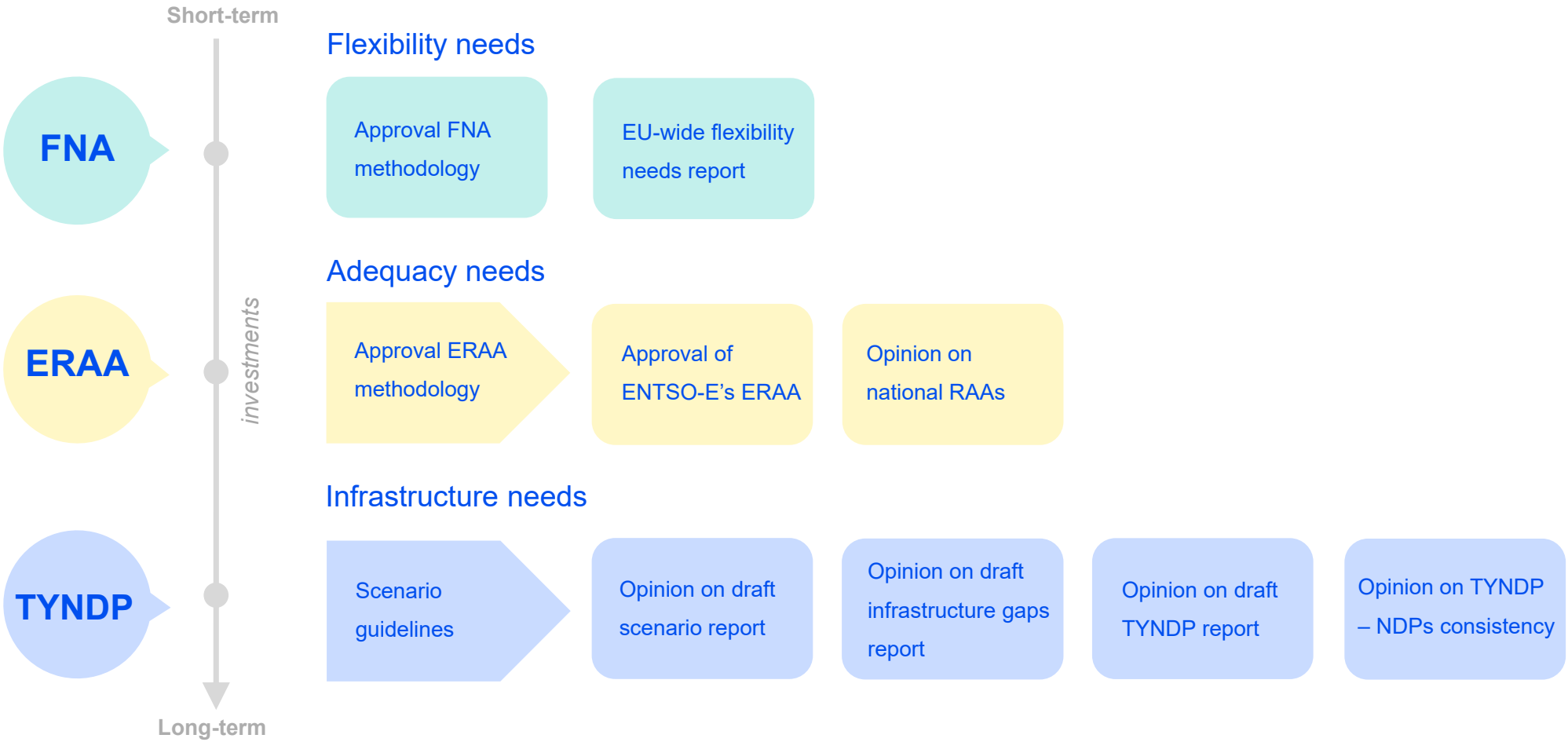
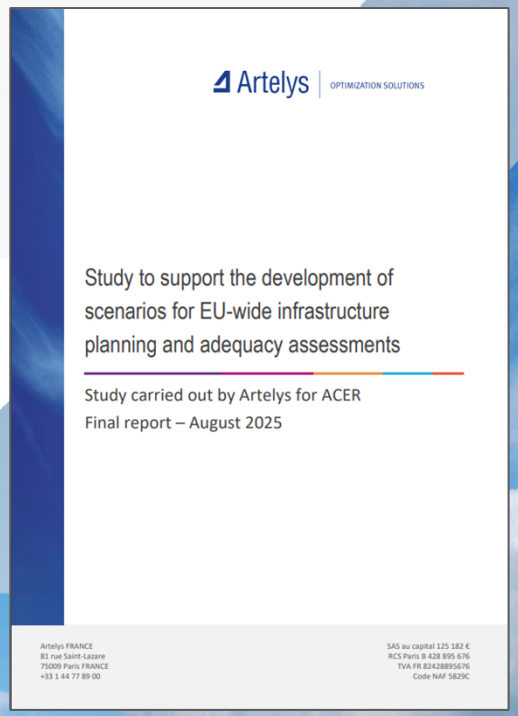
ACER role in planning, adequacy, flexibility



Which process are you more directly involved in or familiar with?

Artelys | OPTIMIZATION SOLUTIONS

Study to support the development for EU-wide infrastructure planning and adequacy assessments



Study carried out by Artelys for ACER

Public webinar presenting the results of the study

11 September 2025

www.artelys.com

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EU-wide infrastructure planning and adequacy assessments

European Resource Adequacy Assessement (ERAA)

- Developed **annually**
- Developed by **ENTSO-E**
- **Objective**: Probabilistic assessment of electricity resource inadequacy risks
- ~10 years ahead
- Central scenario based on National Energy and Climate Plans (**NECPs**)

Ten-Year Network Development Plan (TYNDP)

- Developed **biennially**
- Developed by **ENTSO-E** and **ENTSOG** (and **ENNOH** in the future)
- **Objective**: Identification of **investments needs** and of the **cost & benefits** of **electricity** and **hydrogen infrastructure projects**, with a focus on projects with a cross-border impact
- Up to 2050
- Central scenario (National Trends) **based on NECPs**
  Scenario variants (new in 2026)

Objectives of this study

| Identify the potential **challenges** of the scenario building processes,
| Provide **recommendations** on potential avenues to tackle these challenges.

A combination of techniques to deliver on the objectives

Objectives of this study

- Identify the potential **challenges** of the scenario building processes,
- Provide **recommendations** on potential avenues to tackle these challenges.

Surveys addressed to national electricity and gas Transmission System Operators (TSOs) and to National Regulatory Authorities (NRAs)

Interviews with key stakeholders: ENTSO-E, ENTSOG, the TYNDP Stakeholder Reference Group (SRG), the European Commission, and a subset of TSOs

Desk research including **literature review** and leveraging **Artelys' experience** in establishing and analysing transition scenarios

Unless specified otherwise, the analyses in this study focus on **ERAA 2023** and **TYNDP 2024** editions (most recent editions when this study began).

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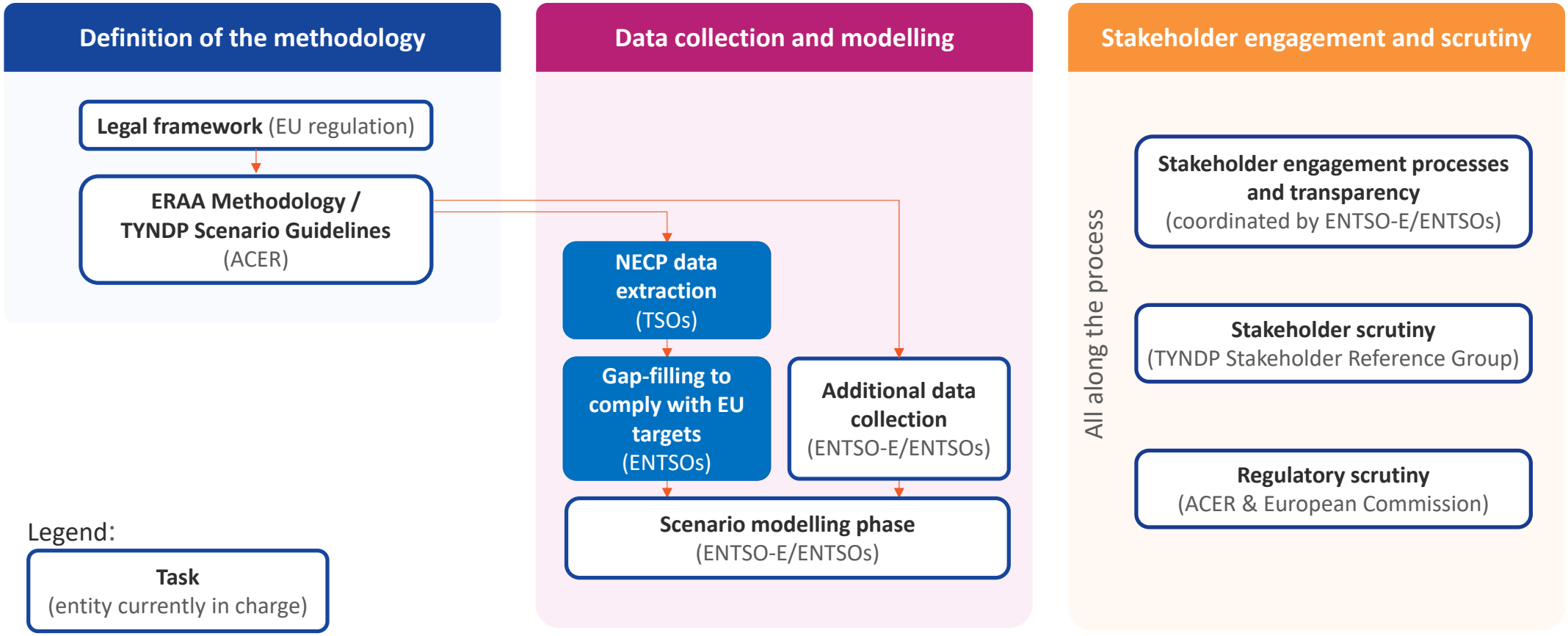
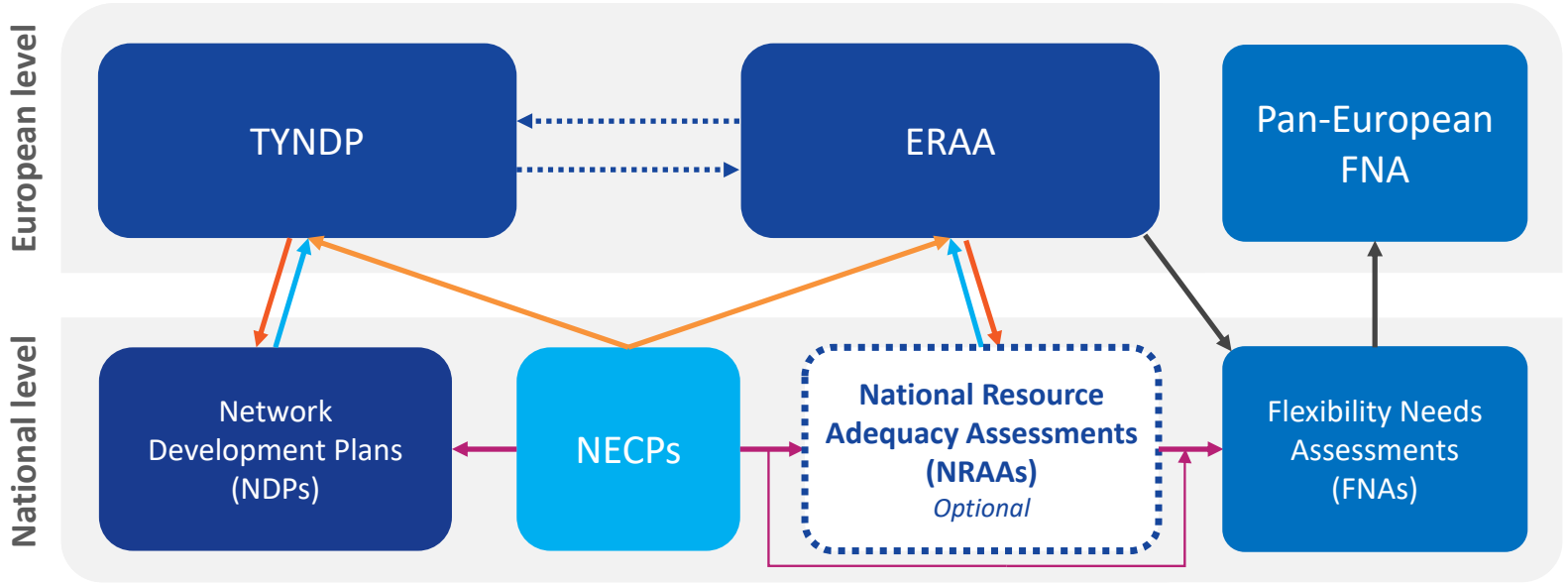
Overview of the current process

ERAA and TYNDP national assumptions shall be **consistent with NECPs**.
TSOs are responsible for **translating NECPs** into scenarios' input data.



Strong interlinkages between TYNDP, ERAA and national instruments



ERAA and TYNDP assumptions are based on NECPs

NRAAs and NDPs are used as an alternative sources of information by some TSOs

TYNDP and ERAA are often used for developing NDPs and NRAAs

NECPs are often used for developing NDPs and NRAAs

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Challenge I – Inconsistent translation of NECPs into TYNDP & ERAA scenarios

How the process should be

NECPs

Member States (ministries) independently produce their NECPs (with European Commission feedback)

Decentralised TSO-specific translation processes

National assumptions provided by TSOs shall be **consistent with NECPs**

TYNDP "National Trends+" ERAA "Central Scenario"

With the NECP-based data collected by TSOs, **ENTSO-E and ENTSOG build** the scenarios for TYNDP and ERAA (only ENTSO-E)

?

How the process is

Not all the inputs parameters are taken from the NECPs

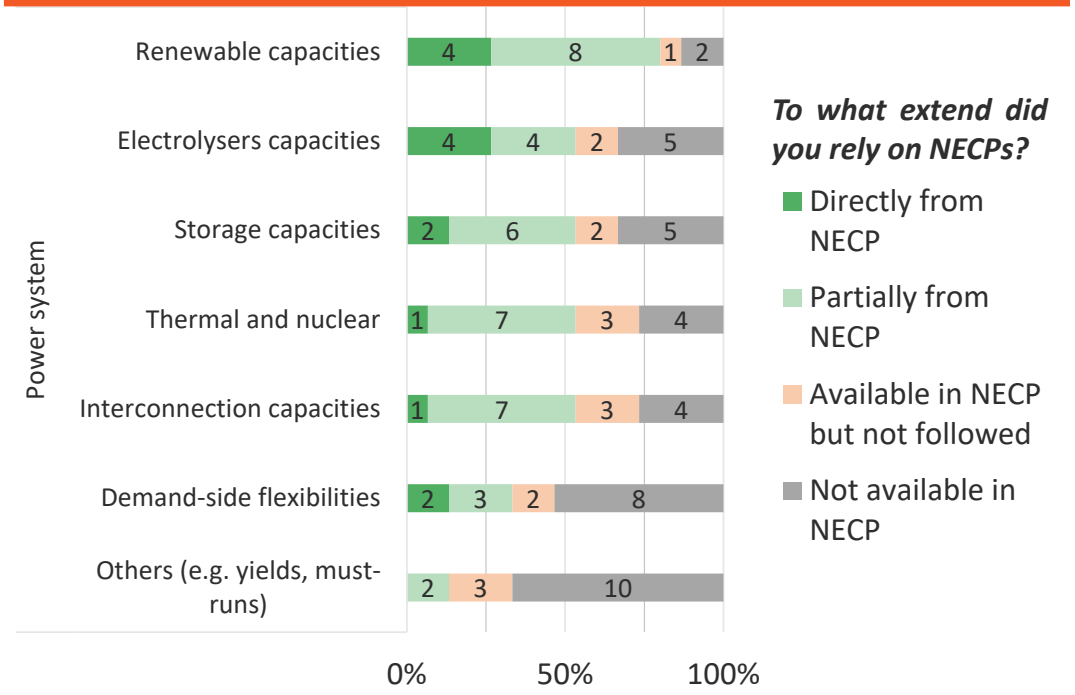


Figure – Sources used by the national TSOs to provide the data
Source: Artelys' survey to electricity and gas TSOs

Challenge I – Inconsistent translation of NECPs into TYNDP & ERAA scenarios

Why do not TSOs always take the input parameters from the NECP?

Unavailable or incomplete NECPs data

- Some NECPs' datasets are **not available** (e.g. values behind the graphs in an Excel format missing)
- Some aspects are **not addressed** in NECPs (e.g. grey/blue hydrogen production capacities, demand flexibility parameters, electricity and hydrogen cross-border infrastructure levels).
- 2040 is absent in some NECPs and 2050 is absent (or poorly detailed) in most

Deliberate deviations from the NECPs

Some TSOs also reported **voluntary deviations** from the NECPs (incl. when the information is available). Furthermore, the list of such deviations is **not published**.

The main justification for deviating from NECPs provided by the TSOs is that some **NECPs are outdated,** and more up-to-date sources are available.

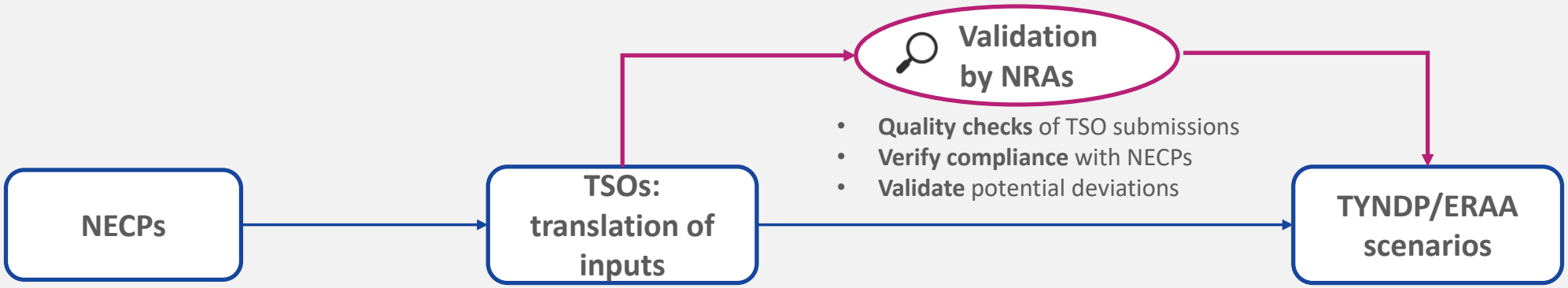
Challenge I – Inconsistent translation of NECPs into TYNDP & ERAA scenarios

Recommendations:

Transparency from the TSOs

- Transparently **report the sources used** by the TSOs to provide national data, in a unified template across Member States
- **Justify deviations** from the NECPs, especially when information is available in the NECP but not adopted

NRAs for scrutiny and validation of the national data provided by TSOs



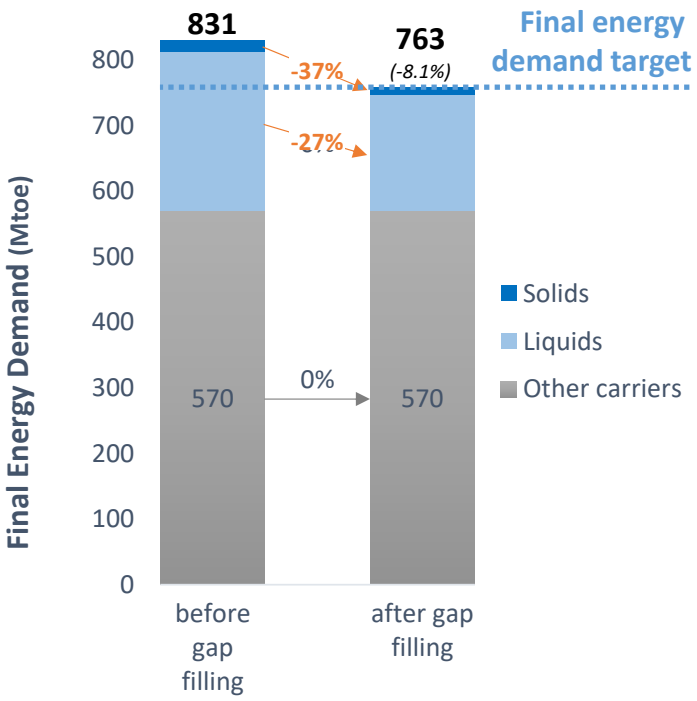
Other recommendations

- Amend Governance Regulation, to require Member States to **publish NECP data in a harmonized format** (e.g. by providing an Excel template) with sufficient details to feed into the ERAA and TYNDP scenario-building processes.
- **Update** the ACER Guidelines and Methodology to address the way to handle cases where **NECPs fail to cover** all the required **time horizons**.

Challenge II – Lack of clarity on NECP evaluation vs EU targets

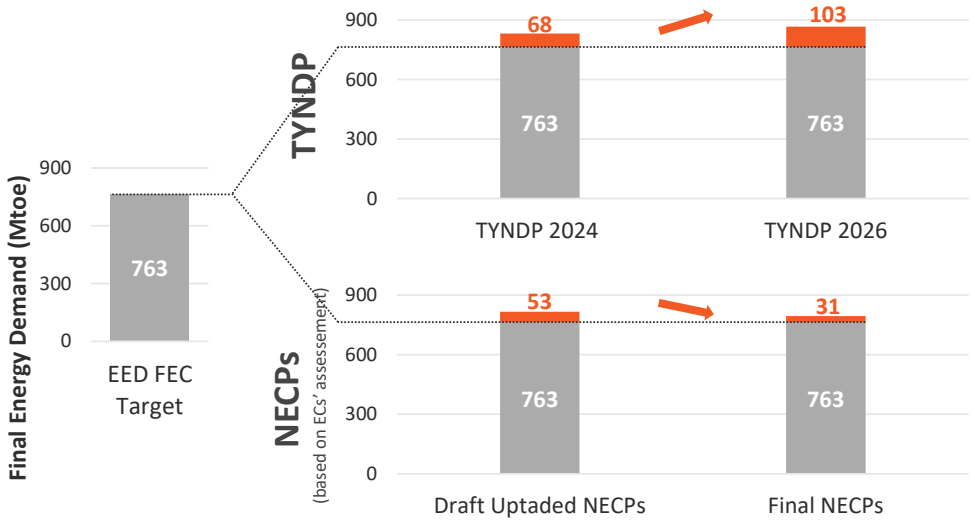
Exiting gap-filling methodology

As per their respective regulatory frameworks, TYNDP and ERAA scenarios must **comply with EU targets**.



Evolution of the gap between 2024 and 2026

- **Increased gap in TYNDP 2026**[1] compared to the TYNDP 2024
  - Larger gaps challenge the **reliability** of the gap-filling methodology
- **EC finds the gap with EU targets is smaller** in the final NECPs compared to the draft updated NECPs.
  - Results' divergence may be explained by **different approaches** adopted by TSOs and the EC:
    - EC relied on the **targets announced in the NECPs**
    - TSOs mostly relied on the **scenarios provided in the NECPs** (and on other sources).



[1] *Draft values for public consultation*

Challenge II – Lack of clarity on NECP evaluation vs EU targets

Recommendations

- Revise the gap-filling methodology to be **robust for larger gaps** or gaps with respect to **other targets** (e.g. RES target).
- Align the methodologies used to verify the compliance with EU targets between **TYNDP/ERAA** and the **European Commission** processes.
- **European Commission** and **ACER** to have a stronger role and involvement in the gap-filling process.

Challenge III – Transparency and stakeholder engagement

Transparency

Current status and challenges

Scenario inputs: overall high level of transparency, both on methodologies and data, but insufficiencies persist:

- **On data**, e.g. flexibility parameters (DSRi, SMR ramping constraints).
- **On methodologies**, e.g. grid construction, translation of NECPs.

Scenario outputs:

- **TYNDP**: recent improvements (hourly results published), but a few gaps persists (e.g., hydrogen offshore flows, impact of SoS loop)
- **ERAA**: published results mainly concern adequacy (and economic viability assessement). General results (e.g., dispatch by technology) missing to enable scenario calibration by 3rd parties.

Recommendations

- **TYNDP:** continue efforts to improve transparency, both on the data and the building processes and ensure completeness of published outputs.
- **ERAA:** increase transparency on scenario results (beyond adequacy).

Challenge III – Transparency and stakeholder engagement

Stakeholder engagement

Public consultations

- **TYNDP**: public consultation on methodology developments, and on some (but not all) input parameters.
- **ERAA**: call for evidence on aggregated input data and public consultation on results. However, only a small number of stakeholders respond to public consultations.

Experts' engagement

The complexity of the scenarios makes public consultation insufficient to allow stakeholders to explore the scenarios in depth and provide meaningful feedback. Therefore, additional forms of engagement are needed.

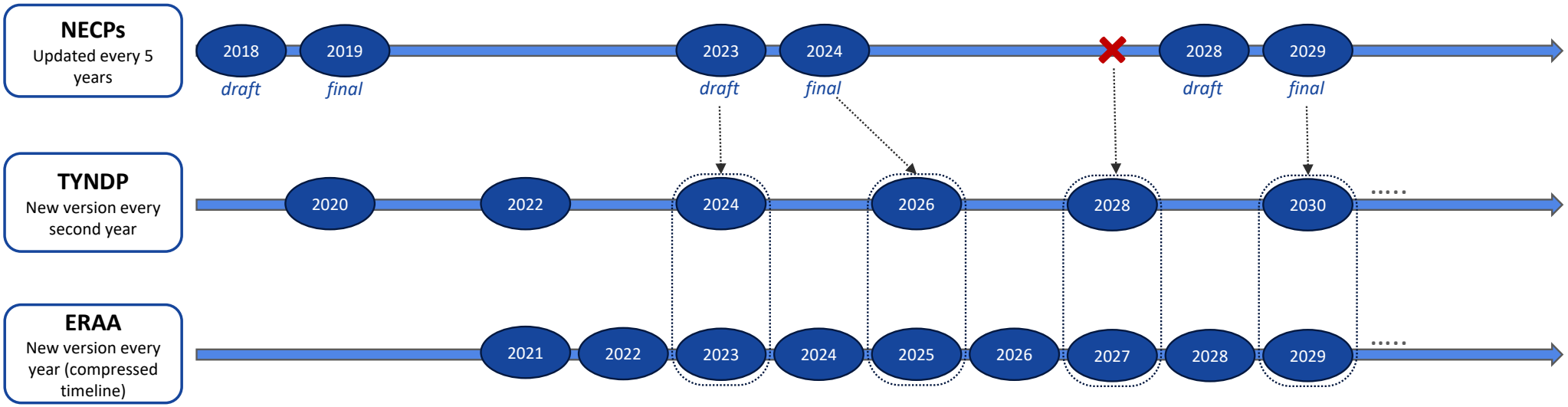
- **Stakeholders Reference Group (SRG)** established for TYNDP.

  The SRG format allows its members to **explore in depth** scenario-building processes, models and datasets, which is valuable in improving transparency and quality.
- **Lack** of in-depth expert engagement **in ERAA**.

Recommendations

- **Improve public consultation conditions**:
  - Provide **enough time** for stakeholders to give meaningful feedback
  - Extend consultation to the **entire set** of assumption data
  - Continue efforts on **transparency on feedback received** and how this feedback is **taken into account**
- Extend the role of the **SRG** to cover the **ERAA** scenario building process.

Challenge IV – Temporal misalignment between planning processes



Challenges

- **Temporal mismatch between ERAA and TYNDP** → difficulties to align processes (in particular data collection).
- **ERAA compressed timeline** forces ENTSO-E and TSOs to carry out all steps in a timely manner, which is a challenge. The delays are often **at the expense of stakeholder engagement**.
- Some TYNDP and ERAA cycles occur **without NECP being updated**.
- Delays in NECPs submission can impact ERAA and TYNDP timelines, slowing the entire chain.

Recommendations

- Consider moving **ERAA** from annual to **biennial basis**.
- Align data collection timelines (especially **data cut-off dates**):
  - National assumptions from TSOs should be **aligned by default**.
- **Anchor TYNDP and ERAA timelines to NECPs.** Between NECP updates, changes in assumptions should be justified and validated.
- **Increase NECP frequency** → consider shifting from 5-year to 4-year cycles.

Challenge V – Input data misalignment between ERAA and TYNDP

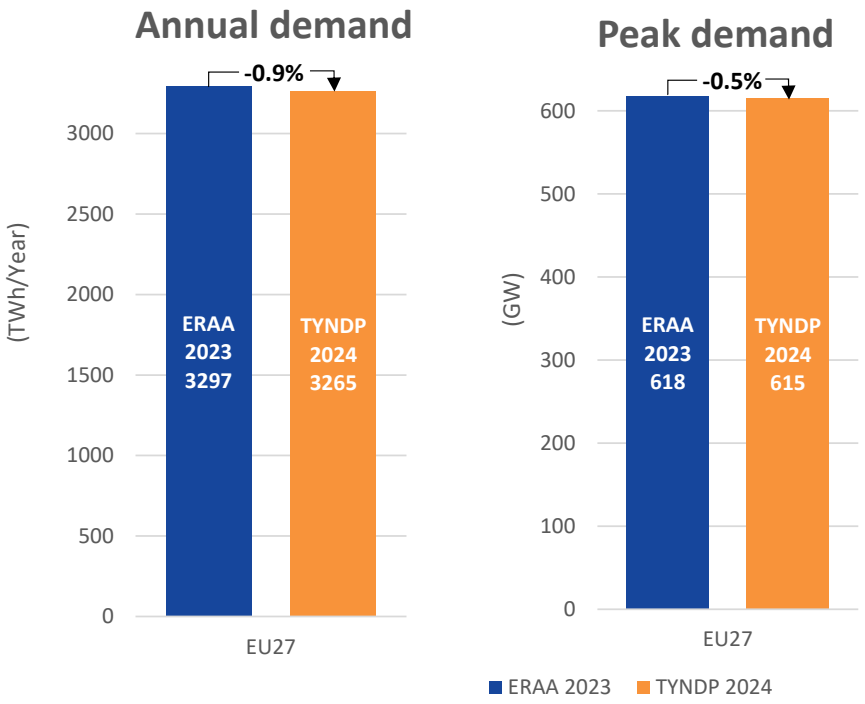


Figure – Comparison of electricity demand assumptions between ERAA 2023 and TYNDP 2024
(EU27 – horizon 2030 – climate year 2009)
***Source*: Artelys, based on data published by ENTSOs and ENTSO-E**

NB: Country-by-country comparison reveals significant deviations in certain countries.

Reasons

These deviations can be explained by:

- Different **data collection timelines** between ERAA and TYNDP
- Different **tools** or **processes** used for data collection
- Some TSOs also reported **voluntary reporting different input data** for ERAA and TYNDP.

Recommendations

- Align data collection **timelines** and **processes** (e.g. tools used for the data collection) between both exercises.
- The general rule should be to use the **same national input data** for both exercises.
- If specific situations in certain MSs require some TSOs to provide different inputs into the ERAA and TYNDP processes, these should be **justified** and **validated** (e.g. by NRAs).

Key takeaways

Challenge #1

Translation of NECPs into scenarios national assumptions

- **Harmonise NECP** formats
- Increase **transparency** from TSOs
- Establish a validation role for **NRAs**

Challenge #2

Process to ensure compliance of scenarios with EU targets

- Improve the gap-filling methodology for **larger gaps**
- Stronger role and involvement of **EC** & **ACER**
- **Align** between EU targets compliance verification between EC and ENTSOs

Challenge #3

Stakeholder engagement process

- Extend **SRG** to **ERAA**
- Extend consultation to the **entire** set of assumption data

Challenge #4

Temporal misalignment between TYNDP, ERAA and NECP processes

- Consider reducing **ERAA** frequency to **biennial**
- **Align** data collection **timelines** between ERAA and TYNDP
- **Anchor** TYNDP and ERAA timelines to **NECPs' timelines**

Challenge #5

Input data misalignment between ERAA and TYNDP

- Align national input data between ERAA and TYNDP
- In case of exceptional deviations, **justify** and **validate** (e.g. by NRAs)

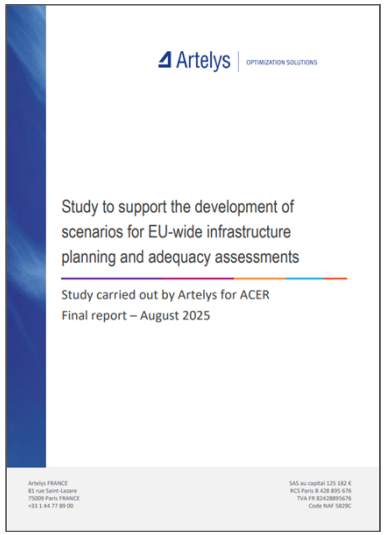
For further information

Additional challenges and recommendations not presented today

- On the current processes:
  - Transparency
  - Alignment between ERAA and TYNDP
  - Use of the **ETM tool**
  - Etc.
- Proposals of **TYNDP scenario variants** methodology and **ERAA additional scenario** based on current trends.
- Methodology proposal to transparently report **how scenario assumptions are chosen** and compare to other sources from the literature.

https://www.acer.europa.eu/news/acer-consultancy-study-recommends-improvements-eu-scenario-development

- **Report**



- **Annexes**

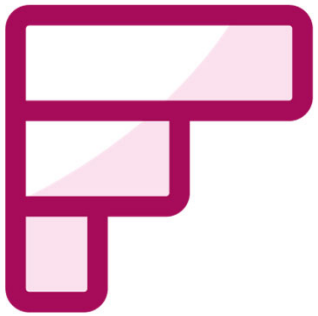
Annex I
Benchmark results

Annex II
Inputs table

Annex III
Validation of scenarios inputs

Questions?

Thank you for your attention



Which of the identified challenges is the biggest barrier(s) to robust and consistent scenarios for EU-wide infrastructure and adequacy assessment?

Audience Q&A

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Closing remarks

Fay GEITONA, ACER

Thank you.

The contents of this document do not necessarily reflect the position or opinion of the Agency.

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European Union Agency for the Cooperation of Energy Regulators

info@acer.europa.eu
acer.europa.eu
@eu-acer.bsky.social
linkedin.com/company/eu-acer