TYNDP 2026

Scenario Building

Online Webinar, 29th July 2026

14:00 – 16:00 CEST

TYNDP 2026 Draft Scenarios Key Findings

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The recording and presentations will be published online

To allow for dissemination of the webinar content to a wider public

Agenda

No	Subject	Time	Who
01.	Introduction – Scenario Package	14:00 - 14:05 5 min	Aisling Wall (ENTSOG)
02.	2026 Scenarios high-level messages	14:05 - 14:20 15 min	Eduardo Hermes (ENTSO-E)
03.	TYNDP Scenario framework and target alignment	14:20 - 14:35 15 min	Laura López (Red Eléctrica) Eduardo Hermes (ENTSO-E)
04.	Modelling Methodologies	14:35 - 14:45 10 min	Axelle De Cadier (ENTSOG)
05.	Q&A	14:45 - 14:55 10 min	-
06.	ACER’s view on TYNDP 2026 Scenario cycle	14:55 – 15:05 10 min	Andreas Graf (ACER)
07.	SRG’s view on TYNDP 2026 Scenario cycle	15:05 - 15:15 10 min	Andrzej Ceglarz (SRG Co-convenor)
08.	Presenting the 2026 TYNDP scenarios – Central Scenario: - Demand figures - Supply figures	15:15 – 15:35 20 min	Julian Hauss (TransnetBW GmbH) Petronella Brauers (ENTSOG) Pedro Sánchez (ENTSO-E)
09.	Presenting the 2026 TYNDP scenarios – Economic Variants: - Demand figures - Supply figures	15:35 – 15:45 10 min	Eduardo Hermes (ENTSO-E) Petronella Brauers (ENTSOG)
10.	Q&A	15:45 – 15:55 10 min	-
11.	Closing remarks	15:55 – 16:00 5 min	Aisling Wall (ENTSOG)

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Introduction
Scenario Package

The TYNDP 2026 Scenarios package was published in June 2026

TYNDP 2026 Scenarios report

Purpose, policy context and key outcomes of the TYNDP Scenarios 2026. Results assessment, consistency with EU energy and climate targets.

Methodology report

How demand, supply, grid and market modelling assumptions were built.

Report data figures

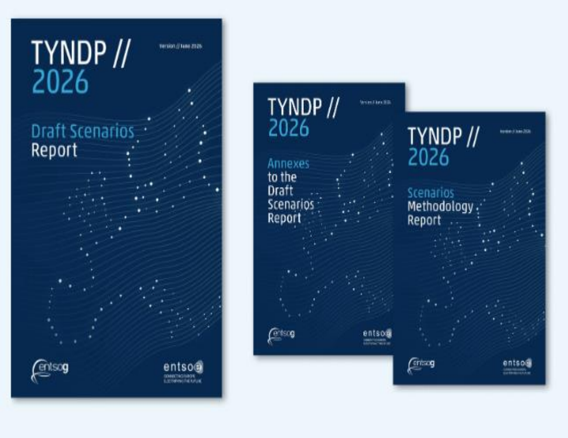
The numerical dataset behind every chart and figure in the report.

Scenario inputs

Model-ready inputs datasets used to run scenario simulations.

Visualisation Tool

Interactive platform/dashboard to explore results across countries, sectors and energy carriers.



Download the package

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High-level messages

High-level messages

A profound structural shift toward a renewable, electrified and cross-vector energy system - aligned with the EU's 2030 targets and the 2050 climate neutrality objective.

01

Ongoing electrification

Electricity demand grows across every horizon, driven by transport, heating and industry.

02

Hydrogen emerges as a key energy carrier for hard to abate sectors

Hydrogen emerges as a key energy carrier for hard-to-abate sectors such as parts of industry and transport.

03

Renewables as system backbone

Wind and solar dominate capacity growth, becoming the largest share of supply by 2050.

04

Sector coupling & conversion

Electrolysis and conversion pathways link electricity, hydrogen and methane into one system.

05

An integrated, resilient system

Stronger interconnection and multi-vector coordination secure supply with less carbon.

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Scenario framework and target alignment

Scenario framework and target alignment

Scenarios: the common analytical foundation for long-term planning

USED FOR:

- TYNDP system needs assessments
- Project evaluation and cost benefit analysis
- Market and system modeling studies
- Alignment across modeling tools and datasets

ALIGNED WITH:

- EU climate and energy targets
- National Energy and Climate Plans (NECP)
- TEN-E Regulation Framework
- Energy Efficiency first principle (EED)

IT ENABLES:

- Evaluation of system robustness across a transition pathway
- Transparent analytical reference for stakeholders
- Qualitative basis for infrastructure investment decisions

How ACER's Framework Guidelines shaped the TYNDP 2026 Scenarios

First TYNDP scenario cycle developed under the Framework Guidelines from the outset

The guidelines shaped the scenario design, governance and stakeholder engagement process from the very beginning.

Single Central Scenario (NT+) aligned with NECPs and EU objectives

- Based on updated NECPs and EU climate and energy objectives (cut-off date 24 December 2024).
- Designed as the common reference scenario for infrastructure assessment.

Transparent methodology to ensure consistency with EU 2030 and 2050 targets

Including the introduction of a gap-filling methodology where national trajectories did not achieve EU-level objectives.

Introduction of Economic Variants (HEV and LEV)

Developed as stress tests around the Central Scenario under different macroeconomic conditions.

Fully operational Stakeholder Reference Group (SRG)

Supported by public consultation and continuous stakeholder feedback throughout the process.

Enhanced transparency and governance

Publication of methodologies, assumptions, datasets and supporting documentation.

How ACER's Framework Guidelines shaped the TYNDP 2026 Scenarios

Introduction of Economic Variants (HEV and LEV)

Developed as stress tests around the Central Scenario under different macroeconomic conditions.

(37) The set of mid-term and long-term scenarios shall include the best-estimate central scenario, based on NECPs, and contrasting "low"-economy and "high"-economy variants that serve as stress-tests of the central scenario.[20] The Agency finds that stress-testing network development along the dimension of a more conservative ('low') and a more optimistic ('high') view on the economy resonates with decision makers.

[20] Conceptual and modelling work would have to be carried out to de-construct how specific assumptions regarding energy demand and supply depend on various drivers like, for instance, the evolution of energy prices, the evolution of technology and economic growth.

TYNDP 2026 Scenario framework

National Trends (NT)
Best-estimate reflection | Policy anchored

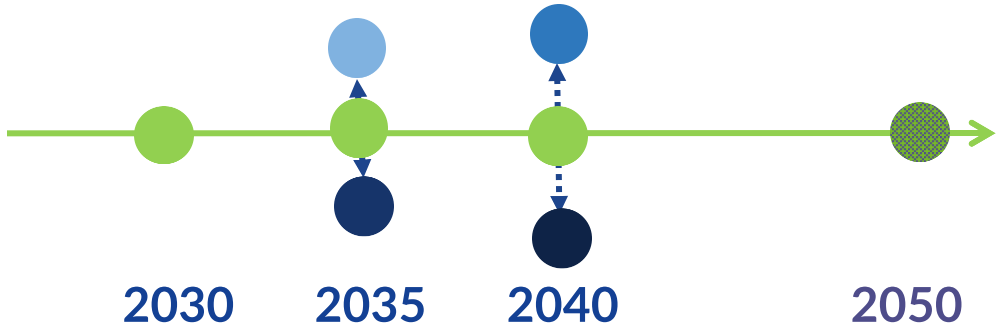
National Trends + (NT+)
Central Scenario | Reference scenario for infrastructure assessment | Target compliant | outputs are model outcome

Higher economic variant
Favorable macro
- GDP above NECP baseline
- Higher sectoral activity
- Greater willingness to invest & innovate
- Long-term sustainability orientation

Lower economic variant
Constrained macro
- GDP near zero growth
- Reduced sectoral activity
- Affordability constraints, less innovation
- Short-term cost focus

Stress test applied to NT | not a standalone scenario

Same supply | same policy | same technology framework as NT



Demand - economic variants

Four layers translate economic assumptions into demand projections

High-level drivers

Transport | Buildings | Households | Industry

Where demand originates. By sector and end-use

Adjustment types

Technology mix

Adoption | Phase-out

Faster/slower uptake of new technologies and faster/slower decline of fossil technologies

Activity

Absolute demand shifts

Sectoral activity volumes (industrial output, transport demand)

Note: Efficiency is covered via technology choice (e.g. Heat pumps, EVs). Demand team decision – no separate efficiency knob needed.

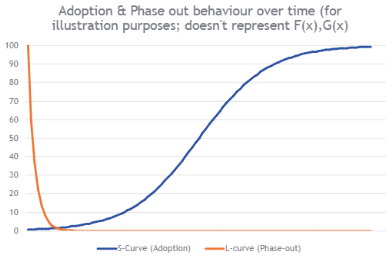
Parameters

Faster/slower technology uptake (EVs, heat pumps, hydrogen)
Faster/slower fossil decline (coal, oil boilers, ICEs)
Sectoral activity volumes (industrial output, transport demand)

Additional files

- TYNDP 2026 Draft Scenario Report Data Figures (Excel)
- TYNDP 2026 Scenario Methodology Data Tables (Excel)
- TYNDP 2026 Scenarios Gap-filling Methodology Results (Excel)
- Annex IX: Economic variants parameter specifications & adjustment Methodology (Excel)
- TYNDP 2026 Scenarios ETM Dashboard (Excel)

S-curve methodology



Adoption follows an S-curve: slow during adoption, fast during peak adoption, slow again during saturation.
Phase-out follows an inverse L-curve (: obsolete tech loses share quickly at first but is difficult to fully eliminate; this behaviour should be observable under changing economic conditions.

Supply - economic variants

Two supply parameters move with the economic variants. Everything else – capacities, the network, etc – stays fixed across the stress test

Commodity prices

Low economy -10%

Central

High economy +10%

Fuel prices

Low economy -10%

Central

High economy +10%

TYNDP 2026 Scenarios: from national plans plans to EU energy and climate objectives objectives

Updated NECPs and national policies
Assessment against EU energy and climate objectives
Target-consistent Central Scenario (NT+)

2030

Target	EU Objective	NT+ Result
Energy efficiency	FEC ≤ **763 Mtoe**	**762 Mtoe** ✅
Renewables	RES share ≥ **42.5%**	**42.55%** ✅
GHG emissions	**–55%** vs 1990	**-66.3% vs 1990** ✅

2050

Target	EU Objective	NT+ Result
Climate neutrality	Net-zero GHG emissions	**Target achieved** ✅

2040

NT+ not only meets the required 2030 and 2050 objectives, but **also remains consistent with the EU's emerging 2040 climate target**.

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Modelling Methodologies

TYNDP Scenarios modelling framework: how scenarios are built

Each country must provide a 'snapshot' of its national energy system from 2030 to 2050, based on NECPs and national strategies

1 Data Collection (2030-2050)

- Energy demand per carrier and sector (ETM)
- Supply mix (PEMMDB, ENTSOG DC…)
- Interconnections (TYNDP Project Collection)
- etc

NT

2 Economic Variants

- With ETM
- HEV y LEV
- 2035, 2040

LEV HEV

3 *Gap-filling methodology*

- Solids and liquids demand is adjusted
- Applied country by country to reach EU target (865 → 763 Mtoe)
- Electricity, hydrogen and methane are not reduced

NT+

4 Data processing (electricity, H_2, e-fuels, HHPs)

- Generation aggregation
- Demand profiling
- Interconnection capacity calculation

5 Optimisation

- Single-node model (market)
- Electricity + hydrogen
- 2030, 2035, 2040, 2050
- 3 weather scenarios per target year

6 Supply Tool

- Energy balance
- CO2
- EU-wide scale

TYNDP Scenarios modelling framework: continuity and targeted improvements

The TYNDP26 Scenarios modelling framework builds on the TYNDP24 scenario topology while introducing targeted modelling refinements.

5

Optimisation

- Single-node model (market)
- Electricity + hydrogen
- 2030, 2035, 2040, 2050
- 3 weather scenarios per target year

Continuity from TYNDP24

Maintained modelling backbone

- Consistent deviation-scenario topology
- Synthetic fuel demand explicitly represented

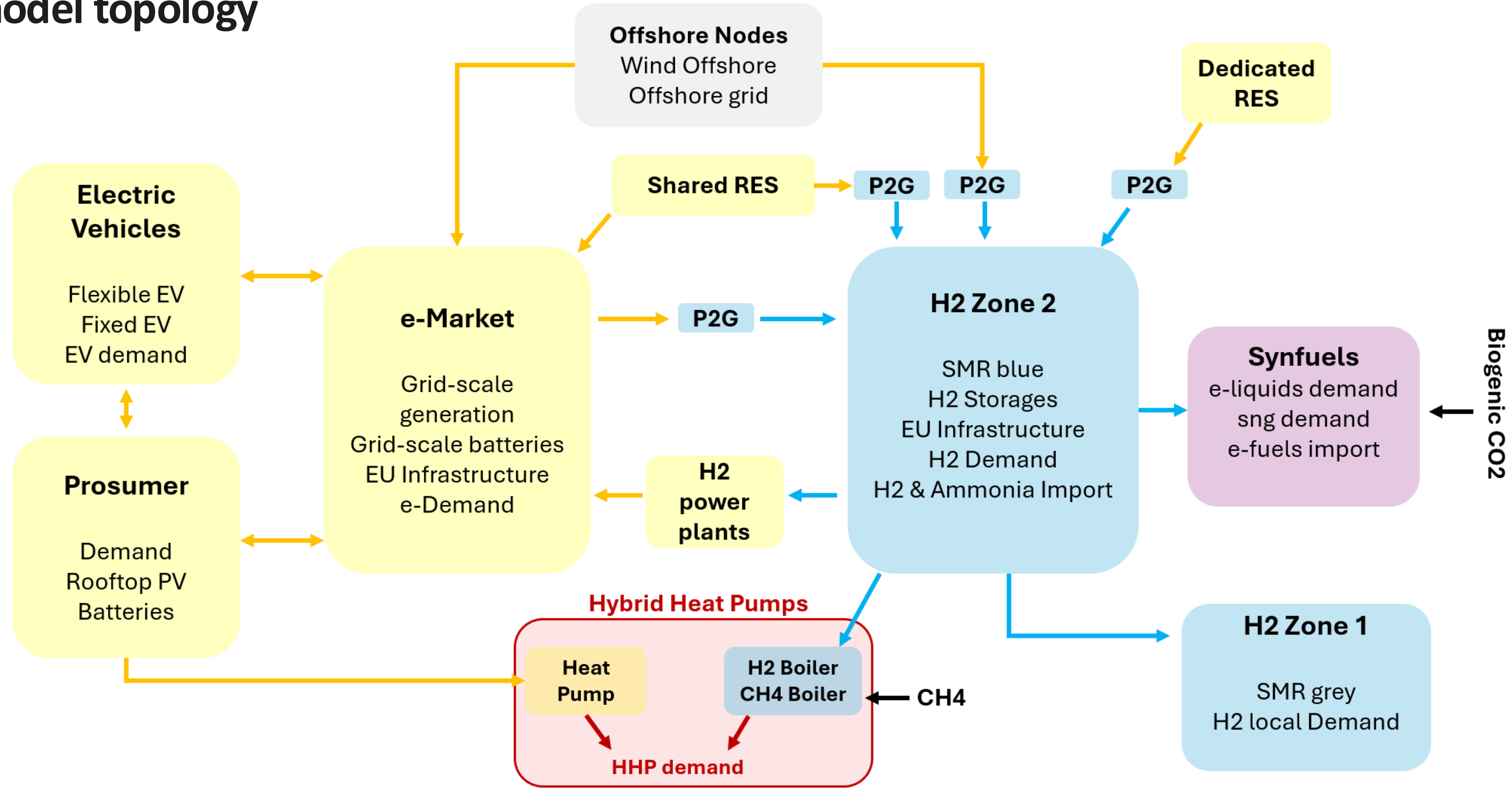
Targeted TYNDP26 refinements

Focused improvements in selected modelling areas

- Enhanced EV modelling
- H_2 : Terminals ramp rates and transport velocity
- Introduced Long-Term Contract LTC H_2 import

Reflected in the 2026 Market Model Topology on the following slide

Market model topology



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ACER's view on TYNDP 2026 Scenario cycle

Andreas Graf (ACER) - *online*
10 minutes

ACER
European Union Agency for the Cooperation of Energy Regulators

ACER Opinion on the TYNDP 2026 scenario report

ENTSO-E & ENTSOG webinar Draft TYNDP 2026 Scenarios Key Findings

29 July 2026

Andreas Graf, Policy Officer Energy Infrastructure

ACER
European Union Agency for the Cooperation of Energy Regulators

TYNDP 2026 in context

Framework context

- **First full scenario cycle** under the ACER Scenario Framework Guidelines
- **Grids Package** could change the framework for future cycles.
- **Current Framework Guidelines** are likely to remain applicable through TYNDP 2028
- **The Opinion** therefore combines recommendations for finalising TYNDP 2026 with recommendations for improving TYNDP 2028.

Assessment scope:

- **Legal basis:** Article 12 of the TEN-E Regulation
- **Assessment benchmark:** 2023 ACER Scenario Framework Guidelines

ACER European Union Agency for the Cooperation of Energy Regulators

ACER's overall assessment

Progress welcomes by ACER

✓ **Joint scenarios** continue to combine electricity, gas and hydrogen in one framework.

✓ **Economic Variants** introduce the first infrastructure stress tests around the central scenario.

✓ **A Stakeholder Reference Group** has strengthened dialogue and methodological scrutiny.

✓ **An Innovation Roadmap** establishes a structured process for continuous improvements.

Key observations

! **EU target alignment** Current scenarios do not yet provide a sufficiently credible pathway towards EU climate and energy objectives.

! **Transparency** Greater transparency is needed on the gap-filling methodology, Scenario Grid assumptions and country-level inputs.

! **Robustness** Economic Variants remain too limited to fully test infrastructure uncertainty.

! **Timeliness** Repeated delays continue to reduce the effectiveness and credibility of the TYNDP process.

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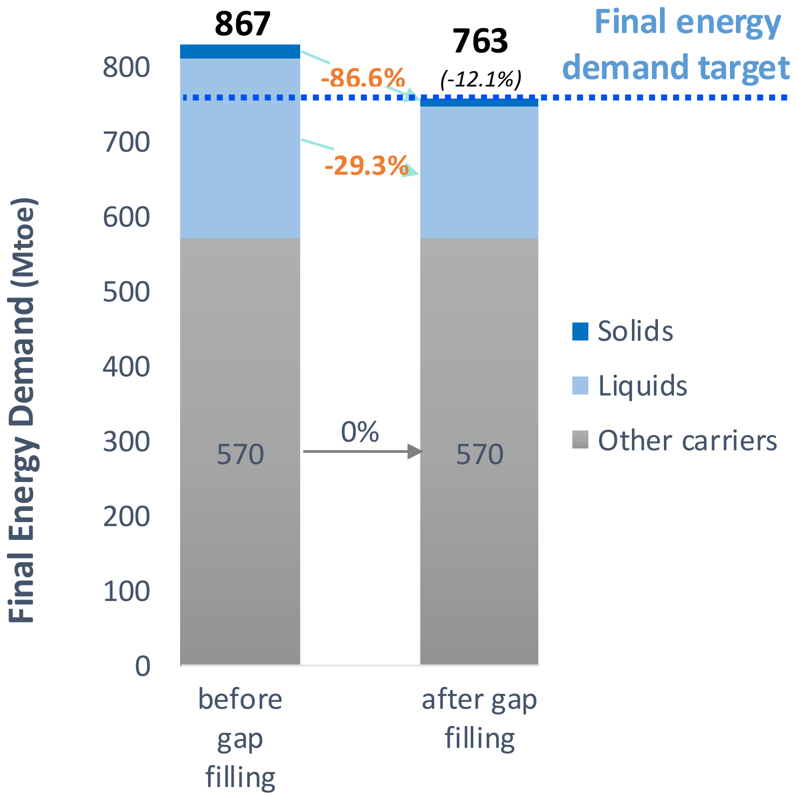
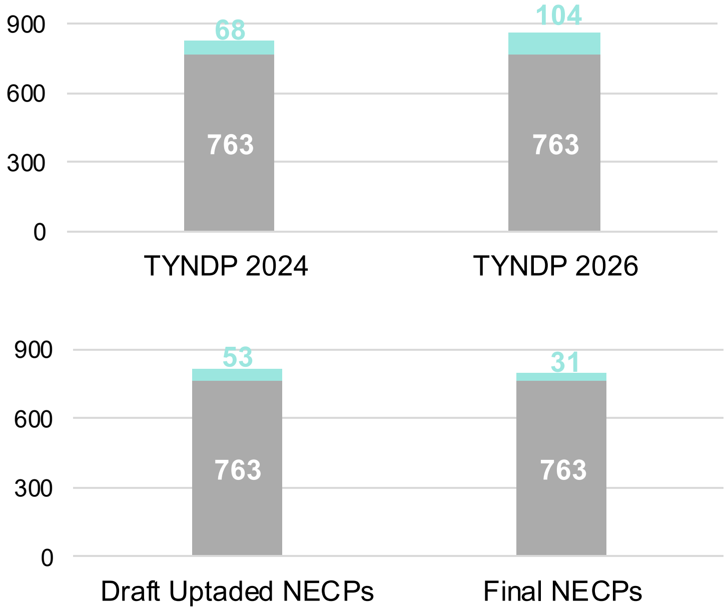
Gap-filler Dilemma – Large disconnect between NECPs and EU energy savings target

Existing gap-filling methodology

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



And the gap has grown between the TYNDP 2024 and 2026



- **Main concern:** Current methodology reduces coal/oil demand without reflecting corresponding deployment of clean alternatives and broader system transformation.
- Formal target compliance ≠ credible target-aligned pathway
- **Key ACER message: Greater transparency is needed** on both the remaining gap and the limitations of the gap-filling methodology.

[1] *Draft values for public consultation*

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Variants present limited use as infrastructure stress tests due to low variability

- **Main concern:** Variants remain too narrow to provide meaningful stress-testing of infrastructure needs, particularly regarding hydrogen uncertainty
- **Key ACER message:** The final TYNDP 2026 report should clearly **explain the limitations** of the current Economic Variants as infrastructure stress tests.

A)

SCENARIO	TARGET YEAR	ELECTRICITY	HYDROGEN	METHANE	HEAT	BIOMASS	SOLIDS	LIQUIDS	OTHERS	AMMONIA	TOTAL
LEV	2035	3,083	416	1,989	529	775	164	4,115	82	41	11,194
NT	2035	3,361	456	1,891	535	796	145	3,996	82	45	11,306
HEY	2035	3,626	488	1,808	560	817	134	3,877	82	49	11,442
LEV	2040	3,432	629	1,690	519	756	93	3,415	114	57	10,704
NT	2040	3,741	700	1,560	533	784	77	3,226	116	63	10,799
HEY	2040	4,051	765	1,428	557	815	68	3,038	117	68	10,907

B)

SCENARIO	TARGET YEAR	ELECTRICITY	HYDROGEN	METHANE	HEAT	BIOMASS	SOLIDS	LIQUIDS	OTHERS	AMMONIA	TOTAL
LEV over NT	2035	-8 %	-9 %	5 %	-1 %	-3 %	13 %	3 %	0 %	-9 %	-1 %
HEV over NT	2035	8 %	7 %	-4 %	5 %	3 %	-7 %	-3 %	0 %	9 %	1 %
LEV over NT	2040	-8 %	-10 %	8 %	-3 %	-4 %	21 %	6 %	-2 %	-9 %	-1 %
HEV over NT	2040	8 %	9 %	-8 %	4 %	4 %	-12 %	-6 %	1 %	9 %	1 %

Table 1: a) Absolute values of Final Energy Demand [TWh] for EU27,
b) EU27 Final Energy Demands Relative Share of the Variants over NT data collection

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Scenario Grid criteria allow for inclusion of less mature hydrogen and electricity projects.

- **Main concern:** Current Scenario Grid criteria do not sufficiently distinguish between more and less mature infrastructure projects.
- **Key ACER message:** The final TYNDP 2026 report should **explain the Scenario Grid criteria** and their implications for project inclusion.

Planned, but not yet permitting

- 26% of all electricity transmission projects (47 of 178)

PCI/PMI projects

- 87% of all hydrogen projects (212 of 244)

Of which

- 67% categorized as less-advanced (141 of 212)
- 54% categorized as both less-advanced and not part of an NDP (115 of 212)

Continued delays risk undermining the relevance and credibility of the TYNDP framework

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- **Main concern:** The TYNDP 2026 Scenarios Report was submitted around six months later than foreseen in the Framework Guidelines
- **Key ACER message:** Continued delays reduce the relevance of TYNDP outputs and leave less time for PCI/PMI assessment.

Milestone	**TYNDP 2024**	**TYNDP 2026**
Data collection cut-off	H1 2023	31 Dec 2024
Expected submission of Draft Scenarios Report	31 Dec 2023	31 Dec 2025
Actual submission of Draft Scenarios Report	30 May 2024	10 Jun 2026
Publication of electricity TYNDP deliverables	9 April 2025	Q4 2026 (expected)
Publication of Gas&H2 TYNDP deliverables	20 October 2025	Q1 2027 (expected)

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Priorities for finalising TYNDP 2026

- ✓ **Be transparent** about the remaining gap to EU climate and energy targets.
- ✓ **Clearly explain** the limitations of the gap-filling methodology.
- ✓ **Clarify** differences between the TYNDP central scenario and corresponding ERAA scenarios.

Thank you.
Any questions?

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SRG's view on TYNDP 2026 Scenario cycle

Andrzej Ceglarz (SRG Co-Convenor)
10 minutes

SRG

STAKEHOLDER REFERENCE GROUP
FOR THE TYNDP SCENARIOS

ENTSOs webinar:
Draft TYNDP 2026 Scenarios

Andrzej Ceglarz (RGI)
Abi Afthab Olikathodi (Eurelectric)
SRG convenors

29.07.2026

BACKGROUND

- 2026 TYNDP Scenarios Cycle was the first one that involved the Stakeholder Reference Group (SRG)

- SRG was launched in Sept 2023 – based on ACER Scenario Guidelines (Jan '23) "to ensure key stakeholders are appropriately consulted and have the opportunity to interaction 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

MEMBERS AND STRUCTURES OF THE SRG

SRG Members (currently 25)

- 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

Organisational set-up (in the 2026 TYNDP cycle)

Convenors
(2 co-convenors and 2 vice co-convenors)

Working Group 1: Process overview
High-level observations, scenario storylines & modelling methodologies, innovation roadmap

Working Group 2: Demand & Transport
Residential, non-residential, industry and transport (incl. electrification)

Working Group 3: Supply & flexibility
Hydrogen, alternative fuels, power generation, flexibility, storage, commodity prices, grids

Working Group 4: Carbon
Carbon dioxide removals, GHG emissions and carbon budget

Avaialble at: https://www.entsos-tyndp-scenarios.eu/stakeholder-reference-group/

RESULTS OF SRG'S WORK IN 2026 CYCLE

- **<u>Six sets of recommendations</u>**:

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

SRG Opinion on 2026 TYNDP Scenarios


SRG
STAKEHOLDER REFERENCE GROUP
FOR THE TYNDP SCENARIOS

SRG OPINION ON 2026 TEN-YEAR NETWORK DEVELOPMENT PLAN (TYNDP) SCENARIOS

Avaialble at: https://www.entsos-tyndp-scenarios.eu/stakeholder-reference-group/

SRG OPINION ON 2026 TYNDP SCENARIOS

GOOD PROCESS, BUT DATA NEEDS STRONGER TRANSPARENCY

Acknowledgment that it was the first TYNDP cycle that needed to be compliant with ACER Scenario Guidelines

Improved TYNDP Scenarios Process, incl. Transparency

Better understanding of the complexity of the TNYDP Scenarios

Regular and smooth information exchange leading to trustful relationship with the ENTSOs and other observers

SRG OPINION ON 2026 TYNDP SCENARIOS

GOOD PROCESS, <u>**BUT DATA NEEDS STRONGER TRANSPARENCY**</u>

- **Main concern: some input data are difficult to assess**
- **Data sources, assumptions and methods should be better documented**
- **Inputs should be cross-checked with alternative sources where possible**
- **More recent data should be used, especially where 2019 reference data is still applied**

DEMAND: AREAS FOR IMPROVEMENT

Building demand modelling

- Update ETM and building-stock data using more recent information, particularly on renovation rates and heating systems

Heating demand

- Use heat-demand profiles grounded in observed data
- Reflect the temperature dependence of heat-pump COP across different temperature ranges.

Demand projections

- Better document data sources, assumptions and methods, and cross-check inputs and results against alternative sources and models

TRANPORT & FLEXIBILITY: AREAS FOR IMPROVEMENT

EV modelling should extend its scope beyond passenger car EVs

- Model heavy-duty vehicles explicitly and improve EV flexibility assumptions to avoid misestimating peak demand and flexibility potential

Flexibility modelling should better capture demand shifting and sector coupling

- Current modelling focuses mainly on demand shedding, rather than shifting consumption across hours or days.
- Key gaps remain in industrial processes, smart heat-pump operation, thermal storage and Power-to-X.
- Electrolysers, hydrogen storage and other flexible assets are not yet sufficiently represented.
- This limits assessment of flexibility’s impact on peak demand, renewable curtailment and system costs.
- PEMMDB data should provide clearer information on the sectors, processes and contracts behind DSR potential.

Additional thoughts after preliminary review of TYNDP 2026 draft report

ADDITIONAL OBSERVATIONS:

- **Current scenario design provides a useful demand-side stress test, but covers only part of the uncertainty:**

Keeping generation capacities fixed while varying demand allows LEV and HEV to test whether the same system remains robust under weaker or stronger economic growth. However, it does not capture supply-side uncertainties—for example, a future with stronger solar deployment in Southern Europe versus greater wind expansion in Northern Europe would produce very different cross-border flows, congestion patterns and interconnection needs.

- **Improve the gap-filling methodology so it informs infrastructure planning:**

The adjustment helps align final energy demand with the EU efficiency target, mainly by reducing liquid and solid fuel demand in 2030. However, because this reduction appears to have little impact on electricity or hydrogen demand—and therefore on the infrastructure needs identified by the model—it currently risks becoming mainly an accounting exercise. The methodology should be strengthened so that the adjustments translate into meaningful changes in the energy system and infrastructure assessment, particularly ahead of TYNDP 2028.

- **Make a few more key modelling outputs publicly available:**

Publishing indicators such as total system costs, electricity and hydrogen costs per MWh, investment needs would make it easier to assess the credibility and implications of the scenarios. Since the PLEXOS model will later be used to estimate the benefits of individual infrastructure projects, greater transparency on system-level costs at the scenario stage would provide an important reference point.

Thank you!
Any questions?

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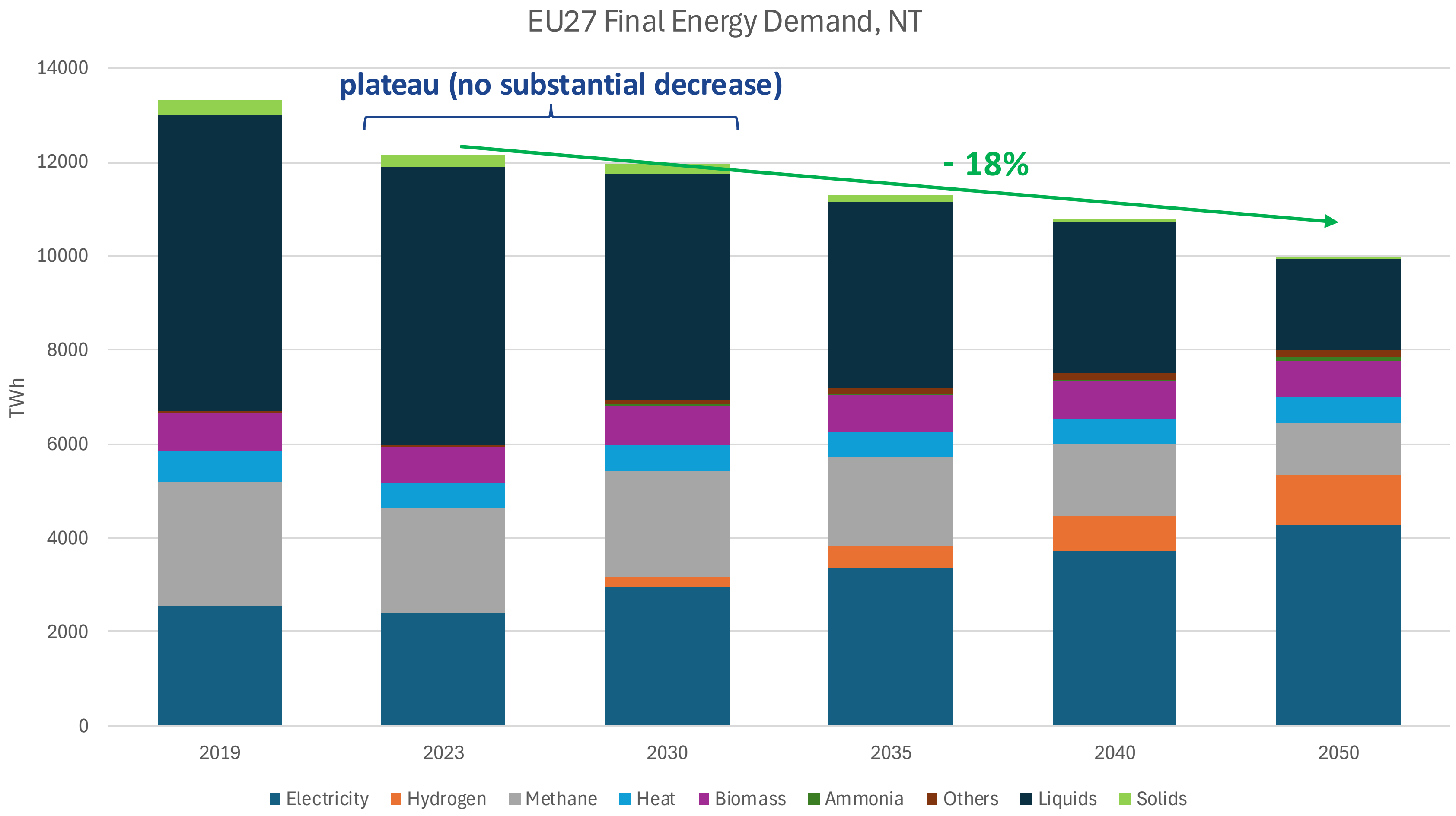
Demand and Supply
Central Scenario

Final Energy Demand – NT Data Collection



Source: TSO data collection

Key findings

FED drops 18% between 2023 and 2050

2023: **12,160 TWh**

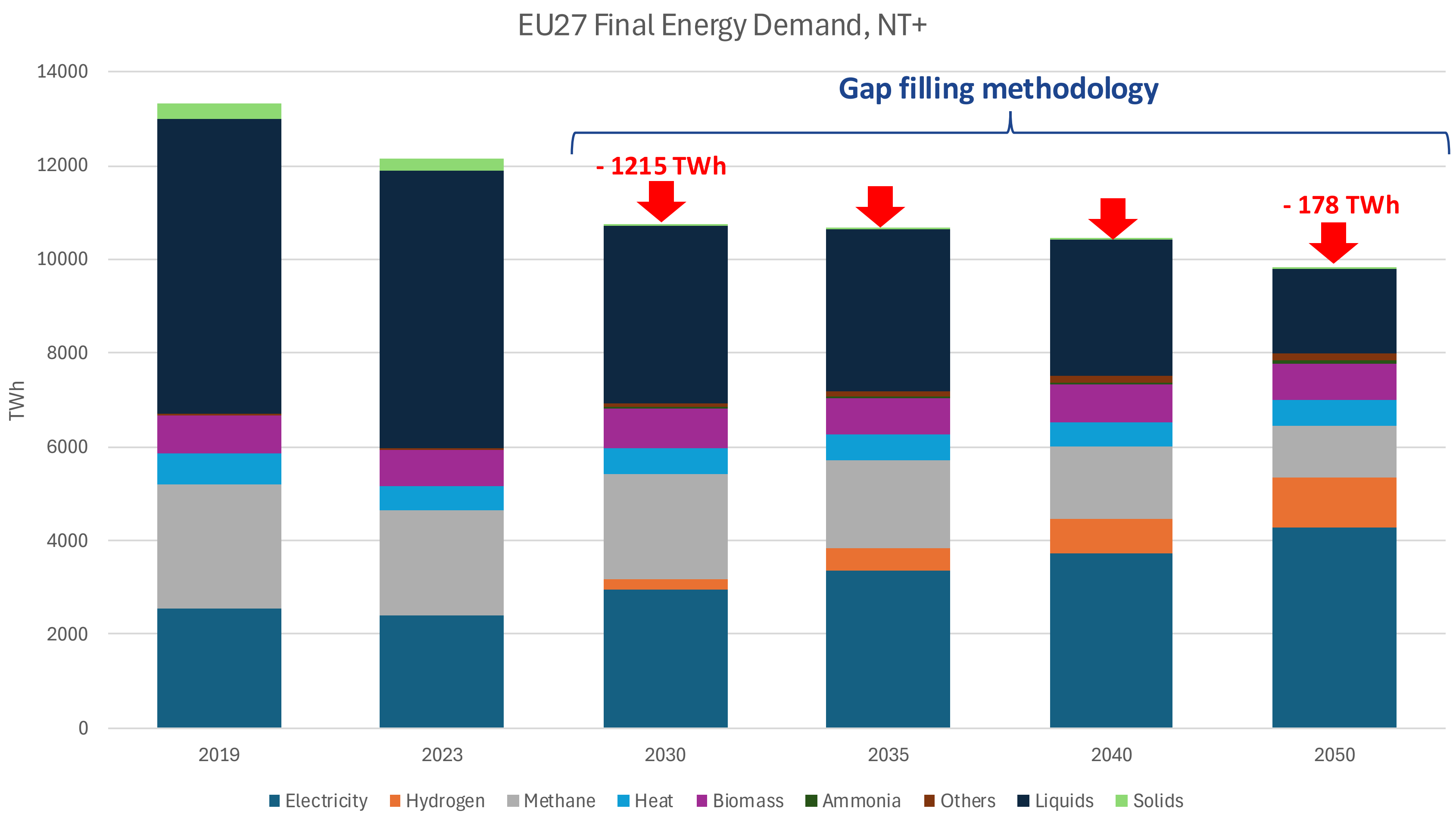
2050: **9,990 TWh**

Structural trends

- **Increasing electrification**
- **Increasing hydrogen demand**
- **Decreasing fossil fuels**

2030 values fall short of the EED Final Energy Consumption target

Final Energy Demand – NT+ Scenario



Gap filling methodology

- Subsequent reduction of solids and liquids
  - Solids almost completely reduced already in 2030
  - Liquids account for 85% of the reduction in 2030 (-1034 TWh)
- Reduction of Methane not required

NT+ Scenario

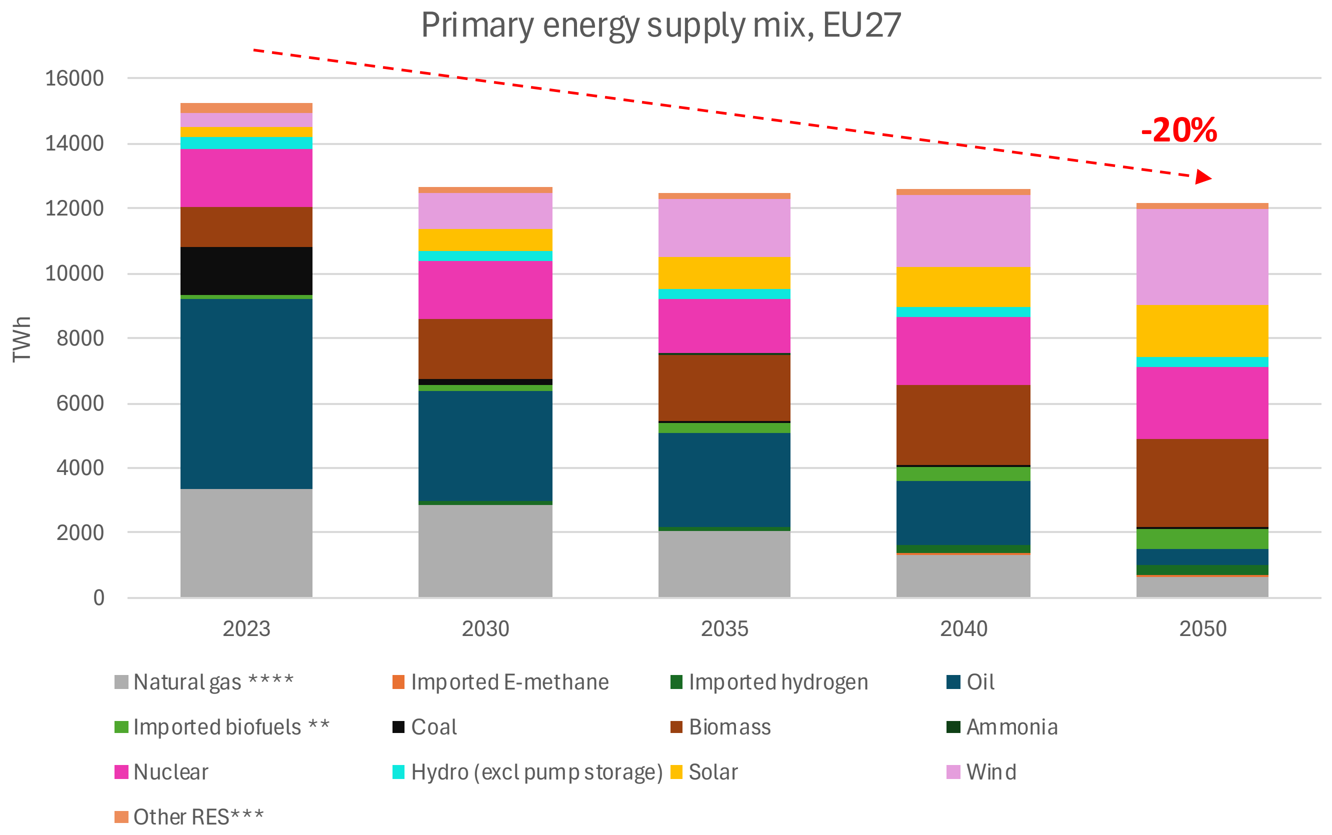
2030-2050 path:

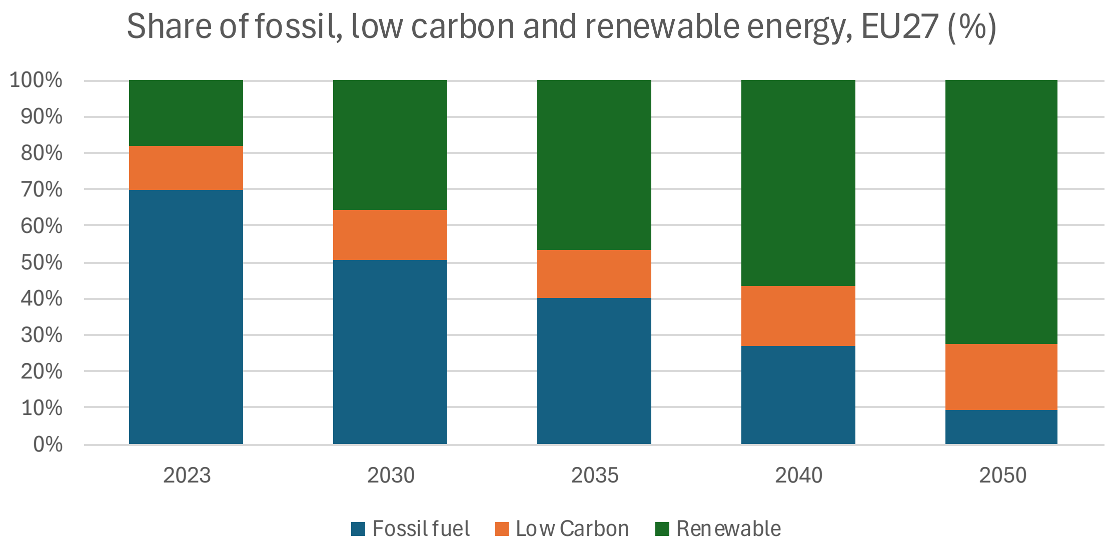
E + H_2 share increases from 29% to 54%

Liquids and solids demand dereases by 52%

Supply

The transition is driven not only by reductions in energy demand, but primarily by a replacement of fossil sources by wind, solar, biomass and low-carbon sources.

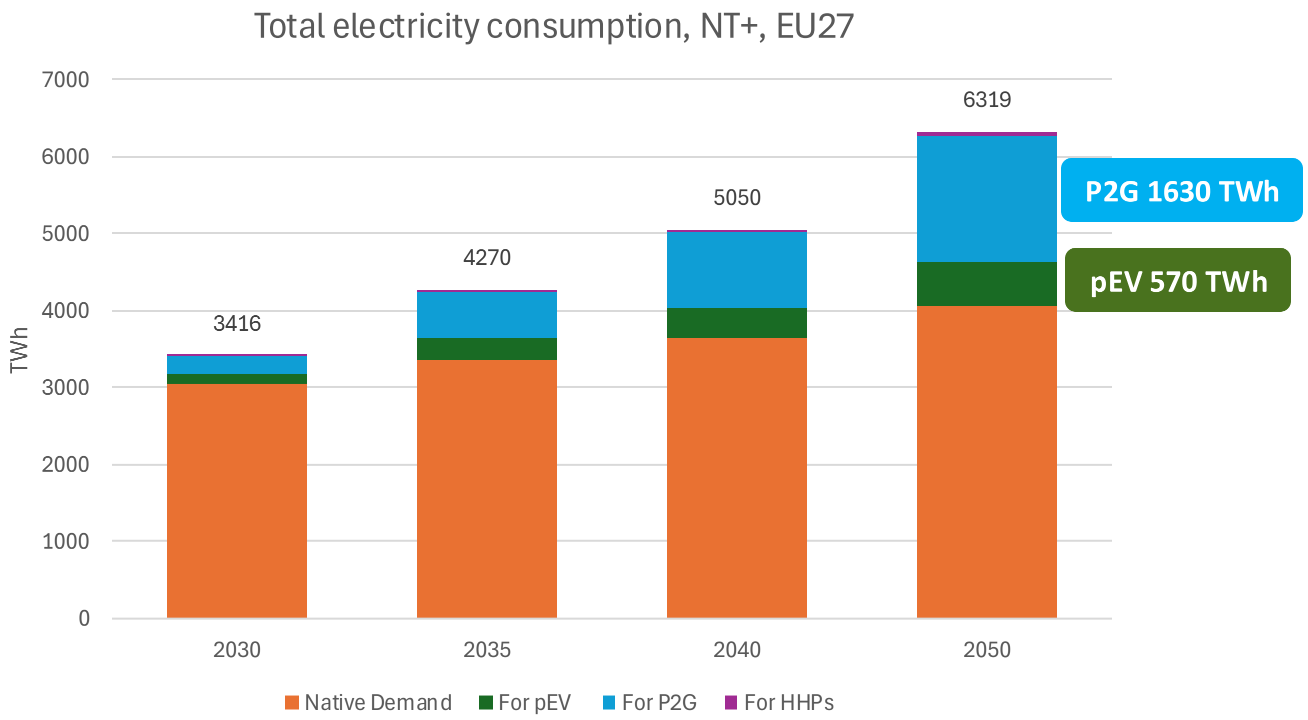




18% to 72%: Renewable share of primary energy supply, 2023-2050

Electricity demand

Electrification nearly doubles EU electricity demand by 2050

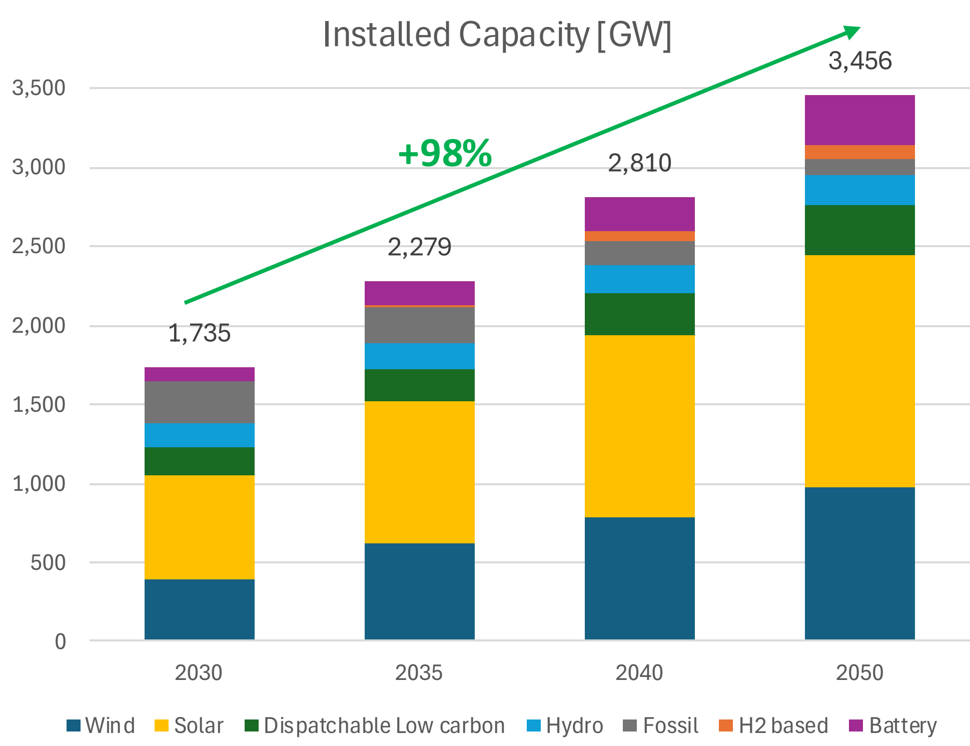


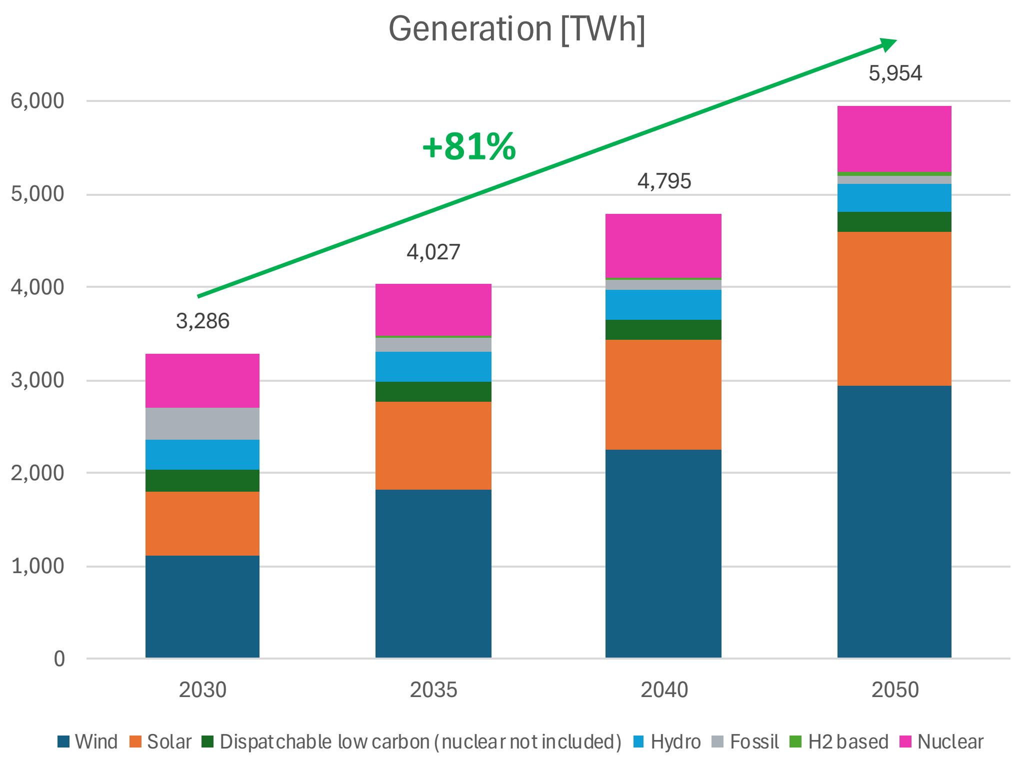
Key findings

- Direct and indirect electrification nearly doubles EU electricity demand
- Native (largely final) electricity demand remains the largest demand component
- P2G grows 7-fold
  - from 225 TWh to 1630 TWh
  - 26% of 2050 consumption
  - driving nearly half of total growth.
- Passenger EV demand increases from 143 TWh to 570 TWh

Electricity installed capacity & Generation mix

By 2050, wind and solar dominate EU power mix, backed by firm low-carbon capacity





Key findings

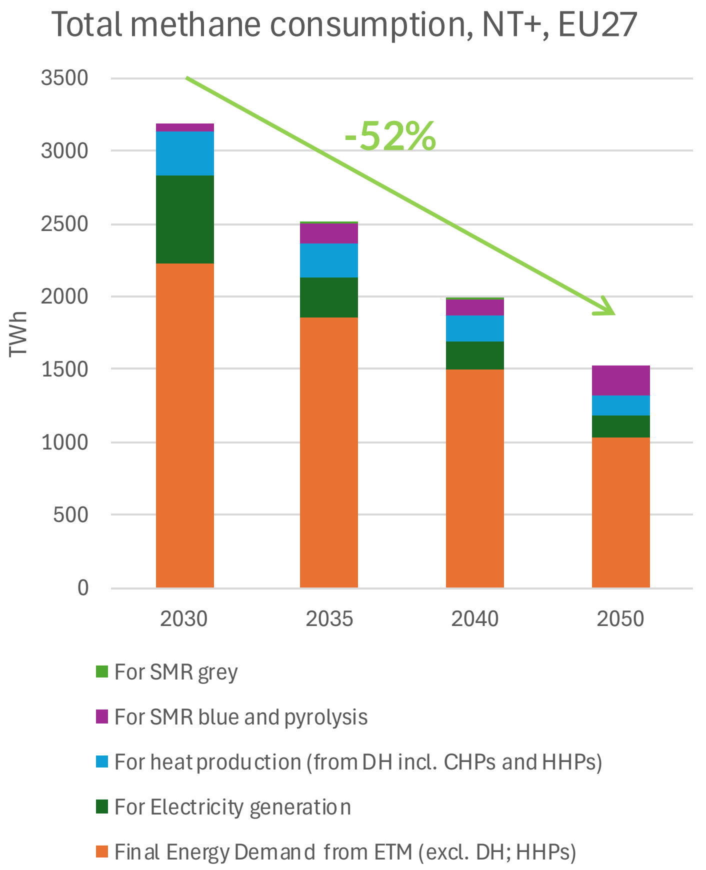
- By 2050, 97% of power generation is from low carbon and renewable sources
- 75% of 2050 power generation is wind + solar

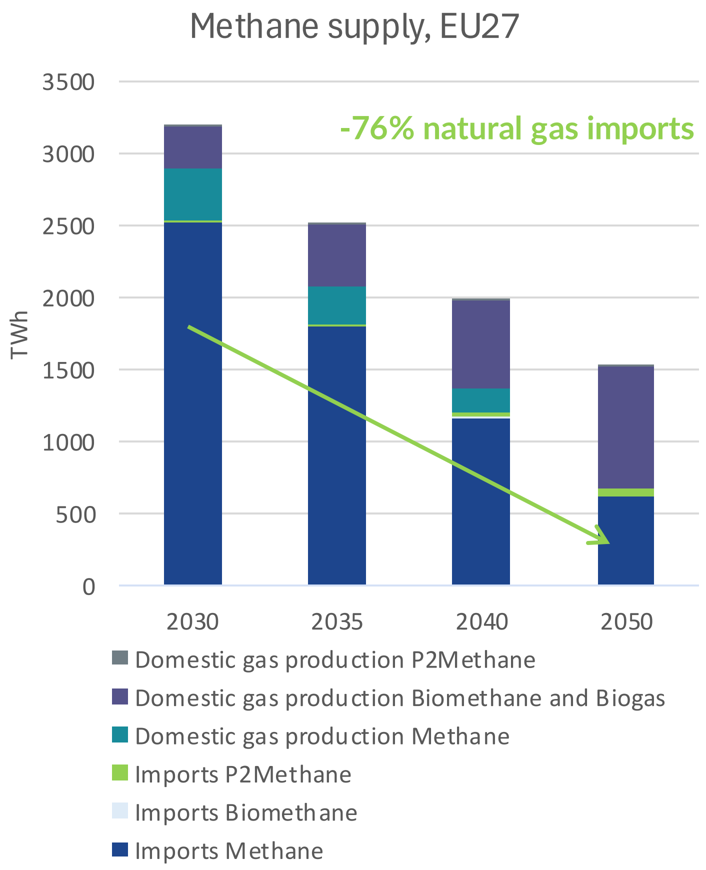
Flexibility is provided by consumers and supply side sources

Methane-fired generation technologies transition from energy provision towards flexibility and adequacy role.

Methane Demand and Supply

Source: Result of market modelling and supply tool





Key findings 2030 - 2050

Demand halves

- ✓ Final energy remains largest methane use.
- ✓ Winter peaks persist (peak-day demand ~3x average daily demand)

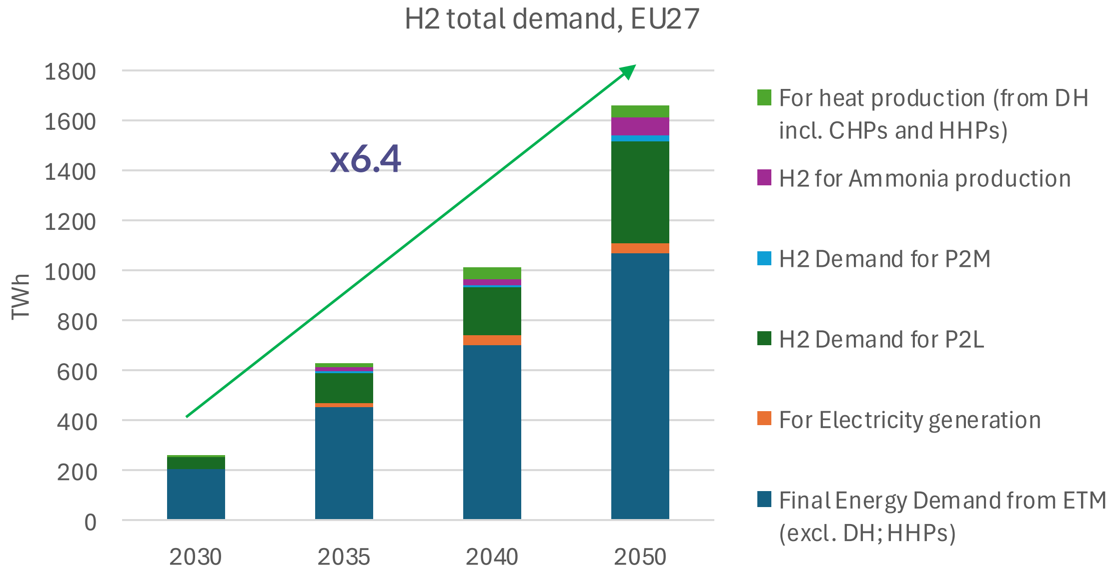
Renewable supply expands

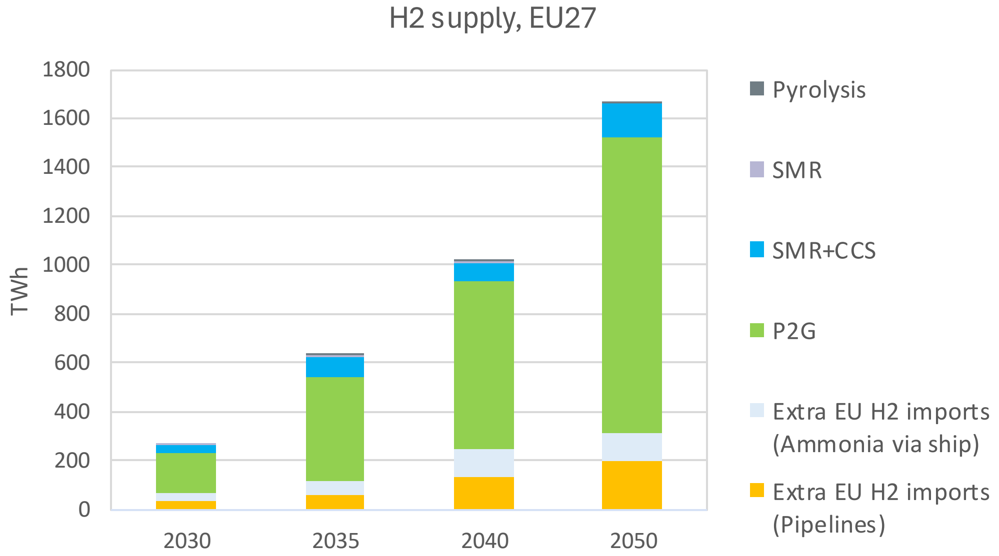
- ✓ Natural gas imports fall 76%, while domestic biomethane becomes the largest supply source by 2050.

Hydrogen Demand and Supply

Source: Result of market modelling and supply tool

Key findings 2030 - 2050





Hydrogen scales rapidly, linking renewable electricity, industry and synthetic fuels.

H2 demand rises 261 to 1660 TWh between 2030 and 2050, converging with methane demand levels.

73% of supply is EU Electrolysis (2050)

9% domestic SMR + CCS

15% non-EU imports

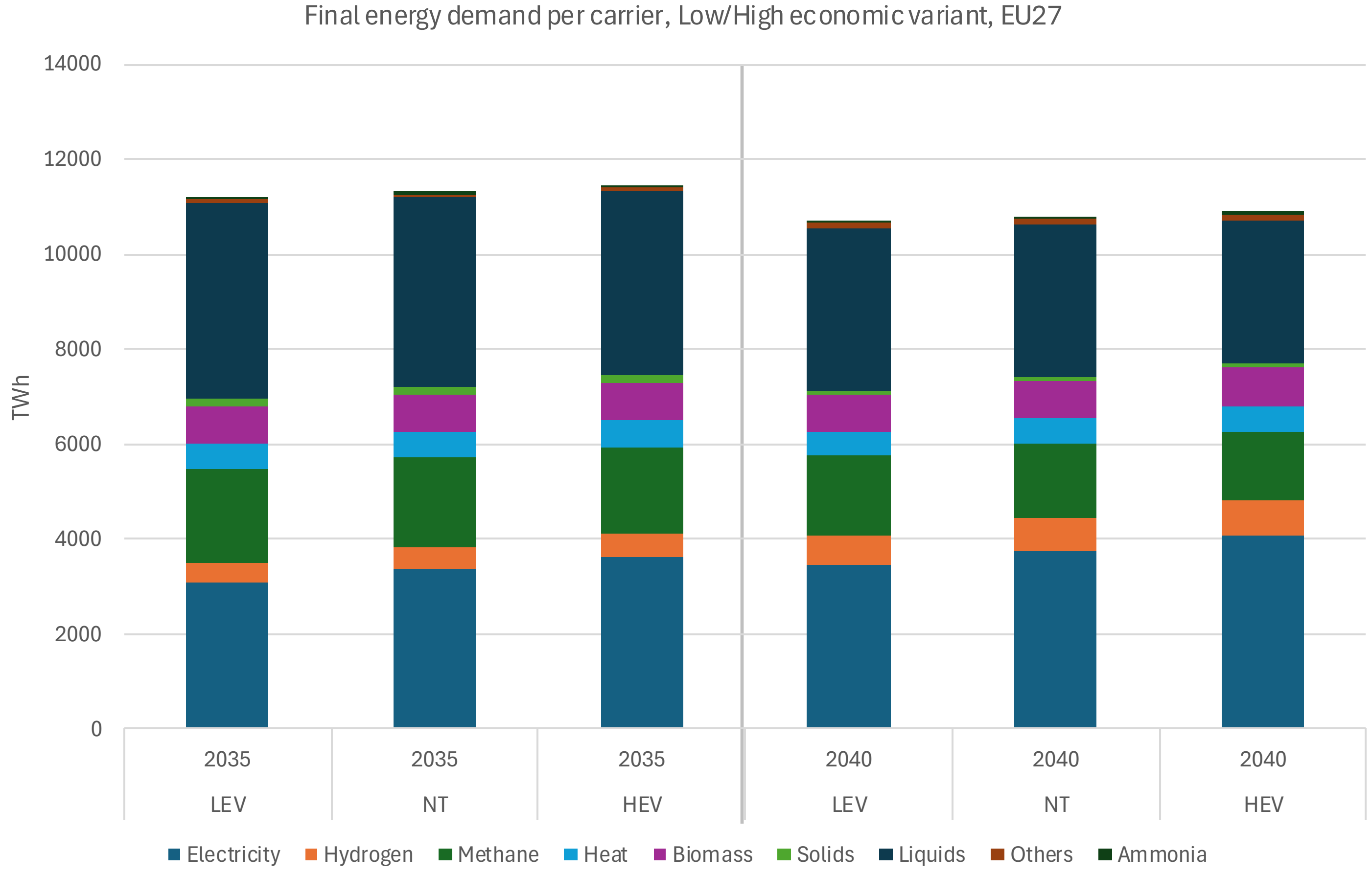
TYNDP 2026

Scenario Building

Demand and Supply Economic Variants

Economic Variants reflection

Final demand per carrier: economic conditions shift the scale of demand, not the shape of the energy mix

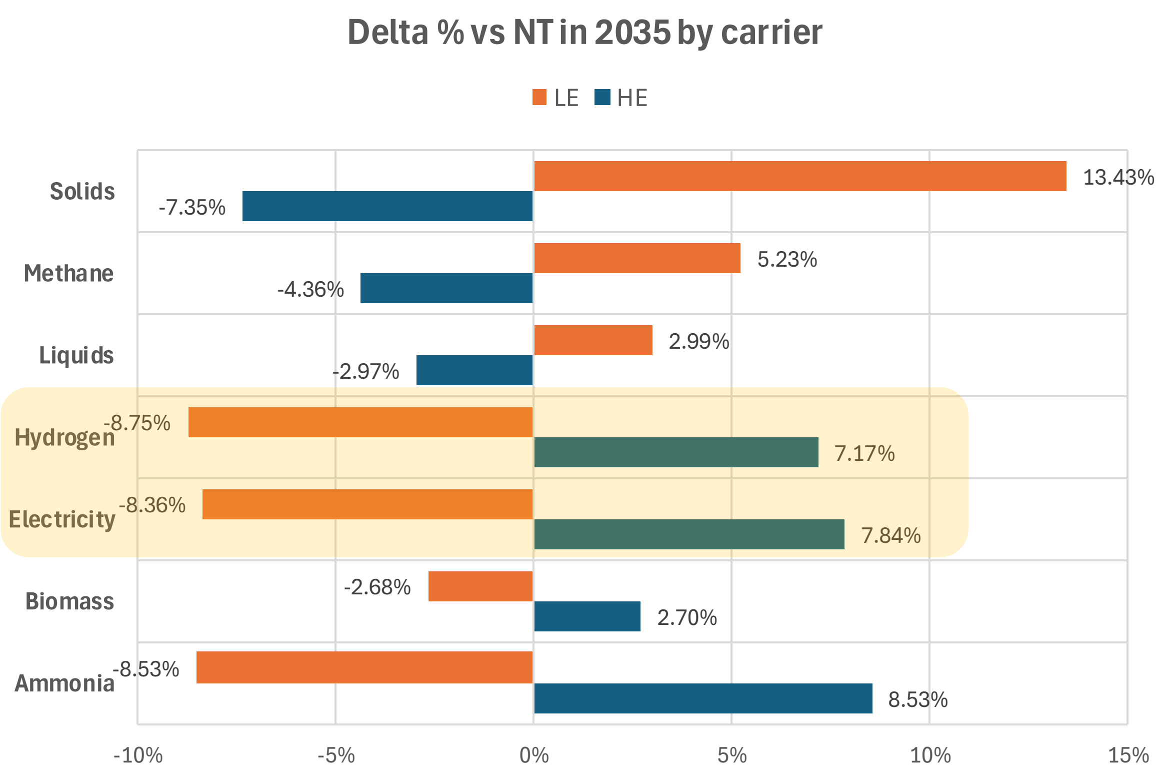


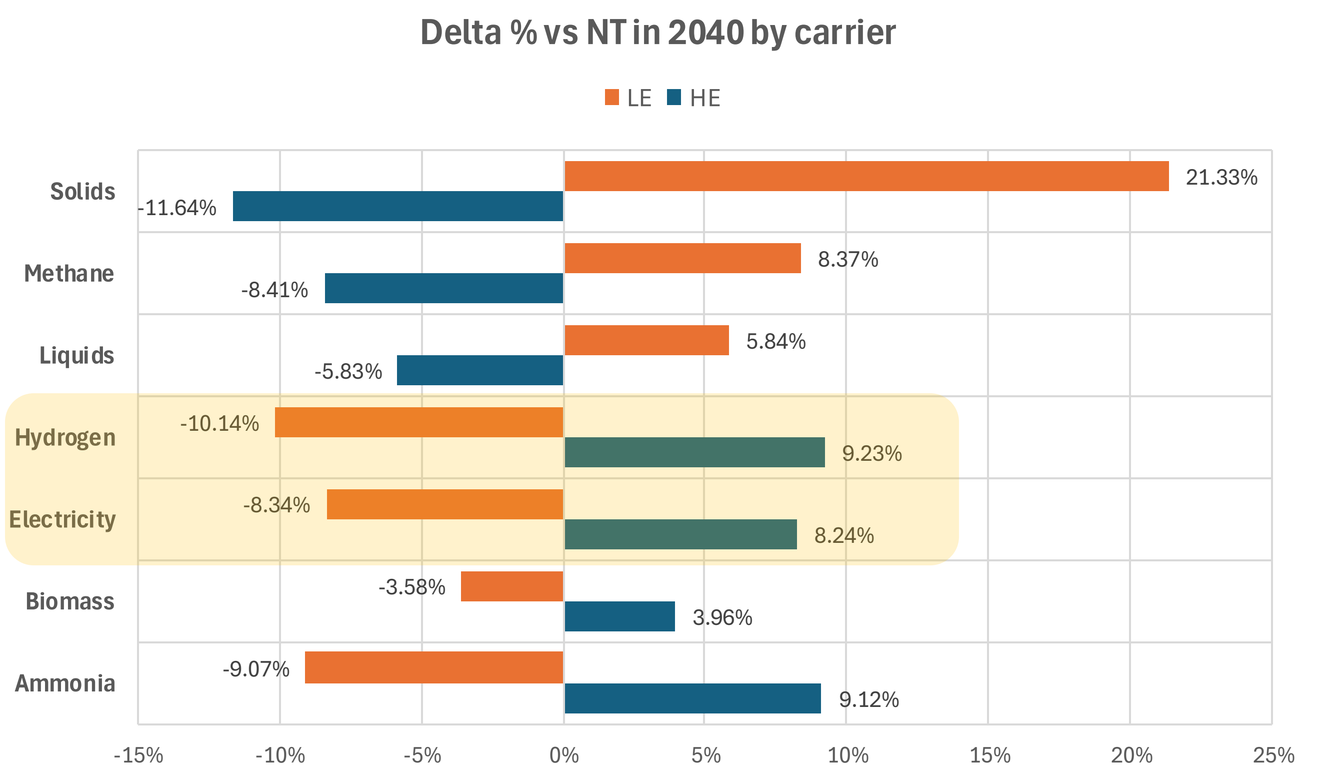
Key findings

- Individual carrier behaviours with a balanced outcome. Demands for key carriers change in a consistent way.
- Economic conditions do not change the overall direction of the energy transition, they strongly influence its pace.
- Total demand declines slightly by 2040. Efficiency gains

Economic Variants reflection

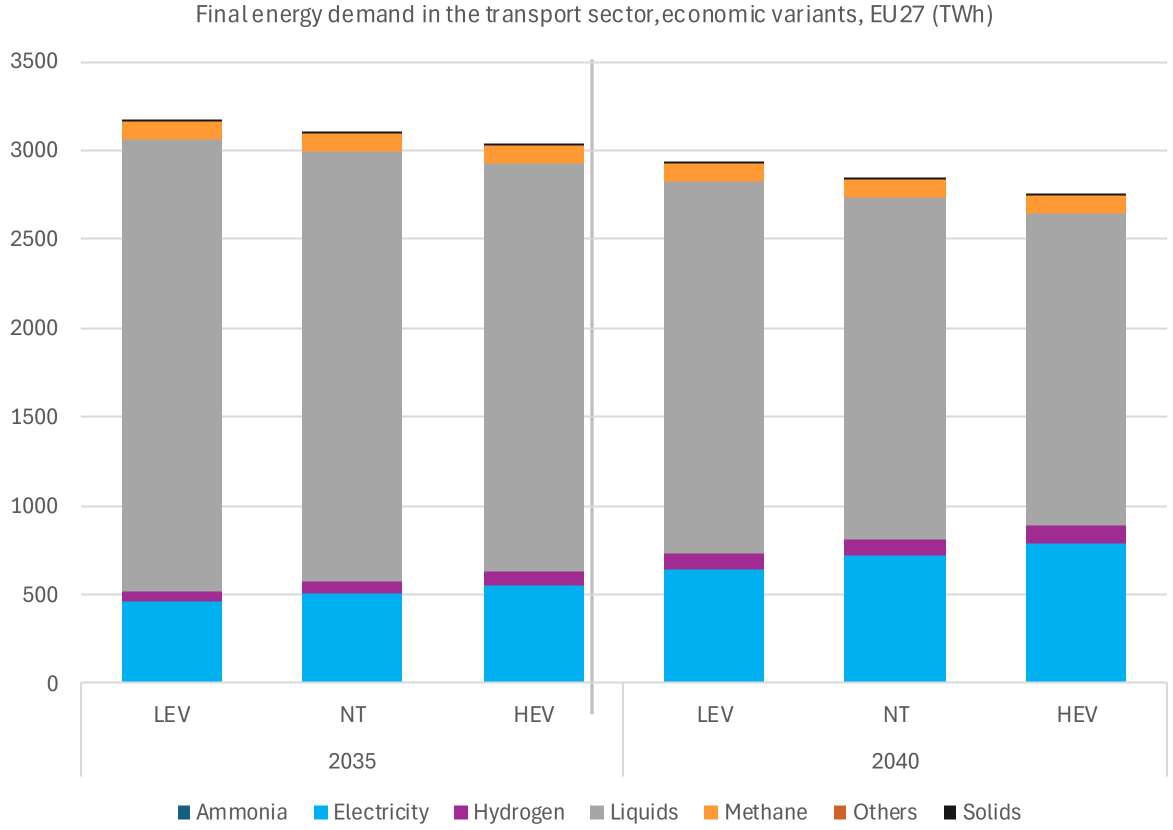
Hydrogen and electricity respond symmetrically to the exercise





Economic Variants reflection

Transport sector. Electrification outruns demand growth



Key findings

Total demand falls fastest under HEV. Counter-intuitively, higher economic growth produces the lowest total transport final energy demand in both 2035 and 2040.

Electrification is the reason why. **Electricity share rises strongly in HEV.** From 18% (2035) to 29% (2040), vs LEV's 15% to 22%. More purchasing power translates into faster EV uptake

Economic Variants reflection

Primary energy supply mix

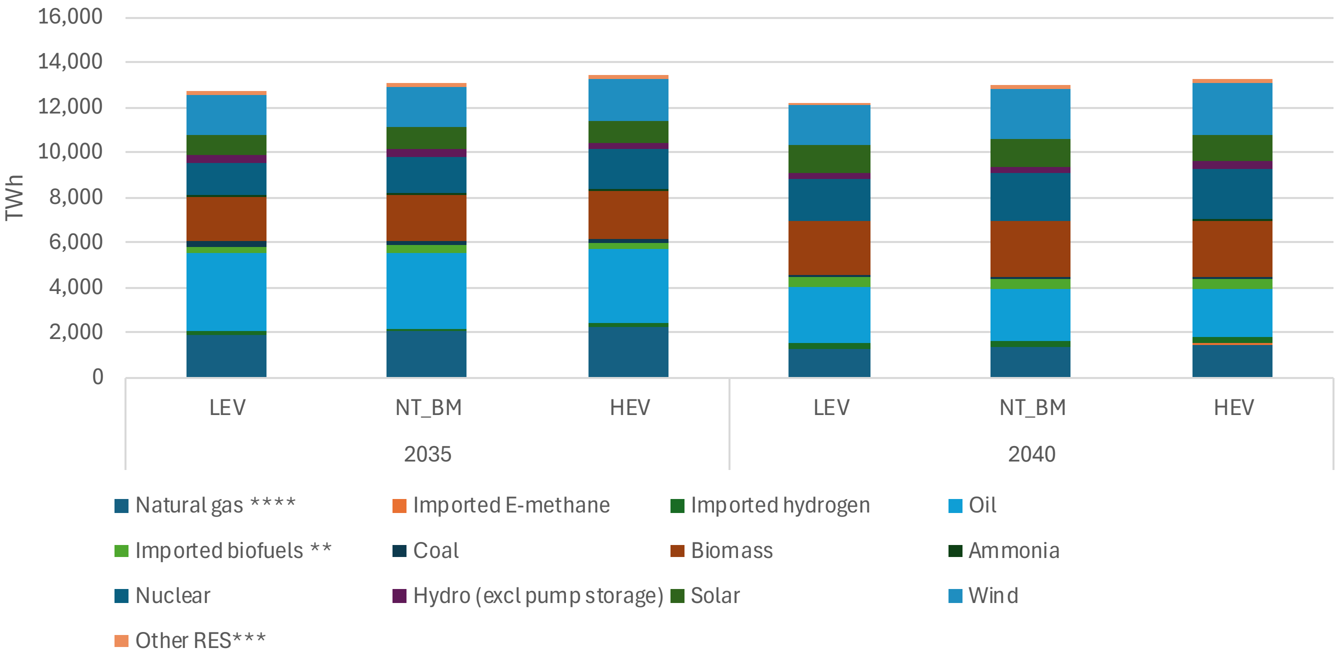
5.3% → 7.8%

HEV-LEV spread **(High-Low/NT)** widens from 2035 to 2040. Growth uncertainty but stays the scale effect. It's about scale, not direction

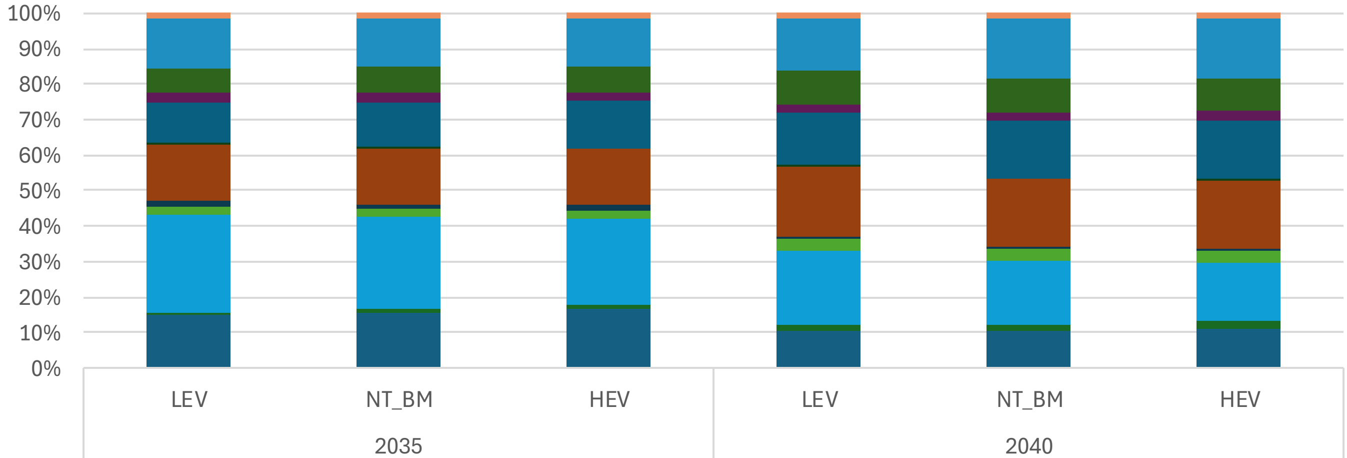
Fossil fuel share actually falls faster under HEV. But LEV burns more in absolute terms.

Fossil fuel share	LEV	NT	HEV
2035	44%	44%	42%
2040	32%	29%	28%

- Nuclear: **scales strongly with growth**. From 1458 to 2213 TWh from LEV-2035 to HEV-2040 (+52%). Good evidence to show that dispatchable low-carbon capacity scales with ambition.
- Hydrogen imports roughly double from 2035 to 2040 and **are consistently highest** in HEV (150→296 TWh) vs LEV (111→227 TWh).

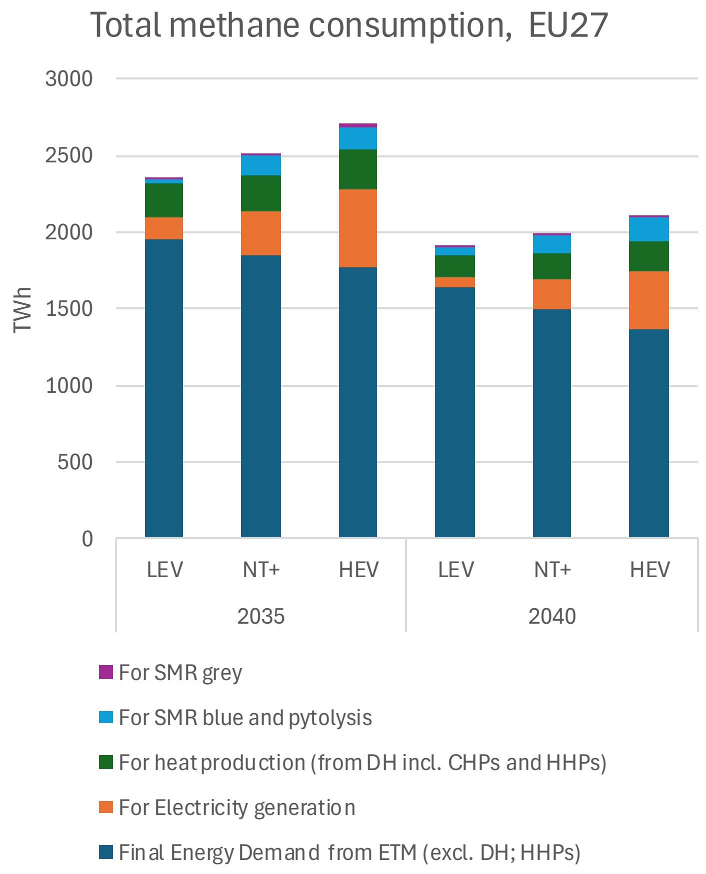


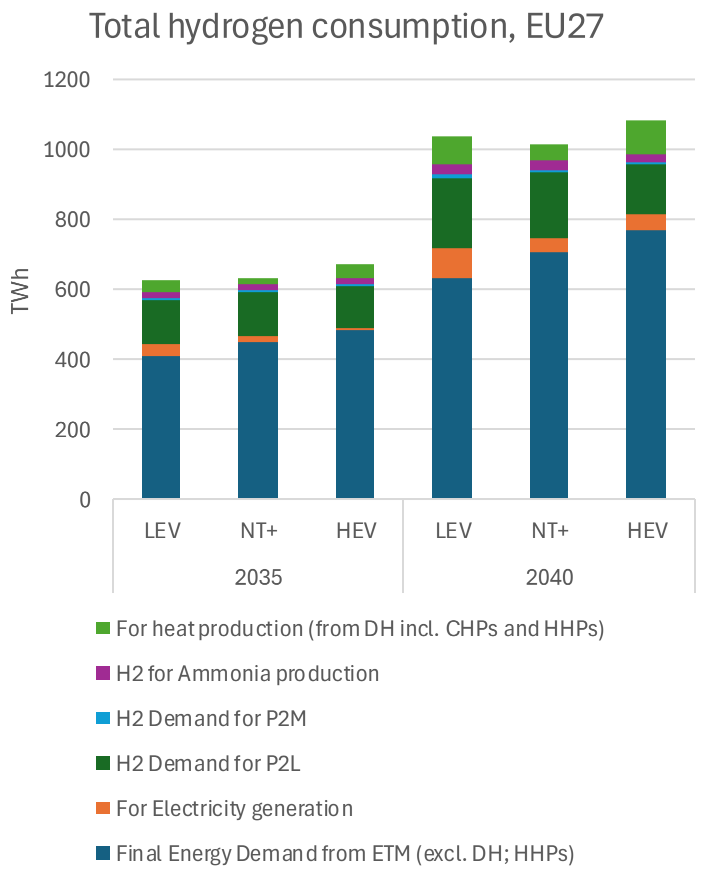
Primary energy supply mix for NT_BM and LEV and HEV variants, EU27 (%)



Economic Variants reflection

Impact on Methane and Hydrogen demand





Stress test: demands vary, while capacities remain fixed.

Methane consumption

LEV: higher final methane demand, lower conversion demand, as electricity and hydrogen native demands are lower.

HEV: lower final methane demand, offset by higher demand for conversion uses as hydrogen and electricity are scarcer.

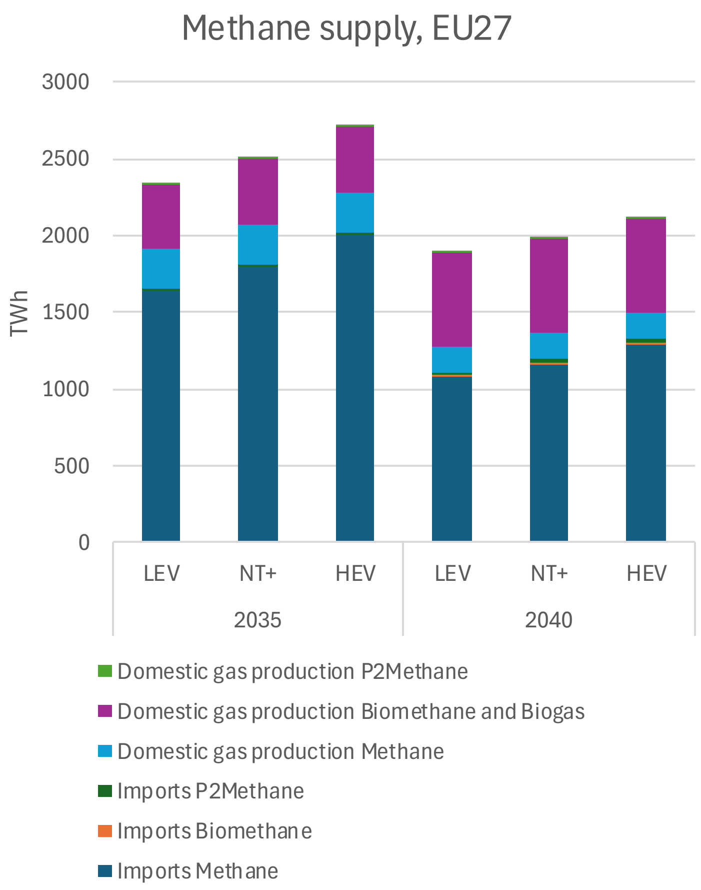
Hydrogen consumption

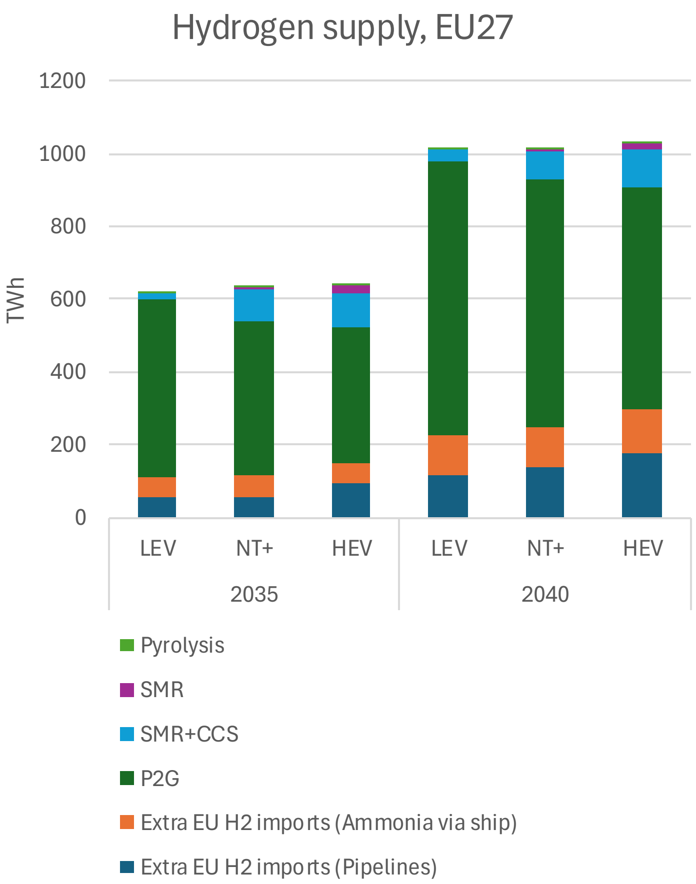
LEV: Lower final demand coupled with lower prices leave more hydrogen available for conversion uses.

HEV: higher final demand, and increased use for electricity and heat production as electricity is scarcer.

Economic Variants reflection

Impact on Methane and Hydrogen supply





Stress test: demands vary, while capacities remain fixed.

Methane supply
Imports fill the gap between methane demand and domestic supply.

Hydrogen supply
LEV: greater availability of electricity results in greater P2G production.
HEV: lower availability of electricity results in increased use of SMR and imports.