Public consultation report on ENTSOG's draft Natural Gas System Assessment and Infrastructure reports for TYNDP 2024

Contents

1. Introduction

The present consultation report concerns the public consultation of ENTSOG's draft TYNDP 2024 draft Natural Gas System Assessment and Infrastructure reports[1]:

- **Draft TYNDP 2024 Natural Gas System Assessment Report**
- **Support materials for the draft Natural Gas System Assessment report:**
  - **TYNDP 2024 Annex E - Analysis tables**
  - **Visualisation platform**
- **Draft TYNDP 2024 Infrastructure Report**.

As part of the consultation process, ENTSOG organised a dedicated, public stakeholder webinar on 23 June 2025[2]. Feedback was requested from stakeholders during a consultation period between 11 June and 30 June 2025 through an online form. This consultation report details the received inputs from stakeholders as well as a statement by ENTSOG on how this input was considered.

This consultation report is voluntarily prepared by ENTSOG for the TYNDP 2024, in complement to consultation reports required by regulation. ENTSOG also voluntarily prepared a similar report for the draft TYNDP 2024 Guidelines for Project inclusion (GPI).[3]

This is the last of the stakeholder consultations organised as part of the TYNDP 2024, after:

- 18 December 2024 – 22 January 2025: Draft Hydrogen Infrastructure Gaps Identification (IGI) Report
- 19 June – 9 July 2024: Draft Guidance Documents (Annex D1, D2, D3) and Gas Quality
- 12-29 September 2023: Draft Guidelines for Project Inclusion (GPI)
- 4 July – 8 August 2023: Scenarios Storyline Report, key data sets and modelling methodologies

The TYNDP 2024 process originally planned for an extra consultation of the full set of documents, ahead of submission of the draft TYNDP 2024 to ACER for its opinion. However, updated TEN-E requirements resulted in a thorough consultation process with extensive stakeholder feedback throughout each phase. As a result, no additional consultation is deemed necessary.

[1] Link to the draft documents: https://www.entsog.eu/tyndp

[2] Link to stakeholder webinar website: https://www.entsog.eu/tyndp-2024-stakeholder-event-draft-natural-gas-system-assessment-report-infrastructure-report

[3] Link to the consultation report on the GPI: https://www.entsog.eu/sites/default/files/2023-10/TYNDP%202024%20Guidelines%20for%20Project%20Inclusion%20Consultation%20Report.pdf

2. Legal background

Article 29(1) of Regulation nr. 2024/1789, on the internal markets for renewable gas, natural gas and hydrogen (GHR) states: *"While preparing […] the draft [TYNDP] for natural gas […], [ENTSOG] shall conduct an extensive public consultation process, at an early stage and in an open and transparent manner, involving all relevant market participants, and, in particular, the organisations representing all stakeholders, in accordance with the rules of procedure referred to in Article 25(1). That consultation shall also involve regulatory authorities and other national authorities, supply and production undertakings, network users including customers, distribution system operators, including relevant industry associations, technical bodies and stakeholder platforms. [ENTSOG] shall publish drafts of […] the [TYNDP] for natural gas […] for comments by the stakeholders and provide sufficient time for them to participate in the consultation process effectively. The aim of that consultation is to identify the views and proposals of the relevant stakeholders during the decision-making process."*

From Article 29(3)[4] of the GHR it follows that in general a consultation report is not mandatory for the TYNDP-related consultations detailed in Article 29(1) of the GHR. For a complete picture, regulation nr. 2022/869 on Guidelines for trans-European energy infrastructure (TEN-E Regulation) stipulates mandatory consultation reports for the preparation of the Cost-Benefit Analysis (CBA) methodology (see Article 11)[5], for the preparation of the TYNDP scenarios (see Article 12)[6], and for the preparation of the infrastructure gaps identification report (see Article 13)[7].

[4] Article 29(3) of the GHR states that *"Before adopting the annual work programme and the network codes referred to in Article 26(1), (2) and (3), the ENTSO for Gas shall indicate how the observations received during the consultation have been taken into consideration. It shall provide reasons where observations have not been taken into account."*

[5] Link to the consultation report on ENTSOG's hydrogen CBA methodology: https://www.entsog.eu/sites/default/files/2023-06/Consultation%20report%20accompanying%20ENTSOG%27s%20draft%20CBA%20methodology_Final.pdf

[6] Link to the consultation report on ENTSOG's and ENTSO-E's joint TYNDP 2024 scenarios: https://2024.entsos-tyndp-scenarios.eu/wp-content/uploads/2024/01/TYNDP_2024_Scenarios_Input_Data-Public_Consultation_Summary_Report.pdf

[6]Link to the consultation report on ENTSOG's hydrogen CBA methodology: https://www.entsog.eu/sites/default/files/2025-03/Public%20consultation%20report%20%E2%80%93%20H2IGI.pdf

3. Inputs to the consultation

Q5. Is the **structure** of the report clear and logical? Are the sections and subsections well-organized and easy to follow?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	*No. Chapter 4.2 Biomethane Production Progress could be better integrated into the overall storyline. While it presents important data showing that biomethane production is falling short of REPowerEU and NECP targets, the chapter does not clearly explain how this shortfall influences the rest of the analysis or conclusions. Strengthening these connections would help improve the clarity and coherence of the report.*	ENTSOG system assessment analysis reflects results are based biomethane supply potentials and target-compliant ramp-up assumptions from the "National Trends+" (NT+) scenario. While the analysis remains generic, it is acknowledged that methane supply is expected to play a critical role for a longer transition period than initially foreseen while renewable gas volumes, as biomethane, continue to scale up. Moreover, as noted in the adequacy outlook, any future deviations from the NT+ scenario assumptions regarding biomethane production, domestic natural gas output, or overall gas demand would directly affect extra-EU supply needs.
AGGM Austrian Gas Grid Management AG	*Yes. The repetitive structure makes it easy to understand the report and its contents very quickly.*	

Q6. Are the **explanations** provided in the draft TYNDP 2024 Natural Gas System Assessment report clear and exhaustive?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	No. Cold Dunkelflaute (CDF) This is a critical phenomenon that can vary significantly in its characteristics. The report should clearly specify the general conditions used in the modelling (e.g. temperature thresholds, duration, regional coverage) to improve transparency and credibility. Stressful-weather uplift appears understated The reported 5% increase in demand between the reference year (1995) and the stressful weather year (2009)	As a general reference, the source for CDF assumptions is the Scenarios 2024 data collection, from which we highlight: - duration: 2 weeks; - regional coverage: EU 27, with MS-level granularity. - temperature thresholds: according to TSO local criteria, not requested and not modelled by ENTSOG.

Organisation	*Answer*	*ENTSOG's reply*
	seems too low. For example, in the Czech Republic, demand relative to 1995 has varied from –9%/–13% (2014, 2023) to +18%/+21% (2001–2005, 2021). A 5% uplift does not appear to reflect a truly stressful scenario. Figure 3 ambiguity It is unclear why imports are shown at roughly twice the level of demand. If this refers to import capacity rather than actual volumes, the figure or caption should clearly state so. Biomethane production outlook While we welcome the inclusion of a biomethane production progress analysis, the explanation remains incomplete. Since forward-looking EBA projections are available, the assessment horizon should be extended to at least 2040 – aligning with the supply adequacy analysis – and ideally to 2050.	Guidance documentation (Annex D3) also stipulated that for the non-yearly DGM simulations, country-specific values of the final natural gas demand are sourced from the CDF datasets, as stated in the TYNDP 2024 Scenario report, mentioned above. Node-specific values for the natural gas demand for power generation are sourced from the DHEM simulation under stressful weather year conditions (i.e., 2009) as follows: -For each time-step of the DHEM (i.e., 1 hour), the natural gas usage for power generation is aggregated at European level. - The relevant period (i.e., 2 weeks for CDF) when the EU had the highest total natural gas usage for power generation and hydrogen production is identified. -For each node, the natural gas demand values for power generation are extracted for the relevant period to be used in the DGM. Regarding Figure 3 – Supply Adequacy Outlook – of the report, the combined maximum supply potential of each supply source—including Norway, Algeria, the Caspian region, Libya, Cyprus/Israel, and global LNG—is illustrated as imports in Figure 3. Given the growing importance of LNG in Europe's energy landscape, along with ongoing and planned LNG terminal expansions, the majority of the supply potential is attributed to LNG. Regarding time horizons for the Biomethane Production Outlook, this consideration will be assessed for the 2026 cycle.
AGGM Austrian Gas Grid Management AG	Yes. The analysis covers all aspects that are relevant for us.	

Q7. Is the **data visualisation** platform valuable to you? Is it easy to navigate and interpret?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	-	The interpretation of results in the data visualisation platform can be facilitated by making reference to the explanations in the report.
AGGM Austrian Gas Grid Management AG	*Yes. Could be easier to interpret.*	

Q8. In TYNDP 2024, building on feedback from TYNDP 2022 and taking into account the updated TEN-E regulation, ENTSOG separated the System Assessment and Infrastructure Gaps Identification exercises, using adapted modelling for each purpose. For the Natural Gas System Assessment report, the scope and assumptions can be found in Annex D3.

Do you think assumptions can be further improved?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	*Yes. The analysis is conducted only for the NT+ scenario. To better assess system resilience, additional sensitivities should be explored.*	We acknowledge that additional sensitivities or other scenarios would complement the system resilience assessment. Including such analyses in the 2026 cycle is being considered, in particular taking into account that the 2026 Scenarios have two deviations, called "economic variants", foreseen from the central scenario, National Trends+.
AGGM Austrian Gas Grid Management AG	*Yes. For Austria improvements should reflect its role as a transit country, the contribution of biomethane to supply and specific storage levels.*	The TYNDP is developed at the European level rather than at the individual country level. Accordingly, the underlying assumptions are harmonised and applied uniformly across all countries, rather than being defined separately for each one. Nevertheless, MS-specific aspects are carefully reviewed and considered during each TYNDP cycle and will be reassessed in the TYNDP 2026.

Q9. Do you consider the draft TYNDP 2024 Natural Gas System Assessment report provides **sufficient insight regarding the question of natural gas security of supply**?
[free text]

Organisation	***Answer***	***ENTSOG's reply***
Eurogas	*No. It would be beneficial to present the underlying assumptions and projections in more detail at the country level.*	The (Union-wide) TYNDP is developed at European level rather than at individual country level, in contrast to national TYNDPs. Accordingly, after aggregating country-level inputs, the underlying assumptions are harmonised and applied uniformly across all countries, rather than defined or simulated separately, for each one. This is done in the national TYNDPs Such country-specific projections for demand and production can, be consulted in detail in the Scenarios documentation, available at: https://2024.entsos-tyndp-scenarios.eu/download/.
AGGM Austrian Gas Grid Management AG	*Yes. It provides sufficient insight, although interdependencies with hydrogen infrastructure could be more strongly highlighted.*	The assessed natural gas system is indeed interlinked with hydrogen infrastructure use. While an overview of the interlinkages is not foreseen to be added to the report, a summary can be found below. Natural gas infrastructure use is affected by hydrogen infrastructure through repurposing and NG demand for hydrogen production (Steam Methane Reforming – SMR). Regarding repurposing, it was concluded during the Copenhagen Infrastructure Forum 2025, that after consultations with relevant stakeholders, repurposing principles will be applied to TYNDP 2026. An adequate description of the approach

Organisation	*Answer*	*ENTSOG's reply*
		with be specified in the TYNDP guidance documentation. Electricity and hydrogen markets are modelled together with the Dual Hydrogen/Electricity Model – DHEM. The Natural Gas System Assessment simulations use the Dual Gas Model (DGM). The two models use the same hydrogen market topology and the DGM receives the following DHEM outputs: - electrolysis production, - hydrogen demand, including hydrogen demand for electricity production and - natural gas demand for electricity production

Q10. The draft TYNDP 2024 Natural Gas System Assessment report assessed the supply source dependence of Russian gas as S-1 case. Should **other S-1 scenarios** be analysed in the Natural Gas System Assessment report?

[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	-	It is correct to point out that additional "S-1" assessments would offer richer disruption insights. During the web event on 23rd June, where the reports covered by this public consultation were discussed, RAG Austria also brought up this argument, exemplifying that for the Austrian case, the single largest infrastructure chosen is not expected to be in use anymore after natural gas imports from Russia are phased-out. An alternative infrastructure for "S-1" simulation purposes can be considered in such a case. "S-1" assumptions will be carefully reviewed in the TYNDP 2026 cycle,
AGGM Austrian Gas Grid Management AG	*Yes. The analysis of additional S-1 scenarios would offer a broader range of supply disruption insights.*	

Organisation	*Answer*	*ENTSOG's reply*
		taking considerations as the above into account.

Q11. The draft TYNDP 2024 Natural Gas System Assessment report indicates that EU-wide security of supply assessment should consider the impact of infrastructure repurposing to hydrogen.
Do you have suggestions on what could be implemented in the assessment for the purpose of such evaluation?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	*Yes. It is crucial to ensure that the hydrogen network is developed in line with accurate future demand and realistic projections, supported by binding commitments and/or capacity reservations.*	ENTSOG Data for repurposing of natural gas infrastructure to hydrogen will be collected from TSOs, based on updated available information, including strategic plans backed by binding commitments and/or capacity reservations. In the joint Scenarios, supply data provided by TSOs are used. DSO-level hydrogen ramp-ups are considered implicitly, if DSOs provide the corresponding information to TSOs. Such data is then used in system-level assessments and project-specific cost-benefit analysis (PS-CBA).
AGGM Austrian Gas Grid Management AG	*Yes. Existing local hydrogen ramp-up plans in the distribution system should be more strongly considered, such as Austria's H2 roadmap by AGGM.*	

Q12. Would a **similar security of supply (SoS) assessment of hydrogen infrastructure** be of value to your organisation in the next TYNDP edition? What is your expectation?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	-	In the TYNDP 2026 cycle, a more substantial SoS assessment of the hydrogen network is currently being prepared.
AGGM Austrian Gas Grid Management AG	*Yes. It would provide insights into supply risks during the hydrogen market ramp-up phase.*	

Q13. Are there any other **sections or topics** that you feel are missing or should be expanded upon? Do you have any suggestion on how to **improve the presentation** of the results?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	*Yes. The report's strong emphasis on biomethane is appropriate, given its pivotal role in EU (and global) net-zero pathways. However, a truly efficient biomethane market also depends on timely deployment of reverse-flow facilities – an aspect missing from the TYNDP. Reverse-flow infrastructure lets gas move both nationally and across borders, allowing biomethane produced at the DSO level to enter the wider grid. If TSOs and DSOs do not plan and invest in these plants soon, biomethane production and trading across the EU could be constrained. The report should therefore stress the urgency for network operators to prioritise reverse-flow projects.*	ENTSOG acknowledge that reverse flows would support biomethane production and trading in the EU, by allowing biomethane injected in the distribution grid to flow back to the transmission grid when locally injected biomethane exceeds local demand. Network adaptations are required for such reverse flow facilities, but submission to the TYNDP is currently voluntary. ENTSOG welcomes the submission of reverse-flow projects to the TYNDP.
AGGM Austrian Gas Grid Management AG	*No. Maybe a fact sheet with the most important outcomes would be helpful.*	The main findings of the report shall be covered in the Executive Summary of TYNDP 2024.

Q14. Is the **structure** of the draft Infrastructure report clear and logical? Are the sections and subsections well-organized and easy to follow?
[free text]

Organisation	*Answer - combined Q20 and Q21*	*ENTSOG's reply*
Eurogas	-	Thank you for this feedback regarding the report structure.
AGGM Austrian Gas Grid Management AG	*Yes. The repetitive structure makes it easy to understand the report and its contents very quickly.*	

Q15. Are the **analyses** provided in the draft TYNDP 2024 Infrastructure report clear and exhaustive?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	-	Thank you for this feedback regarding the analyses presented in the report.
AGGM Austrian Gas Grid Management AG	*Yes. The analysis is very extinctive and covers all aspects that are relevant for us.*	

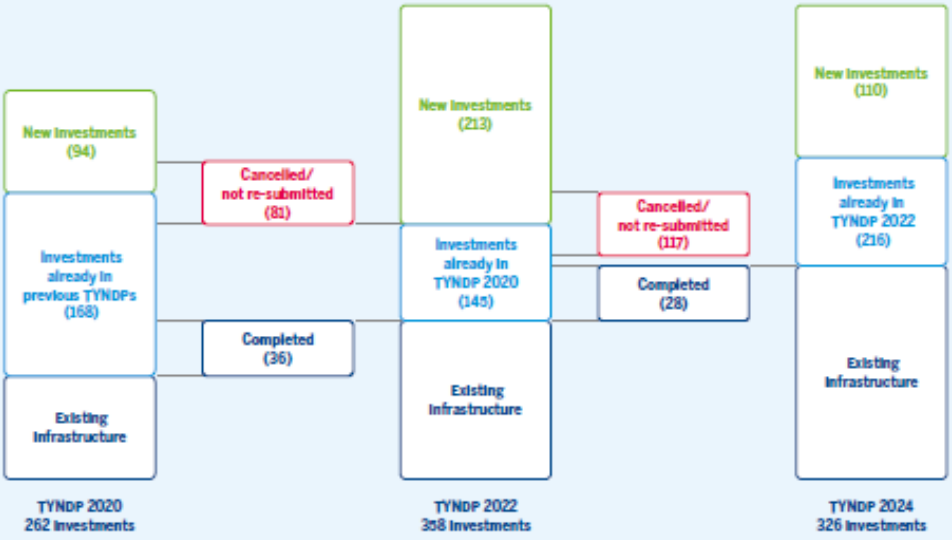
Q16. Are there any other **sections or topics** regarding projects that you feel are missing or should be expanded upon? Do you have any suggestion on how to **improve the presentation** of the results?
[free text]

Organisation	*Answer*	*ENTSOG's reply*
Eurogas	-	Thank you for this feedback regarding the content and presentation of the results of the report. We appreciate the usefulness of a summary in form of fact sheet. It has been prepared and integrated into the report, as well as copied below, for reference.
AGGM Austrian Gas Grid Management AG	*Yes. We don't feel that any topics are missing. All the projects are described in detail. Nevertheless, a fact sheet which covers the most important outcomes and graphics would have been helpful for us.*	

PURPOSE OF THE REPORT

The ENTSOG Infrastructure Report is a core component of the Ten-Year Network Development Plan (TYNDP) presenting key energy investment projects aimed at aligning the European energy system with the EU's climate and energy goals. The growing number of hydrogen projects are now classified under five specific subcategories: H2T (Transmission), H2S (Storage), H2L (Reception facilities), H2E (Electrolysers), H2M (Transport sector for Mobility).

Project submission and compliance:
The project submission process for the TYNDP 2024 was conducted from 23 November 2023 to 11 February 2024. Projects were submitted through the ENTSOG Project Data Portal, following the Guidelines for Project Inclusion.



Comparison between TYNDP 2020, TYNDP 2022 and TYNDP 2024.

KEY MESSAGES

- Each cycle introduces a high number of new investments i. e., 94 (2020), 213 (2022), 110 (2024), highlighting the ongoing innovation, especially in hydrogen
- The majority of projects from previous TYNDPs are carried over to the next, proving long-term infrastructure planning consistency
- Completion rates remain low, with 36 projects completed by 2022, and 28 more by 2024, suggesting lengthy development timelines or barriers
- NG submissions have been progressively decreasing in recent TYNDP cycles, making up a significant part of the cancelled/not re-submitted projects; this can be attributed to two main factors: the development of the hydrogen sector on the one hand and the fact that NG projects are no longer eligible for PCI/PMI status, according to the revised TEN-E regulation

KEY NUMBERS

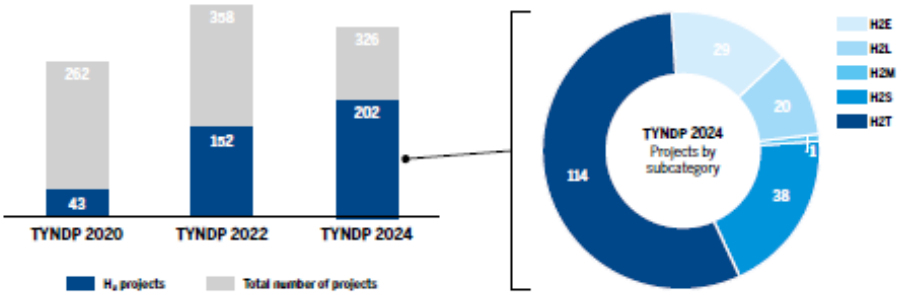
- **326** Investments total (110 new, 216 from TYNDP 2022)
- **90+** Promoters participated (TSOs and third parties)
- **23** Projects expected to be commissioned by 2025

BREAKDOWN BY CATEGORY

- **202** Hydrogen projects (~62%)
- **95** Natural Gas projects (~29%)
- **29** Smart Gas Grid & Other projects (~9%)

HYDROGEN HIGHLIGHTS

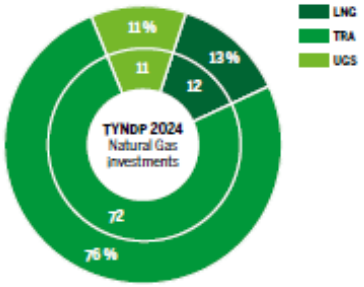
- Subcategories: H2T (Transmission), H2S (Storage), H2L (Reception facilities), H2E (Electrolysers), H2M (Transport sector for Mobility)
- Maturity status: 4 FID, 88 Advanced, 110 Less-Advanced – 74 % of hydrogen projects expected by 2029
- 71 H_2 projects were included in the 1st PCI/PMI Union list
- 33 % of hydrogen projects included in NDPs (up from 17 % in 2022); Germany leads with 24 hydrogen projects in NDPs
- CAPEX ~ € 167 B



Growing proportion of hydrogen projects compared to the total number of projects

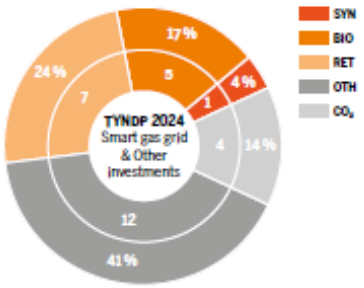
NATURAL GAS HIGHLIGHTS

- Maturity status: 29 FID, 23 Advanced and 43 Less-Advanced – 80 % of projects expected by 2029
- Italy and Romania lead in NDP inclusions
- CAPEX ~ € 35 B
- PCI exceptions: EastMed Pipeline, Malta connection



SMART GAS GRID & OTHER

- Includes Renewable Gas, Biomethane, CO_2 infrastructure
- Maturity status: 3 FID, 6 Advanced and 20 Less-Advanced – Most projects expected by 2030
- CAPEX ~ € 7 B
- Slovakia leads with 3 projects



MORE INFO (FULL REPORT & MAPS)

https://tyndp2024.entsog.eu/
https://www.entsog.eu/tyndp#entsog-ten-year-network-development-plan-2024

4. Next steps

ENTSOG shall publish the final versions of the materials that are object of this consultation on its website, together with this consultation report. They will be submitted to ACER for its opinion as part of the draft TYNDP 2024 set of documents as outlined in article 27(2)[8] of the GHR.

[8] *"The ENTSO for Gas shall submit the draft Union-wide network development plan for natural gas,[...] including the information regarding the consultation process [...].*
Within two months of the date of receipt, ACER shall provide a duly reasoned opinion as well as recommendations to the ENTSO for Gas and to the Commission where it considers that the [...] draft Union-wide network development plan for natural gas submitted by the ENTSO for Gas does not contribute to non-discrimination, effective competition, the proper functioning of the market or a sufficient level of cross-border interconnection open to third-party access. The ENTSO for Gas shall duly take into account ACER's opinion and recommendations."