

Kick-off Workshop

TYNDP 2028 Scenario Building

1st of October 2026



Privacy disclaimer

This is a public workshop. Please be aware that:

- the workshop is going to be recorded
- the video recording and the presentations will be made available online to allow for a dissemination of the workshop content to a wider public
- pictures will be taken during the workshop for use in the ENTSO-E, ENTSG and ENNOH social media accounts

Agenda

- Introduction (5 mins)
- EC introductory presentation (5 mins)
- Objectives of Scenario building 2028 (10 mins)
- The TYNDP 2028 Scenario main deliverables (10 mins)
- The TYNDP 2028 Scenario cycle high-level timeline (10 mins)
- The TYNDP 2028 Scenario Framework (15 mins)
- **Q&A #1(15 mins)**
- The Innovation Roadmap (15 mins)
- The Stakeholder Engagement Plan (5 mins)
- The Stakeholder Reference Group's (SRG) role in the TYNDP 2028 Scenarios cycle (10 mins)
- **Q&A #2 (15 mins)**
- Closing remarks (5 mins)

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Scenario Building

Introduction

Eduardo Hermes – ENTSO-E
5 minutes

TYNDP 2028 scenario managers



Jacques Reberol

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Anna Kralli

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Scenario Building

European Commission's expectations on the TYNDP 2028 scenario cycle

Maciej Grzeszczyk (European Commission)
5 minutes

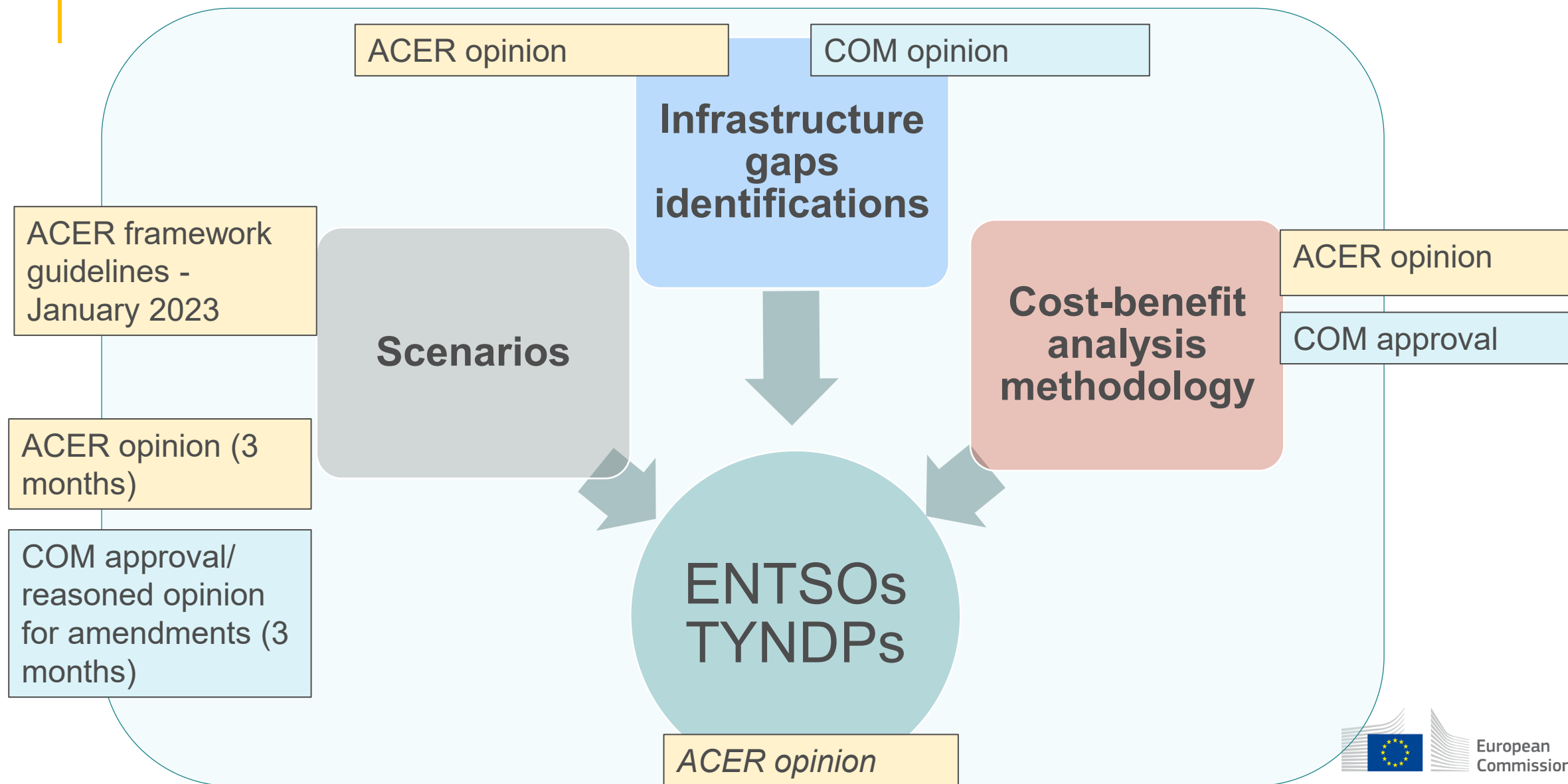


TYNDP 2028 scenarios: policy and regulatory context

European Commission, ENER C4, Maciej Grzeszczyk

TYNDP2028 Scenario kick-off workshop, 1 October 2026

TEN-E framework for infrastructure planning



Article 12 TEN-E – scenario requirements

- **Compliance with specific requirements → ACER framework guidelines**
 - transparent, non-discriminatory and robust development process;
 - in line with the energy efficiency first principle;
 - In line with the Union's 2030 targets for energy and climate and its 2050 climate neutrality objective
 - taking into account
 - the latest available Commission scenarios,
 - when relevant, the national energy and climate plans
- **Stakeholder involvement on key elements**
- **A long-perspective until 2050 and intermediary steps as appropriate**
- **Input and output data published in a sufficiently clear and accurate form**

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Scenario Building

Objectives

Eduardo Hermes – ENTSO-E
10 minutes

TYNDP 2028 Scenarios: navigating Europe's energy transition

A common strategic compass for Europe's electricity, methane and hydrogen systems

Europe's interconnected energy systems are undergoing profound change:



Decarbonisation and transformation of energy demand



Rapid deployment of renewable and low-carbon energy



Sector integration (electricity, hydrogen, methane)



Growing system complexity and uncertainty

Long-term infrastructure
decisions require **robust
scenario planning**

Why Europe needs joint TYNDP Scenarios

Joint scenarios provide a common quantitative basis for integrated infrastructure planning



They are used to:

- Assess future infrastructure needs across electricity, methane and hydrogen
- Support system-needs studies and project assessment
- Test the energy system across different transition and economic conditions
- Provide a common and transparent analytical reference for stakeholders



The Scenario process is guided by:

- The TEN-E Regulation and ACER's Scenario Framework Guidelines
- EU energy and climate targets
- The energy efficiency first principle
- The latest available national and European planning information, including NECPs

One common scenario foundation. Three complementary infrastructure perspectives

Why Scenarios matter beyond the Associations

Scenarios support decision-making across Europe

Policymakers & regulators

- Evidence for infrastructure and policy alignment

Market participants & investors

- Long-term visibility on system developments

Industry & technology developers

- Insights on electrification and hydrogen development

Civil society & Academia

- Transparent basis for dialogue and scrutiny

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Scenario Building

Main Deliverables

Anna Kralli – ENNOH
10 minutes

Stakeholder Engagement Plan

A public plan explaining how stakeholders will be informed and involved throughout the TYNDP 2028 scenario-building cycle.

Updated during the cycle as activities and dates are confirmed

Engagement approach

Objectives, principles and the stakeholder groups to be involved.

Activities and timing

SRG meetings, workshops, webinars and public consultations.

Participation arrangements

How stakeholders can contribute, access material and submit feedback.

Handling of feedback

How ENTSO-E, ENTSG and ENNOH will assess comments and explain how they influenced the work.

Governance and updates

Responsibilities, communication channels, milestones and version control.

Innovation Roadmap

A strategic and dynamic tool with a transparent record of methodological, modelling and toolchain improvements considered for the 2028 cycle.

Maintained as a living document and updated throughout the cycle

Sources of innovation

Regulatory requirements, ACER guidance, lessons learned and proposals from the SRG, TSOs and other stakeholders.

Innovation descriptions

The issue addressed, proposed change, expected benefit and affected process or model.

Prioritisation

Items planned for 2028, nice to have, and others to be further assessed or considered out of scope in the upcoming cycle.

Assessment and testing

Technical feasibility, dependencies, resource needs, risks and test results.

Scenario Building Methodology Report

The technical explanation of how the agreed scenario framework is translated into quantified scenarios and market models.

Methodology subject to public consultation

Inputs and data flows

Data collection, sources, assumptions, parameters, toolchain and quality controls.

Demand and supply

Annual and hourly demand, supply potentials, costs, imports and energy conversion.

System modelling

Weather, grids, market modelling and interactions between electricity, methane and hydrogen.

Target compliance and economic variants

Gap-filling and consistency with 2040 and 2050 EU objectives. Purpose and methodology of the selected variants

Annexes

Detailed parameters, country information and model inputs.

TYNDP 2028 Scenarios Report

The main public report presenting the scenario framework, key assumptions, results and findings.

Published first as a draft and finalised after the formal review process

Purpose and framework

Legal context, role of the scenarios, variants and scenario architecture.

How the scenarios were built

Key assumptions, data sources, stakeholder engagement and implemented innovations.

Scenario results

Demand, supply, production, flexibility, energy balances and key indicators.

Target compliance

How results comply with the European energy and climate targets.

Benchmark with other studies

Comparison of scenario results with other publicly available studies.

Scenario input-data packages

Validated, model-ready datasets that consolidate the information collected for scenario quantification and allow assumptions to be traced and reused.

Model inputs – National trends

README files, CO2 emission factors, demand, EV, Fuel and CO2 prices, heat, hydro, hydrogen, line data, nodes, PECD, PEMMDB, SRES

Model input - Variants

Input data for the selected variants

Behind the meter

Behind the meter data for batteries and PVs

Scenarios Consultation Summary Report

The formal record of the public consultation package, the feedback received and ENTSO-E's, ENTSOG's and ENNOH's joint response to each feedback.

Published after main consultation period to demonstrate transparency, responsiveness. and accountability.

Consultation scope

Regulatory context, objectives of the consultation and related stakeholder groups.

Consultation input

Methodologies, data, parameters, assumptions, innovations.

Feedback received

A structured summary of responses by topic and by consultation question.

Assessment

Comments on the feedback and an explanation of resulting decision, changes or rejections.

Supporting record

Additional consultation workshop Q&As, supporting material and annexes containing consultation responses by organisation.

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Scenario Building

High-level timeline

Jacques Reberol – ENTSOG
10 minutes

TYNDP 2028 Scenario cycle high-level timeline

ACTIVITY	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Innovation Roadmap											
Innovations testing											
Data Collection											
PEMMDB data collection 1 (NT)											
Gas/H2 data collection											
ETM data collection											
Data collection 2 (non-PEMMDB/DFT)											
Gas alignment with PEMMDB											
Data collection 3 (innovations) *no public. Cons											
PEMMDB / data updates											
Methodologies											
Time-series generation (DFT/H2)											

Innovation Roadmap

- 23/9/2026: WGSB first version
- 29/10/2026: Innovation Roadmap publication
- 01/01/2027: WGSB Innovations cut-off
- 07/04/2027: Deadline on Innovations decisions
- Oct-May: Innovations testing

Data Collection

- 19/10/2026: Deadline Quintel on ETM implementation phase
- 16/05/2027 Freeze input data
- 22/01/2027: ETM data validation
- 08/02/2027: WGSB/STG data input approval milestone
- Data updates: Jan-Feb, Apr-May

TBC: data cut-off date: 17/12/2027

Methodologies

- 04/01/2027: Deadline of validation of set of 5 climate years
- 29/01/2027: Methodology approval WGSB & StG
- 16/05/2027 Freeze input data
- 22/01/2027: ETM data validation
- Data updates: Jan-Feb, Apr-May

TYNDP 2028 Scenario cycle high-level timeline



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Scenario Building

Scenario Framework

Laura López García – ENTSO-E
15 minutes

TYNDP 2028 Scenario Framework

Collect the best available national policies, then address the EU target gap through a transparent central methodology.

1

COLLECT THE NATIONAL BASELINE

Use the most up-to-date and best available scenario aligned with national policies and national targets, including those reflected in NECPs.

3

APPLY A CENTRALISED METHODOLOGY

WGSB will address the gap between aggregated national trajectories and the agreed target-compliant pathway through a methodology developed and consulted before implementation.

2

DOCUMENT AND JUSTIFY DEVIATIONS

Any deviation from NECPs must be documented, justified and made transparent to stakeholders through the consultation process.

4

SHOW THE COUNTRY-LEVEL GAP

Compare collected national trajectories with target-compliant values by country. The final target-compliant scenario will not be a bottom-up aggregation of national inputs.

Key change from 2026: move away from the demand-destruction approach towards an explicit, consultable target-alignment methodology.

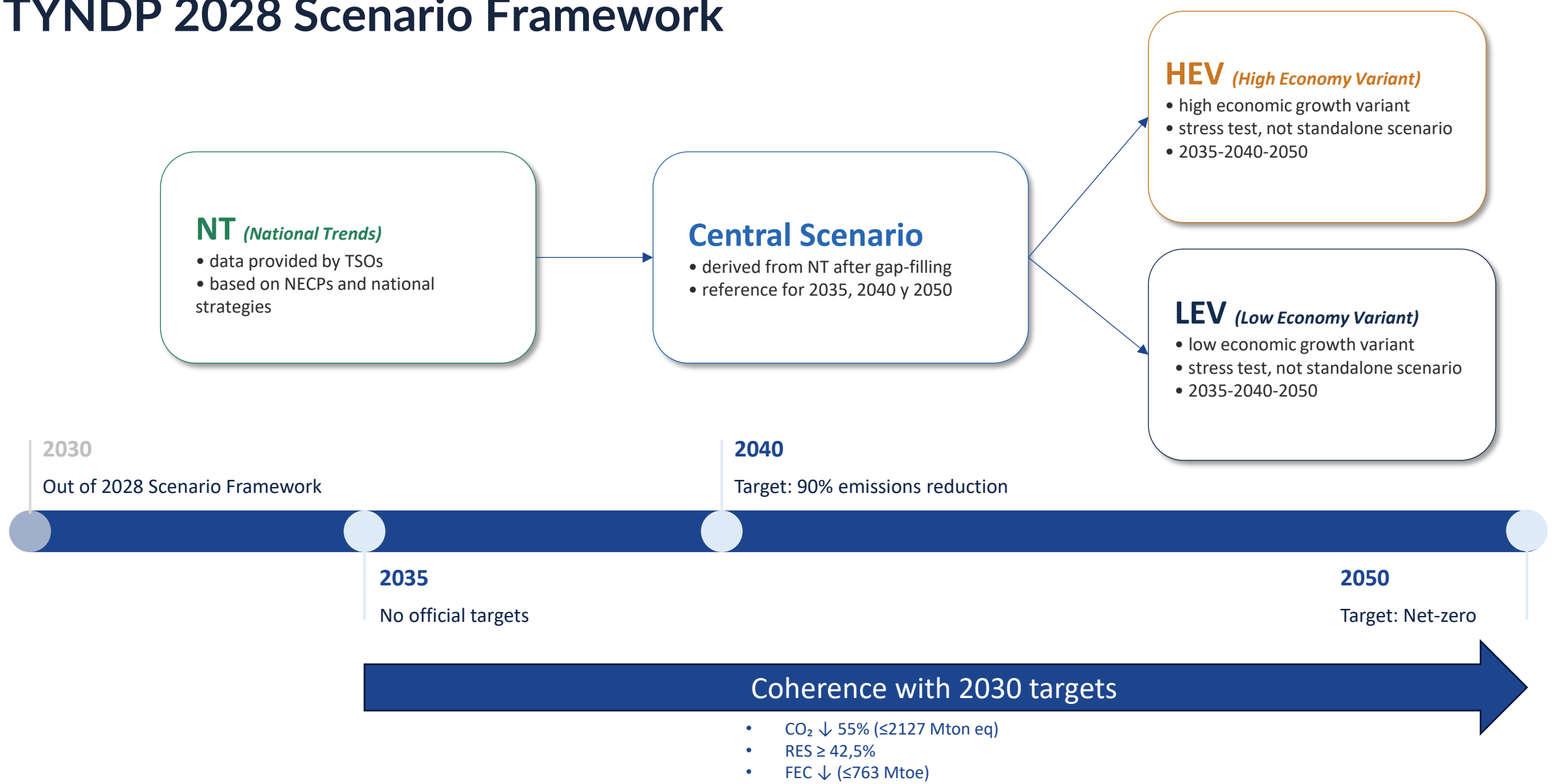
TYNDP 2028 Scenario Framework



Principles for TYNDP 2028

- ETM adjustments should represent real sectoral transformation: efficiency, electrification and fuel substitution.
- Electricity, methane and hydrogen demand should change accordingly, where appropriate.
- Generation and conversion capacities should respond where needed.
- Remaining gaps should be shown rather than hidden through formal compliance assumptions.

TYNDP 2028 Scenario Framework



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Scenario Building

Innovation Roadmap

Joni Karjalainen & Hanne Pittomvils – ENTSG & 50Hertz
15 minutes

Definition of the Innovation Roadmap: TYNDP Scenarios

The main aims of the Roadmap for the TYNDP Scenarios 2028, as an update, are to:

“...a living roadmap document detailing planned changes and larger innovations to be implemented...”

[Article 22](#) in ACER Framework Guidelines for the Joint TYNDP Scenarios

(1) Re-assess and re-prioritise the 2026 innovations

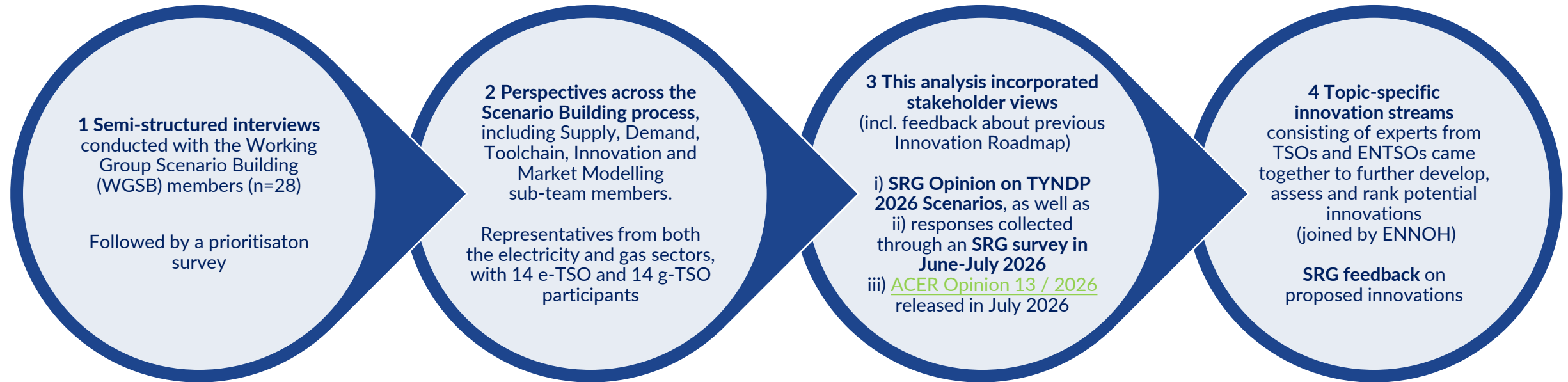
(2) Consolidate information for the choice of 2028 innovation priorities

(3) Contribute to improved transparency, documentation and tracking of the proposed innovations as well as to facilitate stakeholder engagement, as a living document

Access here:

[TYNDP 2026 Scenario Report chapter 8, p. 26-28](#)
and its [Annex II: Innovation Roadmap Implementation p. 131-136](#)

Preparation of the Innovation Roadmap 2028



A combination of qualitative and quantitative data collection methods, drawing on the experiences of TYNDP 2026 scenario-building participants and the feedback received from the SRG

Multiple interlinked criteria for innovation prioritisation

1. Does a proposal fit the definition of an innovation?
2. Is it improving a regulatory requirement?

Example: Economic variants in ACER Framework

Guidelines for Joint TYNDP Scenarios

3. Is it a priority for the robustness of scenario-building results?
Low, Medium, High
4. Is it feasible in terms of timeline / resources?
5. Do stakeholders also see it as a priority?

From preparatory stage to prioritisation

Innovations to be implemented

Nice-to-have innovations

Innovations requiring further assessment

Out-of-scope for upcoming cycle innovations

A change in approach, methodology, data, modelling, toolchain or quality assurance process that has the potential to improve the accuracy, robustness, transparency, usability or efficiency of the TYNDP Scenario Building process and its results

Innovation Roadmap treats eight thematic areas

Scenario
frame-
work and
metho-
dology

Data
quality
and
visuali-
sation

Toolchain
and
modelling
infra-
structure

Market
represent-
ation

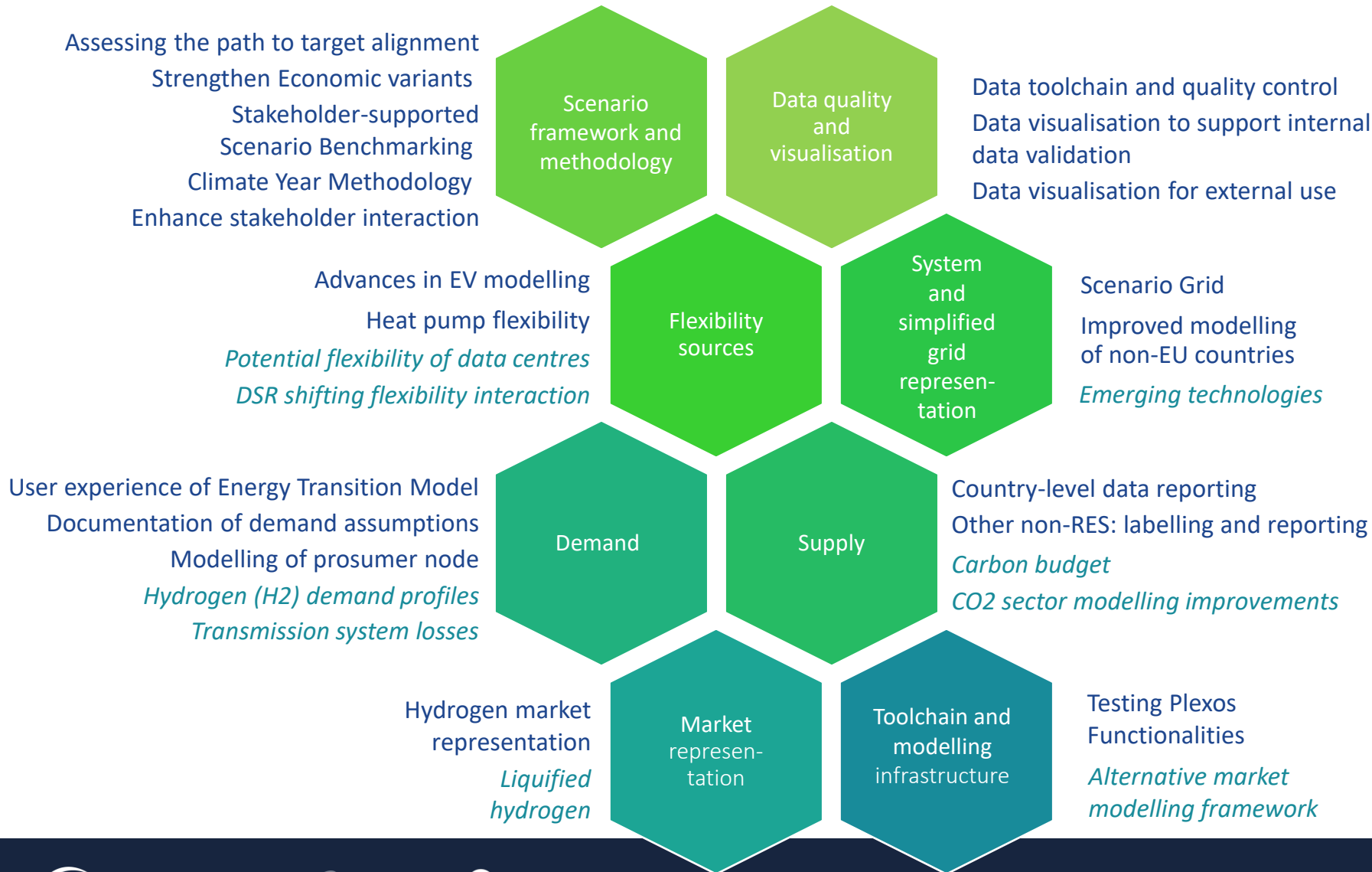
Flexibility
sources

Demand
topics

Supply
topics

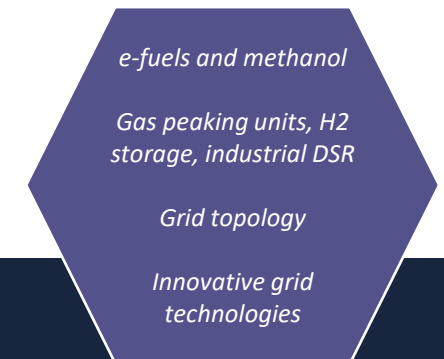
System
and
simplified
grid
represent-
ation

High-priority innovations foreseen to be implemented

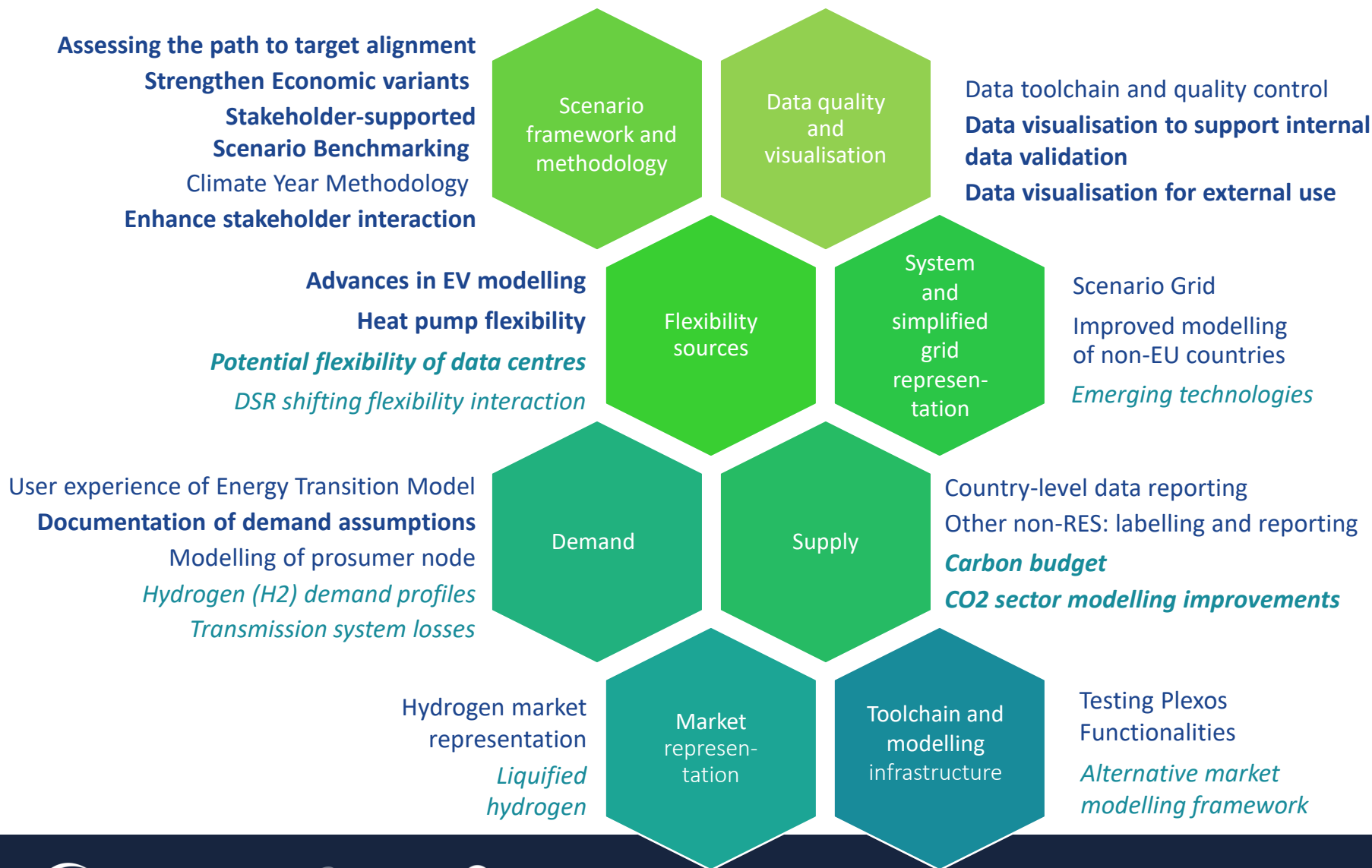


- ✓ 19 innovations are to be implemented in the Roadmap
- ✓ 9 innovations are *nice-to-have* or *should be further assessed*
- ✓ 8 innovations are assessed as out of scope for the upcoming cycle

Although foreseen to be out of scope for the 2028 scenarios, they also will be included in the Innovation Roadmap:



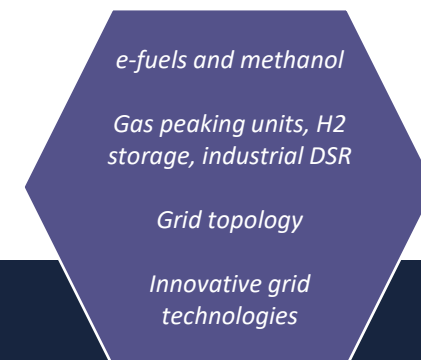
High-priority innovations foreseen to be implemented



*Proposed role for
 Stakeholder Reference
 Group (SRG)
 involvement (in bold)*

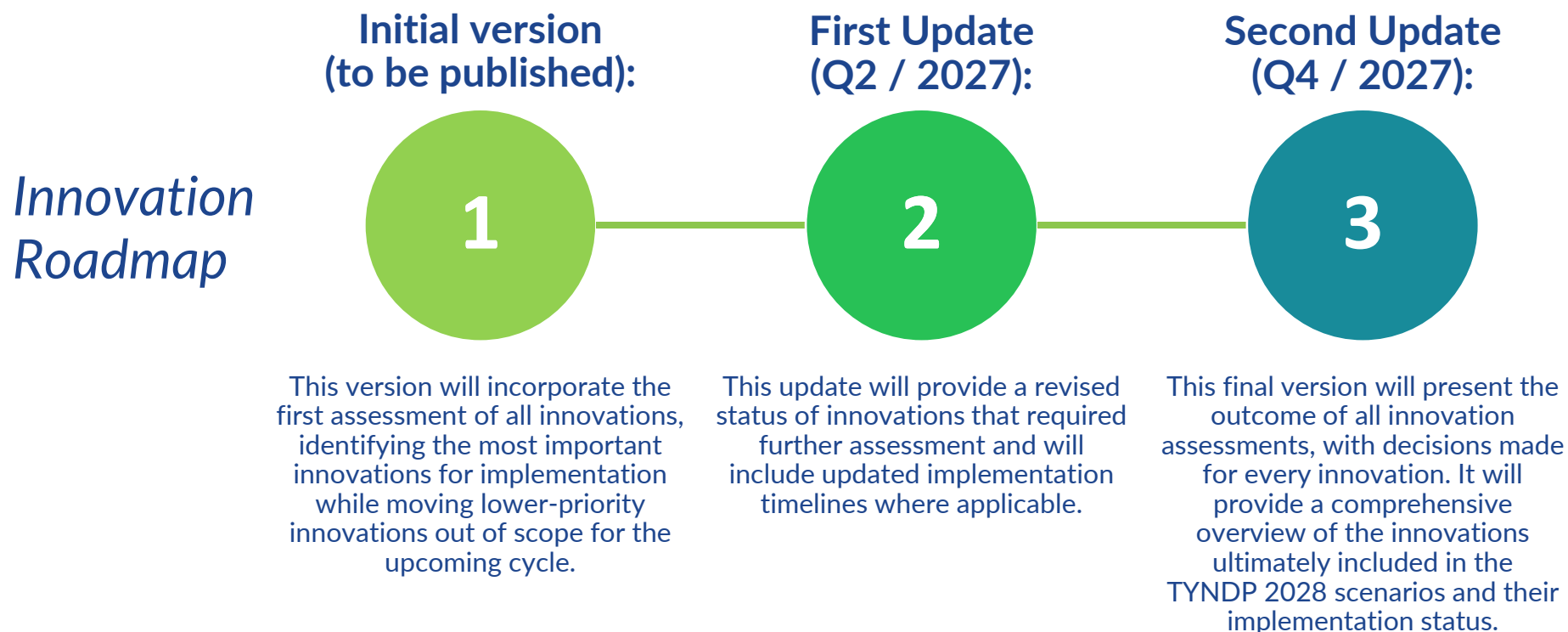
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Although foreseen to be out of scope for the 2028 scenarios, they also will be included in the Innovation Roadmap:



Innovation Roadmap and its Implementation Plan

Follow-up discussions planned on individual topics with relevant experts at ENTSOs based on feedback from Stakeholder Reference Group (SRG) members



Public consultation of the Innovation Roadmap is planned to take place in Q1-Q2 / 2027

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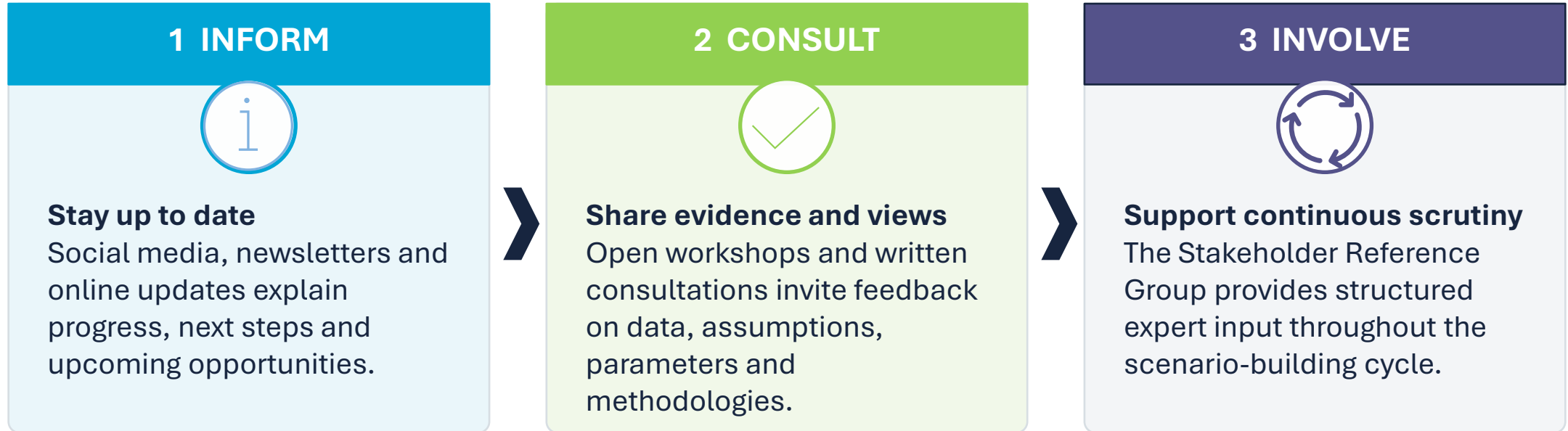
Scenario Building

Stakeholder Engagement Plan

Kristy Louise Rhades
5 minutes

How stakeholders can shape the TYNDP 2028 Scenarios

Follow the process: entsos-tyndp-scenarios.eu | Contact: scenarios@entsos-tyndp-scenarios.eu



Stakeholder Engagement Plan

Structured approach for engaging stakeholders throughout the scenario-building process, ensuring **transparency, inclusiveness, traceability** of feedback, and meaningful participation in the development of credible European energy scenarios.

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Scenario Building

The Stakeholder Reference Group's role in the TYNDP 2028 Scenarios cycle

Andrzej Ceglarz & Abi Afthab Olikathodi
15 minutes



STAKEHOLDER REFERENCE GROUP
FOR THE TYNDP SCENARIOS

The TYNDP 2028 Scenario kick-off workshop

Andrzej Ceglarz, Renewables Grid Initiative
Abi Afthab Olikathodi, Eurelectric

01.10.2026

BACKGROUND

41

- ❖ 2026 TYNDP Scenarios Cycle was the first one that involved the Stakeholder Reference Group (SRG)
- ❖ Launched in Sept 2023 – based on ACER Scenario Guidelines (Jan '23) “to ensure key stakeholders are appropriately consulted and have the opportunity to interact among themselves.”

Responsibilities

1. Timely, independent, expert input to the ENTSOs' development of scenarios
 - ❖ Scrutiny of inputs, assumptions and modelling methodologies
 - ❖ Informed and balanced view, reflecting majority and minority views
2. Co-creation of stakeholder engagement plans (published by the ENTSOs)
3. Evaluation of the scenario-development process and recommendations for improvements of the next cycle

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MEMBERSHIP IN THE SRG

42

Max. 3 organisations representing a given stakeholder group category
(based on SRG's [Terms of Reference](#))

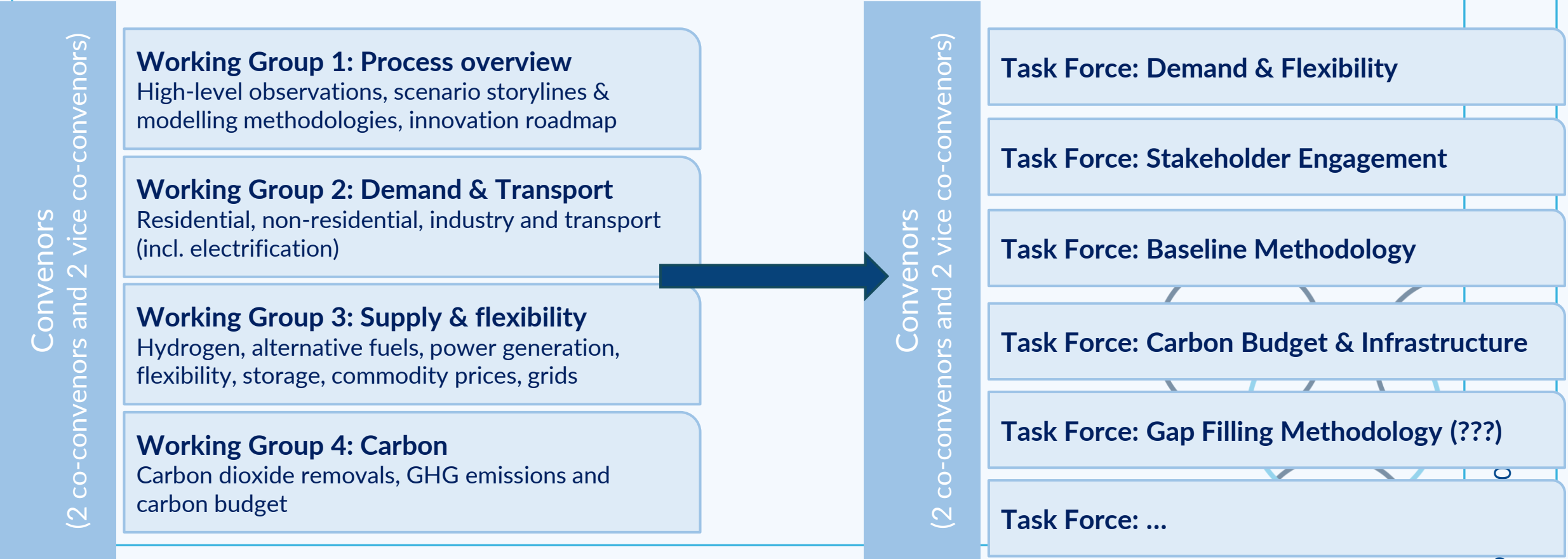
Members of the Stakeholder Reference Group (currently 22)

- EU DSO ENTITY
- ASSOCIATIONS INVOLVED IN THE ELECTRICITY MARKET
- ASSOCIATIONS INVOLVED IN THE GAS MARKET
- HEATING AND COOLING STAKEHOLDERS
- CCS AND CCU STAKEHOLDERS
- INDEPENDENT AGGREGATORS
- DEMAND-RESPONSE OPERATORS
- SUPPLY-SIDE OPERATORS
- ORGANISATIONS INVOLVED IN ENERGY EFFICIENCY SOLUTIONS
- ENERGY CONSUMER ORG.
- CIVIL SOCIETY REPS
- OTHER ORGANISATIONS
- INDEPENDENT EXPERTS

STRUCTURES OF THE SRG

Organisational set-up

TYNDP 2026 cycle → TYNDP 2028 cycle



SELECTION OF THEMATIC TASK FORCES

44

2026 TYNDP cycle OUTPUTS:

❖ Six sets of recommendations:

- ❖ Stakeholder Engagement Plan for the TYNDP 2026 scenarios
- ❖ Innovation Roadmap
- ❖ Gap Filling Methodology
- ❖ Commodity Prices
- ❖ Interlinked Modelling Process
- ❖ Enhancing Transparency in Demand Modelling

❖ Other inputs

- ❖ EV modelling inputs
- ❖ ETM data change inputs

❖ SRG Opinion on 2026 TYNDP Scenarios



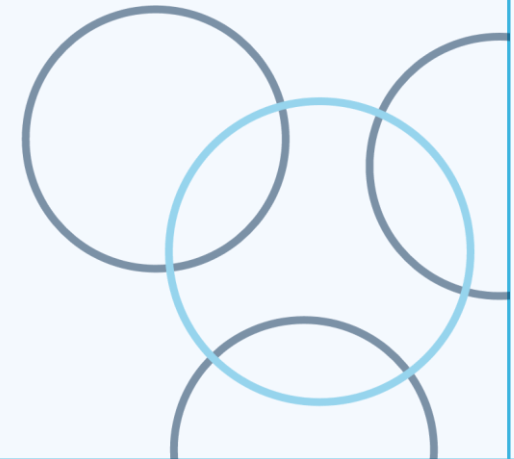
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Available [here](#)

THE WORK HAS ALREADY STARTED

45

- ❖ SRG's feedback to the first draft of the Stakeholder Engagement Plan
- ❖ SRG's feedback to the first draft of the Innovation Roadmap
- ❖ Initial discussion on the Gap Filling Methodology
- ❖ Demand and Flexibility Task Force meetings



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DEMAND DATA AND MODELLING

- ❖ **Demand projections:** The SRG is happy to support ENTSOs in improving benchmarking demand inputs and projections.
- ❖ **Heat demand and heat-pump modelling:** The SRG is happy to support improvements to heat-demand profiles and heat-pump modelling, including a better representation of how heat-pump performance and electricity demand vary with temperature.
- ❖ **Heavy-duty EV modelling:** The SRG will support further development of heavy-duty EV modelling, including assumptions on demand profiles and flexibility, and has already started sharing relevant data for consideration in the TYNDP 2028 cycle.

Some of these aspects mentioned already in the first draft of the Innovation Roadmap

FLEXIBILITY AND CARBON CAPTURE MODELLING

47

TYNDP 2028 SCENARIO BUILDING 01.10.2026

FLEXIBILITY

- ❖ Support to model industrial demand shifting across hours and days, beyond predefined load shedding.
- ❖ Support to capture smart heat pumps, thermal storage, electrolyzers and hydrogen storage more fully.

Carbon budget , e-fuels & CCUS

- ❖ SRG is keen to support on improving the carbon budget methodology
- ❖ SRG is keen to support on the modelling of the e-fuels/e-chemicals/industrial, non-energy emissions/CCU/CCS value chain

Some of these aspects mentioned already in the first draft of the Innovation Roadmap

NEXT STEPS FOR THE SRG

48

Thematic workshops (Baseline Methodology; Demand & Flexibility TF)

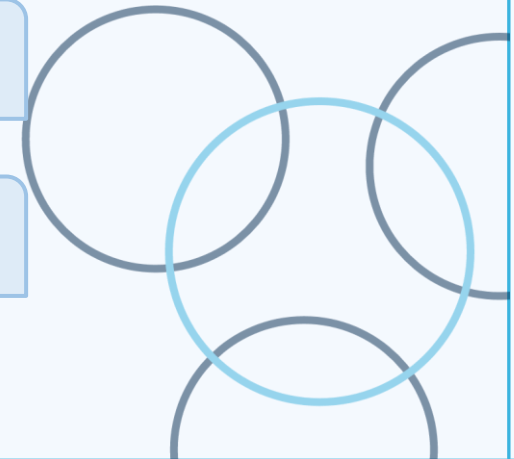
Scenario Building Timeline from the ENTSOs - to understand the process ahead

Exploring synergies between different TYNDP deliverables
(Innovation Roadmap, Cut-off-date, Benchmarking, Storylines etc.)

Consolidation of different Task Forces

Internal presentations of sectoral data (heating & cooling; biomethane)

01.10.2026



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Closing Remarks

Eduardo Hermes & Anna Kralli & Jacques Reberol – ENTSO-E & ENNOH & ENTSG
5 minutes



Thank you for your attention!

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