entsog

european network
of transmission system operators
for gas

ANNUAL REPORT

2024

TABLE OF CONTENTS

PRESIDENT'S FOREWORD

Fifteen years after ENTSOG was first established under the EU Third Energy Package, 2024 heralded a new era for ENTSOG and the gas Transmission System Operators (TSOs). The legislative framework for renewable and low carbon gases was clearly set out in the Hydrogen and Decarbonised Gas Market Package. These revised gas market rules were published in the EU Official Journal on 15 July 2024, entering into force 20 days later.

As before, many of the same ENTSOG tasks are mandated under Regulation (EU) 2024/1789: for example, to elaborate any network codes requested by the European Commission, to continue with the publication of the Ten-Year Network Development Plans (TYNDP) (in cooperation with ENTSO-E for scenario development) and assessment of European security of supply, through preparation of Summer Supply Outlook and Winter Supply Outlook reports.

Now, ENTSOG must also consider the analysis, monitoring and reporting relating to renewable and low carbon gases, such as biomethane. The Regulation requires ENTSOG to develop the TYNDP 2026 with

BART JAN HOEVERS
President, ENTSOG

PIOTR KUŚ
General Director, ENTSOG

two separate chapters, one for hydrogen and one for natural gas. For the first time, ENTSOG is also required to adopt recommendations to TSOs on technical cooperation with Distribution System Operators (DSOs) and Hydrogen Network Operators (HNOs).

Significantly, the Regulation required the formal establishment of the European Network of Network Operators of Hydrogen (ENNOH). In 2024, ENTSOG provided support to the tasks of the (pre) ENNOH team and will further continue the collaborative efforts and also support the work of the HNOs, as needed.

As for previous years, ENTSOG's active stakeholder engagement was a key priority in 2024. We continued our exchanges on many different forums, such as ENTSOG'S Advisory Panel for Future Gas Grids, the European Clean Hydrogen Alliance Roundtable on Clean Hydrogen Transmission and Distribution, and prime movers' groups for Guarantees of Origin as well as Gas and Hydrogen Quality, among others.

More than ever, we champion the implementation of Energy System Integration in practice, with lively discussions taking place during several joint strategic meetings between high-level representatives from ENTSOG and ENTSO-E in 2024. Given the importance of considering the interface also with the hydrogen sector, pre-ENNOH representatives also joined the dialogue. Furthermore, ENTSO-E and ENTSOG supported the assessments of the Stakeholder Reference Group (SRG), an independent group providing expert input to oversight the development of scenarios. The TYNDP 2026 scenario process began in the latter half of 2024, with the SRG involved from the outset.

Looking forward, we see repurposing of existing gas infrastructure as essential to reducing investment costs for the transport of clean molecules. Within the framework of the Clean Industrial Deal, growth and competitiveness go hand-in-hand with climate neutrality and strategic energy sovereignty. Molecules today offer affordable flexibility and reliable storage, even for the longer term, and the gas grids are an important part of an efficient, reliable and cost-efficient decarbonised energy system.

I am proud of the efforts of the ENTSOG Brussels Team and the close working relationship with the gas TSOs, enabling concrete and proactive steps to support Europe's renewed focus on addressing climate change, taking competitive actions and reforming its energy system. The structure of ENTSOG, with the embedded expertise of its members as well as of its Brussels office, has achieved its clear objectives to date. We are already undertaking the tasks in the new legislative frameworks, to enable a secure, sustainable and affordable European gas market.

> *Within the framework of the Clean Industrial Deal, growth and competitiveness go hand-in-hand with climate neutrality and strategic energy sovereignty.*

I finish this foreword with a few words on Jan Ingwersen, who sadly passed away on 6 December 2024. Jan was ENTSOG General Director between 2016 and 2021, starting as ENTSOG Business Area Manager for the Market area in January 2014. His hard work and commitment to aim for an integrated European energy market, secure energy supply and meet the sustainability goals was appreciated by all who had the pleasure to work with him. Most of all, his dedication to the Brussels Team should be recognised. He is missed by all.

BART JAN HOEVERS
President, ENTSOG

GENERAL DIRECTOR'S FOREWORD

The ENTSOG team celebrated the Association's 15-year anniversary in December 2024, at which we reflected, together with ENTSOG members and stakeholders, on what had been achieved so far. The Hydrogen and Decarbonised Gas Market Package provided a clear mandate for the tasks ahead. This milestone event also allowed us to think about the outcomes of the year gone by.

We achieved a lot in 2024, an exciting time for new deliverables. Following the formal adoption of Regulation (EU) 2024/1789 in August 2024, ENTSOG began working on the implementation of the new provisions. For example, the ENTSOG Brussels Interoperability team developed and published in December 2024 the first edition of the Gas Quality Monitoring Report.

The new Regulation also requires that additional gas quality parameters are published on the ENTSOG Transparency Platform (TP). Throughout 2024, ENTSOG undertook projects to update the TP, enabling TSOs to publish daily measured values of the gross calorific value, Wobbe index, hydrogen content blended in the natural gas system, methane content, as well as oxygen content at relevant points.

A series of TYNDP 2024 documents were published in 2024: the draft hydrogen Infrastructure Gaps Identification and Infrastructure reports, as well as various Annexes. For the first time, ENTSOG evaluated the specific role of hydrogen infrastructure in achieving EU climate and energy targets in a dedicated report. In May 2024, the draft TYNDP Scenario report, which included an extensive dataset, was published and submitted to ACER for Opinion and to the European Commission for approval.

The Interlinked Model progressed to test hydrogen, electricity and electrolyser projects using the social economic welfare approach developed by the ENTSOG modelling team. This progress marks important milestones for the delivery of the Interlinked Model, further detailed in the ILM 2024 Progress Report.

ENTSOG's assessment of security of gas supply remained an ever-critical piece of work in 2024. At the request of the Gas Coordination Group (GCG), ENTSOG conducted a revision of the Union-wide simulation of gas supply and infrastructure disruptions scenarios in cooperation with the GCG. These simulations were undertaken and published earlier than had been required by Regulation.

In the autumn of 2024, ENTSOG provided our response to a public consultation on the fitness check of the energy security architecture launched by the European Commission. During the second half of December 2024, ahead of the expiration of the transit contract via Ukraine, ENTSOG and the TSOs held additional 'ReCo Team Europe' calls to monitor gas market behaviour and ensure preparedness for 1 January 2025. At the same time, and on a daily basis, ENTSOG and the European Commission worked closely together to assess any potential risks and make the necessary preparations for that date. These groups, along with ENTSOG, followed the situation closely moving from 2024, to 2025.

> *With the establishment of the new regulatory framework for clean molecules in the European gas market, we can see clearly how gas grids are an asset of significant value.*


Picture courtesy of TAP

Reports for Implementation and Effect Monitoring of the Tariff Network Code and Balancing Network Code were published in 2024 and work on the Network Code Monitoring reports for 2025 commenced in 2024, with data collection for the Capacity Allocation Mechanisms Network Code (CAM NC) monitoring and Congestion Management Plan Guidelines monitoring in the last quarter of the year. ENTSOG also provided contributions to public consultations related to the revision of the CAM NC. ENTSOG participated in three consultations run by ACER in 2024 and proposed concrete wording for the amendment.

With the establishment of the new regulatory framework for clean molecules in the European gas market, we can see clearly how gas grids are an asset of significant value. In particular, repurposing gas infrastructure for hydrogen transport provides a dedicated cross-border energy network at a fraction of the cost of new infrastructure construction.

Now and in the months and years ahead, there is no doubt that ENTSOG will continue its work as a proactive, trusted and technical adviser on gas transmission related topics on a European level and support the achievement of the EU goals of set out in the Clean Industrial Deal and other policy initiatives – competitiveness, security of supply and sustainability.

Jan Ingwersen, who sadly passed away in December 2024, was a very important leader and team member in the ENTSOG Team. We offer our condolences to the family and friends of Jan.

PIOTR KUŚ
General Director, ENTSOG

Picture courtesy of bayernets

1

ORGANISATIONAL STRUCTURE AND MEMBERSHIP

The role of the European Network of Transmission System Operators for Gas (ENTSOG) is to facilitate and enhance cooperation between national gas transmission system operators (TSOs) across Europe, and to ensure the development of a pan-European transmission system in line with European Union energy and climate goals.

ENTSOG operations are governed by its General Assembly (GA), which leads the Association and has full powers to enable it to achieve its objectives. Its tasks include the admission of Members; the appointment of the Management Board, the General Director and business area Directors; the establishment of working and regional groups; and the adoption of ENTSOG deliverables.

Internally, ENTSOG is divided into four business areas: System Operation, System Development, Market, and Strategy, Policy and Communication. These areas manage the many activities with which ENTSOG are tasked – cooperation for security of supply and providing transparency, ensuring REMIT compliance and technical cooperation (**System Operation and System Development**); activities associated with scenario building and future gas infrastructure planning (**System Development**); the development and implementation of Network Codes and guidelines and assessment of current and future gas market design (Market); the coordination of strategic topics and policy processes within ENTSOG as well as the communication of ENTSOG activities outside the organisation (**Strategy, Policy and Communication**). The management team has five support groups which provide compliance, financial and other services across the association. These are Legal, HR, Finance, IT and Administration.

ENTSOG Working Groups (WG), Kernel Groups (KG) and Task Forces (TF) associated with delivering tasks are assigned to the four business areas. The main WGs are shown in Figure 1 below.

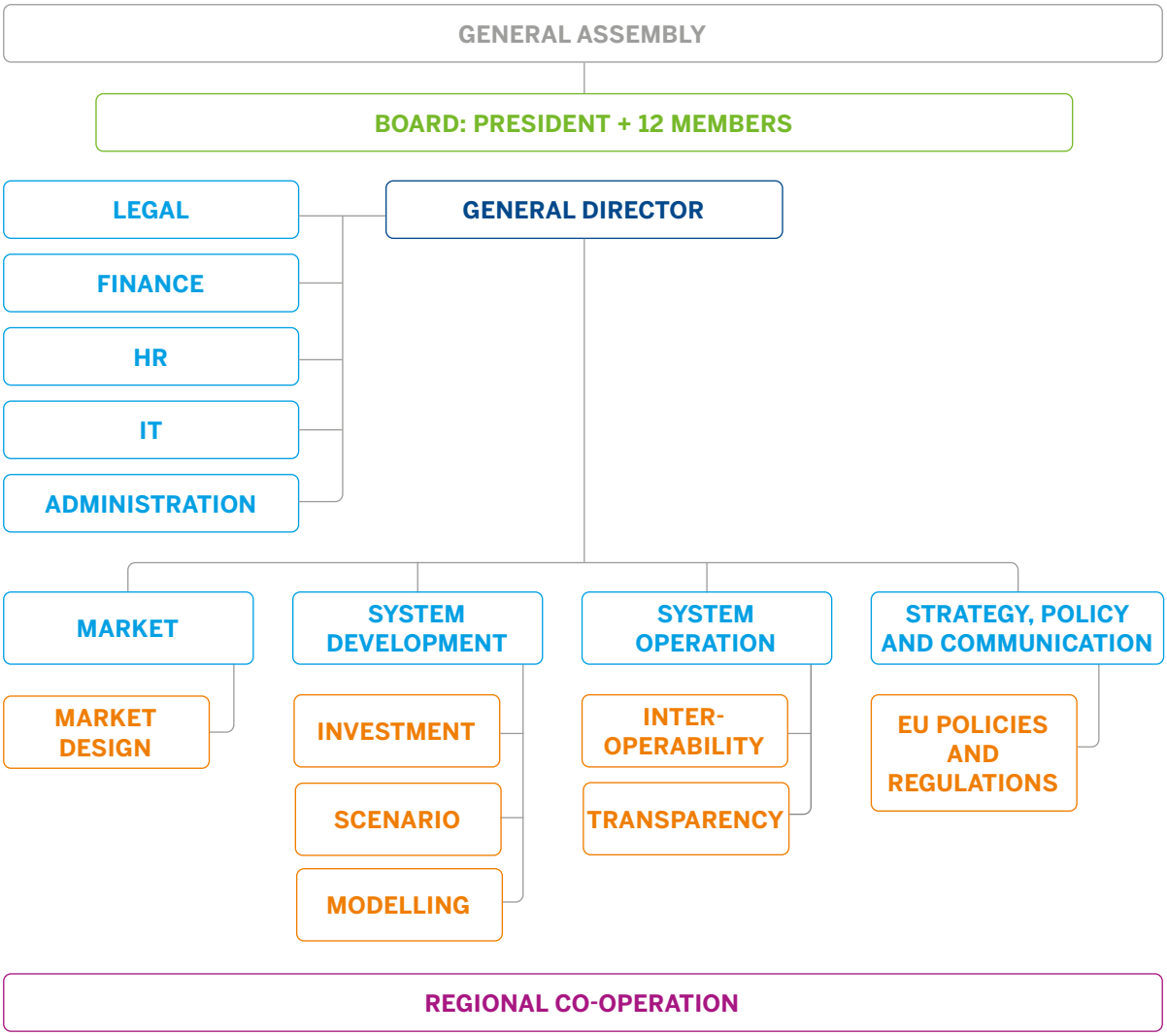

Figure 1: ENTSOG internal organisational structure (as of 31 December 2024)

A WG is the primary means for the management and delivery of ENTSOG's main content development and output (e.g., Summer/Winter Outlooks, TYNDP, Network Codes monitoring reports, position papers, responses, etc.) before their validation at Board and approval at GA level.

A KG is a more specialised group set up within a WG for the preparation of documents, proposals or for discussion of specific technical issues to prepare and facilitate the WG discussions.

A TF is established specifically for particular activities that do not fit within the scope of existing WGs or due to the cross-functional nature of the activity. It is established by the Board upon recommendation of the General Director, including the specification of its Terms of Reference.

WGs and TFs typically meet on a monthly basis and KGs meet on an ad-hoc basis, as required.

The management team has five support groups which provide compliance, financial and other services across the association. These are Legal, HR, Finance, IT and Administration.

ENTSOG **MEMBERSHIP**

Since its foundation on 1 December 2009, ENTSOG Member TSOs have provided wide coverage of the European gas market, operating in Member States of the European Union. ENTSOG's Articles of Association were modified in December 2010 to admit TSOs from EU Member States derogated from the Third Energy Package, as Associated Partners. This allows such TSOs to participate in ENTSOG activities. In February 2011, TSOs from Third Countries (candidates for EU accession, members of the Energy Community, EEA or EFTA), interested in following development of ENTSOG activities, were also admitted to the Association as Observers.

As of 31 December 2024, ENTSOG's membership was comprised of:

43 TSO Members, 1 Associated Partner from an EU country, and 9 Observers from non-EU countries.

MEMBERS (43)

Austria
- Gas Connect Austria GmbH
- TAG GmbH

Belgium
- Fluxys Belgium S. A.
- Interconnector Limited

Bulgaria
- Bulgartransgaz EAD
- ICGB AD

Croatia
- Plinacro

Czech Republic
- NET4GAS, s.r.o

Denmark
- Energinet

Estonia
- Elering AS

Finland
- Gasgrid Finland Oy

France
- GRTgaz*
- TERÉGA

Germany
- bayernets GmbH
- Fluxys TENP GmbH
- GASCADE Gastransport GmbH
- Gastransport Nord GmbH
- Gasunie Deutschland Transport Services GmbH
- GRTgaz Deutschland GmbH
- NEL Gastransport GmbH
- Nowega GmbH
- ONTRAS Gastransport GmbH
- Open Grid Europe GmbH
- terranets bw GmbH
- Thyssengas GmbH

* In 2025, GRTgaz is renamed to NaTran

Greece	– DESFA S. A.
Hungary	– FGSZ Natural Gas Transmission
Ireland	– Gas Networks Ireland
Italy	– Infrastrutture Trasporto Gas S.p.A. – Snam Rete Gas S.p.A. – Società Gasdotti Italia S.p.A
Latvia	– Conexus Baltic Grid
Lithuania	– AB Amber Grid
Luxembourg	– Creos Luxembourg S. A.
Netherlands	– BBL Company V.O.F. – Gasunie Transport Services B. V.
Poland	– Gas Transmission Operator GAZ-SYSTEM S. A.
Portugal	– REN – Gasodutos, S.A.
Romania	– Transgaz S.A.
Slovak Republic	– eustream, a.s.
Slovenia	– Plinovodi d.o.o.
Spain	– Enagás S.A.
Sweden	– Swedegas AB

ASSOCIATED PARTNERS (1)

Switzerland	– Trans Adriatic Pipeline AG (Greece, Albania, Italy)

OBSERVERS (9)

Albania	– Albgaz
Bosian and Herzegovina	– BH-Gas Ltd. Sarajevo
North Macedonia	– NOMAGAS JSC
Norway	– Gassco AS
Switzerland	– Swissgas AG – Erdgas Ostschweiz AG – Transitgas AG – FluxSwiss Sagl
Ukraine	– LLC Gas Transmission System Operator of Ukraine

Status as of 31 December 2024

MEMBERS MAP

STATUS: DECEMBER 2024

43 Members

1 Associated Partner

9 Observers

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Since its foundation, ENTSOG Member TSOs have provided wide coverage of the European gas market. In addition, ENTSOG's Articles of Association were modified in December 2010 to admit TSOs from EU countries currently derogated from the Third Energy Package, such as the Baltic States, as Associated Partners. This allowed for participation in ENTSOG activities.

In February 2011, TSOs from Third Party countries (candidates for EU accession, members of the Energy Community or EFTA) interested in following development of the network codes were also admitted to the Association as Observers.

Following Brexit and in accordance with the established EU–UK Trade and Cooperation Agreement, UK TSOs are no longer ENTSOG Members as of 1 January 2022.

AUSTRIA, GERMANY AND SWITZERLAND

Picture courtesy of FGSZ

2

SUMMARY OF ENTSOG'S **ACTIVITIES AND DELIVERABLES** IN 2024

The Annual Report assesses ENTSOG's work and achievements retrospectively for each given year and provides an opportunity to assess the status of work when comparing the executed results against those planned in the Annual Work Programme.

Since its establishment, ENTSOG's regulatory tasks and deliverables have been within the remit of Gas Regulation (EC) No 715/2009, TEN-E Regulation (EU) No 347/2013, and Security of Gas Supply Regulation (EU) 2017/1938, and have included:

1. **Delivering common operational tools to ensure network security and reliability.**
2. **Providing regular information on gas supply and demand for the European market.**
3. **Elaborating Ten-Year Network Development Plans (TYNDPs).**
4. **Developing network codes and guidelines for market and system operation.**

More recently, ENTSOG activities fall within the scope of the **Hydrogen and Decarbonised Gas Market Regulation (EU) 2024/1789**, the updated Regulation (EU) 2022/869 (TEN-E Regulation), and of emergency security of supply measures associated with the energy crisis following Russia's invasion of Ukraine, namely: the Gas Storage Regulation (2022/1032); the Enhancing Solidarity Regulation (2022/2576), the Market Correction Mechanism Regulation (2022/2578) and the Council Regulation (EU) 2022/1369 on coordinated demand-reduction measures for gas (in 2024).

While ENTSOG's focus remains on fulfilling the tasks as required by the established regulatory framework, it also strives to meet the objectives associated with newly announced policies, including the Clean Industrial Deal, to ensure a secure, competitive and sustainable European gas market. It will continue to assess the longer-term horizons for European scenarios, to meet EU energy and climate goals.

A summary of the key ENTSOG activities is provided in the first five Sections of this chapter.

The key deliverables are outlined on page 20 and 21.

The status of the activities and deliverables which had been planned and included in the AWP2024 are provided in the last section of this chapter.

SECURITY OF SUPPLY AND REGIONAL COOPERATION

Since Russia's invasion of Ukraine in 2022, European TSOs held regular ReCo Team Europe calls to monitor gas market behaviour, gas flow patterns, the usage of underground gas storage facilities, and to exchange information regarding potential risks to the security of gas supply. Following the experiences of 2022–2023, ENTSOG and the TSOs conducted a dedicated table-top exercise in March 2024 to test the gas system's resilience and readiness to address potential risks and supply disruptions.

ENTSOG continued to collaborate closely with the European Commission (EC) and their Joint Research Centre (JRC) to assess gas flows and evaluate how Member States and industry stakeholders might respond in the event of an emergency. In November 2024, ENTSOG participated in a 'dry run' exercise organised by the EC to test the EU's preparedness for various gas emergencies and applying solidarity measures.

During the second half of December 2024, ahead of the expiration of the transit contract via Ukraine, ENTSOG and the TSOs held additional ReCo Team Europe calls to monitor gas market behaviour and ensure preparedness for 1 January 2025. At the same time, and on a daily basis, ENTSOG and the EC worked closely together to assess any potential risks and make the necessary preparations for that date.

In its Summer Supply Outlook 2024 and Winter Supply Outlook 2024/25, ENTSOG continued (following the interest of institutions and stakeholders) to provide an overview analysis in which simulations for seasonal outlooks are not only limited to the investigated season but cover the consecutive twelve months. In each report, ENTSOG additionally assessed the dependence of the EU on Russian supplies during summer 2024 and winter 2024/25. As the Ukraine–Russia transit contract expired in December 2024, the Winter Supply Outlook 2024/25 also included EU gas transit

through Ukraine, Ukrainian UGS capacities that can be used by EU shippers, the Moldovan gas infrastructure, and the Moldovan gas demand.

Regulation 2017/1938 of the European Parliament and of the Council concerning measures to safeguard the security of gas supply was amended by Regulation (EU) 2024/1789. It assigns ENTSOG the task to carry out, every four years, a Union-wide simulation of gas supply and infrastructure disruptions scenarios in cooperation with the Gas Coordination Group. At the request of the Gas Coordination Group, ENTSOG conducted a revision of the simulations earlier than required by the Regulation 2017/1938, in 2024. All disruption scenarios in this edition of the simulation report assume a complete disruption of Russian pipeline supply during the winter season period. 2024 was characterised by high LNG supplies in response to market demands and available capacities. Furthermore, the gas market was active in injecting into storage facilities throughout the summer and autumn periods, achieving filling level of 95.3 % across the EU on 27 October 2024. ENTSOG observed a slight increase in pipeline-based gas supply to Europe from Russia when compared to 2023.

ENTSOG shared detailed observations with the EC and the Gas Coordination Group (GCG) on a regular basis and further supported the EC by providing operational and gas system expertise, knowledge, and information relevant to the security of gas supply.

In autumn 2024, ENTSOG provided their response to a public consultation on the fitness check of the energy security architecture launched by the EC.

SYSTEM DEVELOPMENT SCENARIOS AND INFRASTRUCTURE

Throughout 2024, ENTSOG continued with activities related to the TYNDP process, including scenario development. A series of TYNDP 2024 documents were published: the draft and final guidance documents known as Annex D (D1, D2, D3), the draft hydrogen Infrastructure Gaps Identification (IGI) and Infrastructure reports, as well as remaining annexes (A, B and C). For the first time, ENTSOG evaluated the specific role of hydrogen infrastructure in achieving EU climate and energy targets in a dedicated report, and has identified the remaining infrastructure gaps needed to meet these goals.

Work also advanced with ENTSO-E on the electricity and gas interlinkages project. Throughout 2024, the TYNDP 2024 scenario building process made significant progress. In May 2024, the draft scenario report, which included an extensive dataset, was published and submitted to ACER for its opinion and to the EC for approval. A joint ENTSOG – ENTSO-E workshop, held in July, marked the closing of the 2024 Ten-Year Network Development Plan (TYNDP) scenarios and the kick-off for the 2026 TYNDP scenarios, with the Stakeholder Reference Group (SRG) involved from the outset.

As required by Article 11 of the TEN-E Regulation (EU) 2022/869, ENTSOG continued work on the improvement of the single-sector CBA Methodology, in coordination with the EC and ACER. The single-sector CBA Methodology was finalised and submitted to EC for its formal approval on July 2024. The methodology reflects specific provisions of the TEN-E Regulation and will be complemented by particular input data obligations for each TYNDP cycle (Annex D).

The Interlinked Model progressed so that it is able to test hydrogen, electricity and electrolyser projects using the social economic welfare approach developed by the modelling team. This allows project benefits to be split between EU Member States and Non-EU countries. This progress marks important milestones for the delivery of the interlinked model and has been further detailed in the ILM 2024 Progress Report.

The INV WG was involved in the work to publish the System Capacity Map 2025, which presents supply and demand trends alongside the latest capacity data. This System Capacity Map 2025 was finalised in December 2024 and published in January 2025. ENTSOG publishes the System Capacity Map in collaboration with GIE on an annual basis.

SYSTEM OPERATION, INTEROPERABILITY AND TRANSPARENCY REQUIREMENTS

In 2024, the ENTSOG Interoperability Team, together with the ENTSOG Members, worked on the Interoperability related new obligations for ENTSOG as required by Regulation 2024/1789, the Regulation on the internal markets for renewable gas, natural gas and hydrogen. Specifically, the Interoperability team developed and published the first edition of the **Gas Quality Monitoring Report**, in response to Article 26.3, which mandates ENTSOG to publish a gas quality monitoring report every two years.

Additionally, ENTSOG worked on the delivery of 'recommendations to transmission system operators on their technical cooperation with distribution system operators and hydrogen network operators' as required by Article 26.3 of the Regulation. For this work, TSOs members and four EU associations representing DSOs (EUROGAS, CEDEC, GEODE, and GD4S) were consulted by ENTSOG. The new Regulation also requires that additional gas quality parameters are published on the ENTSOG Transparency Platform (TP) as a way to increase the transparency of the natural gas markets. Throughout 2024, ENTSOG has undertaken projects to update the TP, enabling TSOs to publish daily measured values of the gross calorific value, Wobbe index, hydrogen content blended in the natural gas system, methane content, and oxygen content at relevant points.

In 2024, ENTSOG continued to cooperate with other stakeholders in normative work, to include recommendations and considerations related to the definition of future gas quality management and hydrogen handling principles, in the field of data exchange, security of supply and other topics such as CCUS.

Furthermore, the ENTSOG EIC Local Issuing Office services continued in 2024.

In 2024, the ENTSOG Transparency Team and the Transparency Working Group continued enhancing the ENTSOG TP by expanding and refining its functionalities and providing user support. Efforts were directed towards maintaining and continuously providing the transparency information required by the Tariff (TAR), Interoperability (INT) and Capacity Allocation Mechanism (CAM) Network Codes. This included the implementation and ongoing adherence to the transparency obligations established by Regulation (EU) 2024/1789 and the requirements coming from the REMIT Regulation (EU) No 1227/2011, revised by Regulation (EU) No 2024/1106. Additionally, ENTSOG and the gas TSOs actively engaged in dedicated initiatives led by ACER to discuss the ongoing revision of REMIT and related regulatory instruments.

MARKET NETWORK CODES & GUIDELINES AND MARKET ASSESSMENT

With regards to ENTSOG's ongoing Network Code Monitoring, the Market team worked to publish, in 2024, the reports for Implementation and Effect Monitoring of the TAR NC and BAL NC. Work on the Network Code Monitoring reports for 2025 commenced in 2024 with data collection for CAM NC monitoring and CMP GL monitoring in the last quarter of the year – respective Executive Summaries for both monitoring reports are included in this ENTSOG Annual Report.

The following list outlines timeline for publication and implementation of each of the currently existing Network Codes and Guidelines:

Publication	Implementation
Guidelines on Congestion Management Procedures (CMP GLs) and on Transparency	Published as Annex I to Regulation (EU) No 715/2009 (repealed since February 2025, now published as Annex I Chapter 2 to Regulation (EU) 2024/1789), entry into force in October 2013. Only one ENTSOG member has not yet fully implemented the CMP GLs [1]
CAM NC – Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems	Published on 14 October 2013 as Regulation (EU) No 984/2013, entered into force in November 2015. CAM NC – Amendment for Incremental capacity. Regulation (EU) 2017/459, the first amendment of the NC, entering into force on 6 April 2017. Implementation of the NC has been completed.[2]
BAL NC – Network Code on Gas Balancing of Transmission Networks	Published 26 March 2014 as Regulation (EU) No 312/2014. The network code has reached a high level of implementation and TSOs are very compliant. Voluntary mergers of Balancing zones has been ongoing.
INT NC – Network Code on Interoperability and Data Exchange Rules	Published on 30 April 2015 as Regulation (EU) No 703/2015, implemented by May 2016. Compliance with the NC is very high.
TAR NC – Network Code on Harmonised Transmission Tariff Structures for Gas	Published on 16 March 2017 as Regulation (EU) No 460/2017, entry into force on 6 April 2017, a high level of implementation has been reached.

Table 1: TheTable outlines the timeline for publication and implementation of each of the Network Codes and Guidelines

Furthermore, the Market Team prepared the Auction Calendar 2025/2026 for the Capacity Allocation Mechanisms Network Code, published in 2024.

Also, the Market Area Brussels Team, actively participated in the Industrial Carbon Management (ICM)-Forum working group on Infrastructure, contributing to the development of the working group's report. According to the mandate of the working group on Infrastructure the report should discuss main areas related to the development of CO_2 transport networks. ENTSOG provided input in particular on de-risking, regulatory, governance and liabilities.

In 2024, the Market Area also monitored and maintained the Gas Network Codes Functionality Platform, which develops solutions to issues raised through the jointly managed ACER and ENTSOG Functionality (FUNC) Process. Throughout the year, no new issues were posted on the platform, no issues were under review, and no issue resolutions were in development. In 2023, ACER initiated the preparatory phase of the CAM NC amendment process which was continued in 2024. During this phase, as well as in the subsequent stages of ACER's and the Commission's amendment process, issues related to CAM NC would be integrated into the amendment work and discussions. Consequently, CAM NC activities on the platform remained temporarily on hold throughout the review and amendment process.

In 2024, the Market Area also closely monitored the ACER analysis on national periodical consultations on TSO tariffs.

The Market Area in collaboration with other ENTSOG business areas provided their contribution to public consultations related to the revision of the CAM NC. ENTSOG participated in three consultations run by ACER in 2024 and proposed concrete wording for the amendment.

Furthermore, the Market business area contributed with the Guarantee of Origin Prime Movers Group on the topic of the Union Database implementation – envisioned in the Renewable Energy Directive – by organising two public workshops.

The Market business area also participated in Investors Dialogue on Energy WG and contributed to European Clean Hydrogen Alliances Roundtable Transmission and Distribution Roundtable Learnbook on Financing of Hydrogen Infrastructure.

1 See the latest findings in CMP GL Implementation & Effect Monitoring Report published in 2025 in Chapter 5.

2 See the latest findings in CAM NC Implementation & Effect Monitoring Report published in 2025 in Chapter 5.

STRATEGY, POLICY AND COMMUNICATION

In 2024, following the formal adoption of the Hydrogen and Decarbonised Gas Market Package, ENTSOG began working on the implementation of the new provisions. In February, the GHP TF was replaced by the European Policies and Regulation Working Group (EPR WG). Its main deliverable is to monitor and propose relevant actions on the priorities agreed by the ENTSOG Board regarding the implementation of the Hydrogen and Decarbonised Gas Market Package, the TEN-E Regulation, the Security of Supply Regulation, and any other relevant EU legislation impacting the natural gas transmission business.

Under the EPR WG, the activities included mapping the relevant provisions of the newly adopted Hydrogen and Decarbonised Gas Market Package and reporting to ENTSOG Members on the new European Union institutional setup and policy priorities following the European Parliament (EP) elections of 6–9 June 2024, including the process of appointment of the new college of European Commissioners.

The EPR WG was also involved in Members' alignment on issues and relevant topics, such as CCUS, the Clean Industrial Deal, and setting priorities for engagement with stakeholders in bilateral and multilateral fora. The EPR WG was informed and regularly updated on ENTSOG activities related to the Advisory Panel for Future Gas Grids, focusing on stakeholder dialogue related to Carbon Capture, Utilisation, and Storage (CCUS) and CO_2 transport, and in the newly established Stakeholders' Reference Group (SRG) under the Scenarios Building framework within TYNDP, focusing on scenarios development. In addition, the EPR WG was informed on ENTSOG activities in facilitating the Roundtable on Clean Hydrogen Transmission and Distribution under the European Clean Hydrogen Alliance, addressing the topics of implementation of hydrogen supply corridors and financing of hydrogen infrastructure assisting with the development and publication of two industry reports (Learnbooks) in 2024.

In 2024, as a subgroup of the EPR WG, the CCUS Kernel Group (CCUS KG) was established in the context of the implementation of the Industrial Carbon Management Strategy and the planned EU regulatory initiatives for CCUS. The meetings of the CCUS KG are chaired by SPC together with the relevant ENTSOG business areas and/or ENTSOG Members. Its objective it to organise the efficient information flow, reporting, analyses, and content development works.

As part of its activities related to CCUS developments, the SPC Business Area coordinated, together with other ENTSOG business areas, the input flows for the ICM Forum's WGs CO_2 Infrastructure and CCU. All ENTSOG business areas contributed to updating members on the progress of each of the WGs reports through the newly established CCUS KG.

The SPC Business Area managed the developments of the joint Hydrogen Infrastructure Map, including two updates – in May and December 2024 – including projects across the hydrogen value chain for transmission, distribution, storage, import terminals, production and off-takers. This was done in collaboration with GIE, Eurogas, CEDEC, Geode and GD4S.

ENTSOG **MANAGEMENT SUPPORT**

ENTSOG's Management Support team continued working in 2024 with ENTSOG teams and management and working with ENTSOG members. Support was via the Legal, HR, Finance, IT and Administration functions to ensure a robust platform for the activities and deliverables of ENTSOG.

The ENTSOG Legal Team ensured the proper working of the day-to-day activities from the legal and corporate perspective.

ENTSOG Human Resources continued with a well-prepared recruitment process, so that the relevant resources and competences were in place to perform the required activities.

Working with several IT providers, vendors and IT contractors, the IT Team plans, manages, builds and operates IT systems to support ENTSOG advisors and their activities. In 2024, they provided IT support to ENTSOG stakeholders in the use of ENTSOG's data and systems.

ENTSOG **DELIVERABLES 2024**

JANUARY

11 // ENTSOG and GIE's System Capacity Map 2024

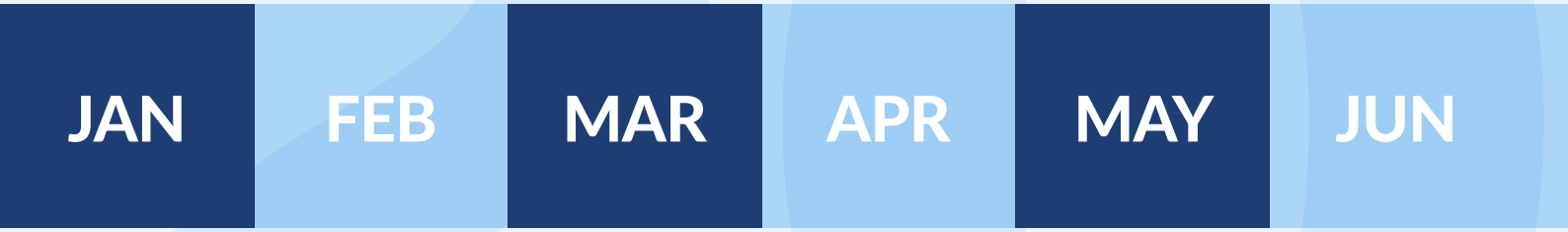
MAY

07 // ENTSOG and ENTSO-E Interlinked Model (ILM) 2024 progress report

15 // ENTSOG Annual Report 2023

21 // ENTSOG Balancing Network Code Implementation and Effect Monitoring Report

22 // ENTSO-E and ENTSOG Joint Draft Scenarios for TYNDP 2024



FEBRUARY

28 // ENTSOG preliminary single-sector Cost-Benefit Analysis (CBA) methodology for stakeholder feedback

APRIL

16 // Summer Supply Outlook 2024 (with Winter 2024/25 overview) and Summer Supply Review 2023

JUNE

11 // Tariff Network Code Implementation and Effect Monitoring Report

SEPTEMBER

30 // European Clean Hydrogen Alliance 'Learnbook on Financing of Hydrogen Infrastructure'

DECEMBER

19 // Gas Quality Monitoring Report 2025

20 // Capacity Allocation Mechanisms (CAM) Network Code 'Capacity Auction Calendar' for 2025/2026

20 // ENTSOG Annual Work Programme 2025

OCTOBER

16 // Winter Supply Outlook 2024/25 (with Summer 2025 Overview) and Winter Supply Review 2023/24

NOVEMBER

07 // European Clean Hydrogen Alliance 'Learnbook on Implementation of Hydrogen Supply Corridors'

WORK PROGRAMME STATUS

These tables provide an overview of the activities in ENTSOG's four main business areas –System Development, System Operation, Market, and Strategy, Policy and Communication (SPC). The listed tasks originate (and are supplemented in some cases) from the Annual Work Programme 2024.

SYSTEM DEVELOPMENT

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
TYNDP 2024	Project collection TYNDP 2024 (Check and validation phases of TYNDP 2024 Project Collection process) TYNDP 2024 Methodological Annexes D1, D2, D3 Infrastructure Report Infrastructure Gaps Identification Report	Publication of the TYNDP 2024 Annex A (June-2024) Publication of Draft TYNDP 2024 Annexes (D1, D2, D3) (June 2024) Publication of TYNDP 2024 draft Infrastructure Report (December 2024) Publication of TYNDP 2024 Infrastructure Gaps Identification Report (December 2024)	EC ACER Public consultation (19 June – 9 July 2024) Public consultation (started 18 December 2024)	Published: the final list of TYNDP 2024 projects (Annex A). Published: guidance/ methodological documents for TYNDP 2024. Published: the Infrastructure Report and complementary Annexes (Annex B and Annex C), that represent the hydrogen and gas infrastructure submitted to TYNDP 2024 in the form of maps and in terms of capacity. Identified hydrogen infrastructure gaps through the TYNDP 2024 IGI report.
Support to Regional Groups	Project Collection of hydrogen infrastructure candidate projects for the second PCI/PMI Selection Process.	Second PCI/PMI project collection (September 2024 – November 2024)	EC ACER	Provided support to 2nd PCI/PMI selection process under the TEN-E regulation. Published: the Project Promoter Handbook to support with PCI/PMI applications.
ENTSO-E/ENTSOG consistent and Interlinked Model	Task force Interlinked Model (TF ILM) to review the project assessment methodology based outcomes of the outcomes of the 2021 progress study. TF ILM to develop a dual assessment methodology and electricity and hydrogen integrated model (ongoing).	Testing of cost benefit analysis methodology and dual assessment (completed) Publication of a Progress Report (ongoing)	EC TYNDP Project promotors	Assessment of electrolyser CBA due by the end of march based on interlinked model. Drafting of 2022 Interlinked model progress report ongoing.

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
TYNDP 2024 scenario development process	Joint scenario development process between both ENTSOs	Final TYNDP 2024 joint scenario report (ENTSOG/ENTSO-E)	TSOs TYNDP 2024 scenarios consulted with EC, ACER, external stakeholders.	Draft Scenario report published in May 2024
TYNDP 2026 scenario development process	Joint scenario development process between both ENTSOs	Final TYNDP 2026 joint scenario report (ENTSOG/ENTSO-E)	TSOs TYNDP 2026 scenarios consulted with EC, ACER, external stakeholders	Process started in June 2024, expected to be final in March 2026
Summer Outlook 2024 with Winter 2024/25 overview	Provide view on injection period ahead	Publication April 2024	TSOs ACER	Completed
Summer Review 2023	Analyse previous summer	Publication April 2024	TSOs	Completed
Winter Outlook 2024/25 with Summer 2025 Overview	Provide view on supply-and-demand balance for winter ahead	Publication October 2024	TSOs ACER	Completed
Winter Review 2023/24	Analyse previous winter	Publication October 2024	TSOs	Completed
System Capacity Map 2025	Provide project map and graphic representation of supply-and-demand for past year with updated information on capacities in Europe	Publication January 2025	TSOs	Finalised in December 2024 and published in January 2025
Union-wide security of supply simulation report 2024	Regulation 2017/1936 stipulates that ENTSOG must carry out a Union-wide simulation of supply and infrastructure disruption scenarios, which represents a Union-wide risk assessment. The results of this simulation should be considered by competent authorities when updating their risk assessments, preventive action plans, and emergency plans.	Defining the methodology and assumptions in collaboration with the Gas Coordination Group (completed); Collecting the necessary data from the competent authorities (completed); Performing the risk assessment, editing the report gathering the results and submitting this report to the relevant parties (completed); ENTSOG Union-wide security of supply simulation report 2024 publication (completed).	TSOs Gas Coordination Group	Finalised in December 2024 and published in January 2025

Table 2: System Development Work Programme Status

SYSTEM OPERATION

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
TRANSPARENCY				
Data consistency support to TSOs	Ensure a high data completeness and consistency on the TP	ENTSOG staff monitors the integration of data publications on a daily basis and provides monthly reports to the TSOs.	Gas TSOs	Over the course of the year, data completeness has continuously improved and averaged 93.7 % per month.
Continuous platform improvements	Ensure user friendliness and usability of the published data	In 2024, several updates were implemented. The filtering features on the TP and in API calls were enhanced, the export wizard received improvements, the TP map was updated, and the functionalities for mobile and tablet views were refined.	Gas TSOs and TP Users	Ongoing
Facilitate required data collection processes	Ensure timely and effective data deliveries	The data for ACER's monitoring obligations were delivered on 8 February 2024.	Gas TSOs, ACER Gas Market Department	Completed
Follow up on REMIT requirements	Ensure proper application of REMIT requirements	Ongoing	Gas TSOs, ACER REMIT department, ACER REMIT User groups	ENTSOG and gas TSOs actively engaged in a wide range of REMIT, ACER, EC discussions, Roundtables, Public Consultations (PCs) ENTSOG continues to represent the Gas TSOs in ACER's REMIT Stakeholder Groups, including ACER REMIT Expert Groups, Webinars and roundtables for the Association for Energy Market Participants (AEMP); RRMs (registered reporting mechanisms), and IIPs (platforms for disclosure of inside information). The updated ACER requirements for REMIT implementation have been considered and implemented, if relevant.

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
ENTSOG TP acts as an approved Inside Information Platform (IIP)	Ensure good practice and integrity for publication of inside information as UMMs	ENTSOG TP effectively operates as an approved Inside Information Platform (IIP) for gas infrastructure operators and maintains ongoing communication with the Agency regarding any relevant matters.	Gas TSOs, ACER	Ongoing
Analyse legal transparency requirements coming from EU legislation, including the gas Network Codes	Ensure proper application of the transparency requirements	In 2024, ENTSOG oversaw the implementation of new provisions from the Transparency Guidelines following the publication of the Gas and Hydrogen Package. These new provisions are related to the publication of new gas quality parameters on the Transparency Platform (TP), including methane, hydrogen blended into the system, and oxygen content at all relevant points. in addition to the Wobbe Index (WI) and Gross Calorific Value (GCV). The revision process of the CAM NC was monitored.	Gas TSOs, EC, TP users and other stakeholders	Ongoing
Cooperate with ENTSOG business areas to fulfil transparency requirements coming from relevant NCs	Ensure proper application of the publication requirements	Ongoing	Gas TSOs, other ENTSOG Working Groups, TP users and other stakeholders	Ongoing
Facilitate and support other areas inside ENTSOG with projects concerning TP	Ensure good usage of the available data and functionalities on the TP	Ongoing	Gas TSOs, other ENTSOG Working Groups,	Ongoing
TP users support	Ensure transparent and user-friendly channels for providing feedback on using the TP	Ongoing	Gas TSOs, TP users, ACER, EC, and other stakeholders	Ongoing
Public workshop on Transparency	Ensure transparent dialog with stakeholders	No workshop was held in 2024	Gas TSOs, TP users, ACER, EC, and other stakeholders	Not completed

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
INTEROPERABILITY AND DATA EXCHANGE				
Development of the Gas Quality Monitoring report	Publish the first edition of the Gas Quality Monitoring report as requested by Article 26.3 of Regulation (EC) No 2024/1789	Report (available here) published in December 2024	TSOs involvement	Completed
Development of the Gas Quality Outlook report	Develop the fifth edition of the Gas Quality Outlook report for the TYNDP 2024	Ongoing. Publication expected in 2025	TSOs involvement General public through TYNDP public consultation	Following the timeline of the TYNDP process, the gas quality outlook 2024 was part of the TYNDP public consultation finalised in July 2024 and will be published in 2025
Continue discussion on H2 quality	1) Gathering information on the gas transmission network readiness to integrate hydrogen 2) Contribute to the development of a CEN Technical specification for H_2 in repurposed system	1)Ongoing 2) ENTSOG replied to the consultation from European Commission on H_2 quality, whose goal was to develop the mandate for CEN standard on H_2 quality	TSOs involvement Stakeholders from the H_2 value chain	Set out ENTSOG's current understanding of the opportunities and challenges on increased penetration of hydrogen
Continue discussion on gas quality standardisation with CEN	Cooperate with gas sector on the EN16726 revision. Provide the ENTSOG view on the implementation of the WI classification system proposed by CEN.	Contribute towards the revision of EN 16726 to include WI and H_2 and revise other quality parameters (e.g., oxygen, relative density, etc). The revised standard was finalised in 2024 and will be submitted to final vote in 2025.	Stakeholders from the whole gas value chain participate in the process	ENTSOG continues cooperating with CEN
Participate in discussions on CO_2 quality	1) Contribute to the development of a CEN standard on CO_2 quality for transmission grid 2) Follow and participate in WG "CO_2 standards" of the Industrial Carbon Management (ICM) Forum	Ongoing	Stakeholders from the whole CO_2 value chain participate in the process	ENTSOG continues cooperating with CEN and the ICM Forum
Continue discussion on gas and hydrogen quality and handling with industry associations	Cooperate with gas sector regarding gas and hydrogen quality standard, handling and regulation	Ongoing	Stakeholders from the whole gas value chain participate in the process	Marcogaz, EASEE-gas, GERG, GIE, DSOs associations and other industry associations in this field.

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
Public workshop on GQ&H_2 handling	Dialogue with stakeholders along the gas value chain in the field of gas quality, hydrogen and CO_2	A Gas Quality workshop was held in November 2024. The documentation is available here.	All public could participate	Once per year
Smart Grid solution & digitalisation for Gas Quality and H_2 handling	Exploring the possibilities of deploying 'smart gas grid' services to improve the interoperability of systems and technologies	Ongoing	TSOs involvement	Ongoing
Follow up on the SoS and technical cooperation	Follow up on the existing ReCo System for Gas as a CNOT for emergency conditions	Ongoing	TSOs	Ongoing
Follow up on technical cooperation with third-country TSOs	Continue cooperating with Energy Community and third-country TSOs	Meetings with non-EU TSOs and Energy community secretariat	EnC Secretariat and stakeholders	Ongoing
Follow up on data exchange	Organise Data Exchange and Cyber Security workshop	Organised Annual Workshop on Data Exchange and Cyber Security in the gas sector on 29/30 October 2024	All public could participate	A hybrid event that combined Data exchange and cybersecurity workshop was held on 29/30 October 2024 in collaboration with ENTSOG, EASEE-gas and GIE held at the ENTSOG offices. ENTSOG, GIE, EASEE-gas, ENISA, TSOs, EC participated as speakers
Follow up on cybersecurity	Organise (when possible) bi-monthly Cyber security calls with the GIE/ENTSOG Joint Cybersecurity Task Force	Organised Cybersecurity task force steering team calls as and when required. In 2024 the joint group meetings were combined with the one-day hybrid cybersecurity workshop in Brussels 30 October 2024	GIE members, ENTSOG membersIn collaboration with ENISA	New ToR for the Joint Task Force are being prepared for 2025
Follow up of EASEE-gas collaboration	Collaborate on CNOT issues and advise on data exchange	ENTSOG participated and contributed to the EASEE-gas groups: MWDWG & TSWG. The EASEE-gas and ENTSOG collaboration framework agreement was signed and came into effect in January 2024.	ENTSOG, EASEE-gas Board/management team and MWDWG & TSWG	ENTSOG participated in the relevant groups run by EASEE-gas and collaborated on the joint Data exchange and data security workshop. The EASEE-gas collaboration agreement ensures the continued edigas message suite maintenance and availability to the gas community.

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
Continuation of the dialogue with stakeholders on European and national level on security algorithms for AS4 and the development of a new updated ENTSOG AS4 profile.	Establish a common definition of secure security algorithms for AS4 and produce a new version for gas sector adoption with state-of-the-art encryption.	Developed a final version of the ENTSOG AS4 version 4.0 profile with an increased security core which was approved by the ITC KG 10 December 2024 to be published Q1 2025.	GIE, EASEE-gas, EC eDelivery program, ITC KG	A final AS4 profile version was developed and shared with the ENTSOG ITC KG for comments. A high-level road map for AS4 profile documentation updates, service provider communication and testing was put in place for editing in 2025.
Develop an edigas XML validation tool	Develop, with EASEE-gas, an online, freely available edigas XML validation tool	The validation tool platform was established in December 2024 and configuration of the tool will be completed Q1 2025	ITC KG, EASEE-gas (MWDWG, TSWG), INT WG	The configuration of the edigas XML validation portal will continue in 2025 where more edigas 6.1 messages will be added after consultation with the ITC KG and the EASEE-gas MWDWG (edigas WG)
Recommendations to transmission system operators on their technical cooperation with distribution system operators and hydrogen network operators	Develop the document on recommendations to TSOS on their technical cooperation with DSOs and HNOs as required by Article 26.3 of Regulation (EC) No 2024/1789	Ongoing To be finalised and published in 2025	TSOs involvement EU DSOs associations: EUROGAS, CEDEC, GEODE, and GD4S	An extensive consultation process was conducted within ENTSOG throughout 2024. This included TSOs members and coordination with the four EU DSOs associations
Operate the Local Issuing Office for the EIC scheme	Management of EIC Codes requests Carry out data governance activities as requested by the ENTSO-E CIO administration	Ongoing – year-round A request by the CIO for all LIOs' EIC codes to have a valid function code was completed in December 2024	ENTSO-E, LIOs, EIC users	Ongoing management
Cooperation with stakeholders on methane emissions reduction	Share technical expertise and provide support (along with Marcogaz and GERG) to GIE and Eurogas for the development and implementation of the Methane Emissions Regulation	Ongoing	GIE, Eurogas, Marcogaz and GERG within the Methane Emissions Joint Expert Group	Ongoing

Table 3: System Operation Work Programme Status

MARKET NETWORK CODES & GUIDELINES AND MARKET ASSESSMENT

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
BALANCING NETWORK CODE				
Support ENTSOG members with the implementation of the BAL NC	Successful implementation of the BAL NC provisions by ENTSOG members	Ongoing throughout 2024	TSOs	Ongoing
Publish the BAL NC implementation and effect monitoring reports – 2024 edition	Monitor the implementation and effects of the BAL NC	Data collected in 2023 and subsequent content discussion in BAL KG and MAR WG.	TSOs, Market Area Managers and ACER	Completed for 2024. Next report expected in 2026. BAL NC Implementation and Effect Monitoring Report published on ENTSOG website in June 2024.
Respond to queries from Members and stakeholders on balancing issues	Reply to requests, on topics such as implementation of the BAL NC or good practices in Europe, in a timely manner	Ongoing throughout 2024	TSOs, stakeholders	Ongoing
Develop ENTSOG positions on balancing related issues and respond to consultations and queries from stakeholders	Develop ENTSOG positions on balancing-related issues that can be presented to stakeholders and the wider market, as well as internal material to support other areas	Ongoing throughout 2024	TSOs, stakeholders, ACER	Ongoing
Participation in external events on balancing	Present ENTSOG's positions and results regarding balancing towards external stakeholders if necessary	Ongoing throughout 2024	TSOs, stakeholders, ACER	Ongoing

Activity	Goal	Deliverables & Completion Date	Consultation with	Status / Comments
TARIFFS NETWORK CODE				
Support ENTSOG members with the implementation of the TAR NC	Successful implementation of the TAR NC provisions by ENTSOG members	Ongoing throughout 2024	TSOs	Ongoing
Publish the TAR NC implementation and effect monitoring report – 2024 edition	Monitor the implementation and effects of the TAR NC	TAR NC Implementation and Effect Monitoring Report	TSOs and ACER	Completed for 2024. Next report expected in 2026. TAR NC Implementation and Effect Monitoring Report published on ENTSOG website in June 2024.
Respond to queries from Members and stakeholders on tariff issues	Reply to requests, on topics such as implementation of the TAR NC or good practices in Europe, in a timely manner	Ongoing throughout 2024	TSOs, stakeholders	Ongoing
Develop ENTSOG positions on tariff-related issues and respond to consultations and queries from stakeholders	Develop ENTSOG positions on tariff-related issues that can be presented to stakeholders and the wider market, as well as internal material aimed at analysing the evolution of tariffs and revenues	Ongoing throughout 2024	TSOs, stakeholders, ACER	Ongoing
Participation in external events on tariffs	Present ENTSOG's positions and results regarding tariffs towards external stakeholders	Ongoing throughout 2024	TSOs, stakeholders, ACER	Ongoing

Activity	Goal	Deliverables & Completion Date	Consultation with	Status / Comments
CAPACITY NETWORK CODES AND CONGESTION MANAGEMENT GUIDELINES				
Support ENTSOG members with the implementation of the CAM NC	Successful implementation of the CAM NC provisions by ENTSOG members	Ongoing	TSOs	Ongoing
Develop the CMP GL and CAM NC implementation and effect monitoring reports covering gas years 2022/2023 and 2023/2024	Monitor the implementation and effects of the CAM NC and CMP GL	CMP Guidelines Implementation and Effect Monitoring Report CAM NC Implementation and Effect Monitoring Report	TSOs	Data collection for CAM and CMP Implementation and Effect Monitoring reports started in 2024. Reports will be published in 2025
Participation in CAM NC amend-ment process	Support ACER in development of CAM NC amendments	ENTSOG participated in 3 con-sultations run by ACER in 2024 and proposed concrete wording for the amendment.	TSOs	ACER submitted its proposal to the European Commission.
Development of CAM NC auction calendar 2025/2026	Publish the auction calendar for 2025/2026	Auction calendar for 2025/2026 published on ENTSOG website on 20 December 2024	TSOs	Completed in 2024 for 2025/2026 period
Respond to queries from Members and stakeholders on capacity issues	Reply to requests, on topics such as implementation of the CAM NC or good practices in Europe, in a timely manner	Ongoing	TSOs, stakeholders	Ongoing
Develop ENTSOG positions on capacity related issues and respond to consultations and queries from stakeholders	Develop ENTSOG positions on capacity-related issues that can be presented to stakeholders and the wider market, as well as internal material to support other areas	Ongoing	TSOs, stakeholders, ACER	Ongoing Response to ACER's consultation on the CAM NC
Participation in external events on capacity	Present ENTSOG's positions and results regarding capacity towards external stakeholders	Ongoing	TSOs, stakeholders, ACER	Ongoing

Activity	Goal	Deliverables & Completion Date	Consultation with	Status / Comments
FUNCTIONALITY				
Support the Functionality Process and any related issues to the Network Codes and Guidelines that arise	Assist with operation of the Functionality Process	Ongoing	Stakeholders, TSOs, ACER	Ongoing
MARKET ASSESSMENT				
Evaluate any proposed changes to the current regulatory framework in the EU gas sector or legislation potentially impacting it and provide feedback.	Ensure that the stakeholders (including the EC) are aware of ENTSOG's positions and views regarding the legislative and policy proposals developed for the EU gas sector	Ongoing throughout 2024	TSOs, EC, stakeholders	Ongoing
Provide opinion and/or responses on issued reports, public consultations, and papers.	Support members and stakeholders	Ongoing throughout 2024	TSOs	Ongoing. Feedback provided in 2024 via Market Area and Working Groups on – for example: – Response on ACER consultation on CAM NC revision. – Response on EC study on energy integration. – Response on Electricity Market Design consultation. – Response on CCUS consultation.

Table 4: Market Work Programme Status

STRATEGY, POLICY AND COMMUNICATION

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/Comments
External Engagements	Engage in the European Clean Hydrogen Alliance's Roundtable on Clean Hydrogen Transmission and Distribution	Ongoing throughout 2024	TSOs	Established and ongoing
Communication proposals	Provide recommendations on ENTSOG's priorities in dialogue with the EC, Parliament and ACER. Propose external and internal communication. Engage in dialogue with industry, gas and other key EU stakeholders	Ongoing throughout 2024	TSOs	Ongoing
Information sharing	Provide information material to TSOs in their discussions on gas, hydrogen and CO_2 regulatory framework held at national level. Report to Members on all ENTSOG bilateral, multilateral and public engagements	Ongoing throughout 2024	TSOs	Ongoing

Table 5: Strategy, Policy and Communication Work Programme Status

Picture courtesy of Gasum

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SYSTEM OPERATION:

SECURITY OF SUPPLY, REMIT, TRANSPARENCY AND INTEROPERABILITY

The primary work of the System Operation business area includes developing and monitoring technical network codes, evaluating activities related to gas quality standardisation, developing and maintaining existing Common Network Operation Tools (CNOT), the ReCo System for Gas and the exchange of information on security of supply, and the maintenance and continuous development of ENTSOG's Transparency Platform (TP), including activities referring to REMIT.

In 2024, System Operations comprised two main working groups: Interoperability (INT WG) and Transparency (TRA WG).

WORK STRUCTURE

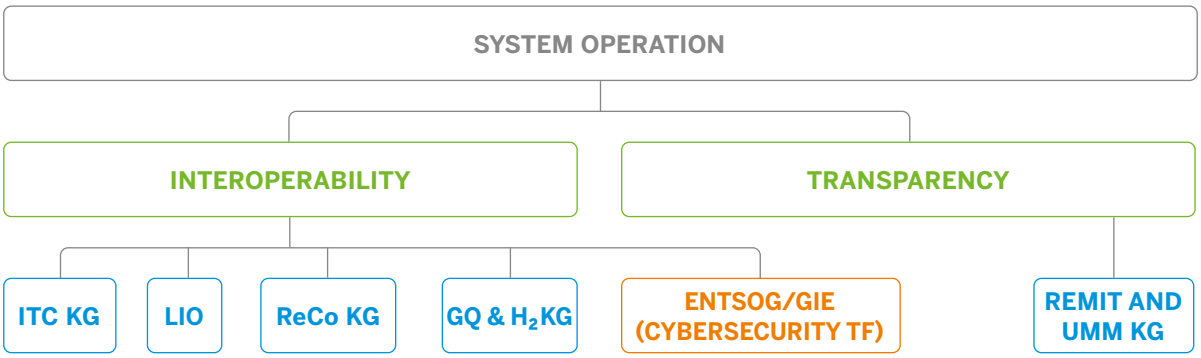

Figure 2: Interoperability and Transparency Working Groups and associated KGs/TFs

INTEROPERABILITY

The Interoperability Working Group (INT WG) monitors the implementation of the INT NC and oversees the work of the groups mentioned below.

ENTSOG Members' work on interoperability topics is structured around the following groups within the System Operation area:

- The Regional Coordination System for Gas KG (ReCo KG) focuses on operational and dispatching cooperation between TSOs to ensure the security of gas supply, reliable and efficient gas transportation.
- The Information Technologies and Communications KG (ITC KG) develops and maintains the ENTSOG Common Network Operation Tools (CNOTs) for normal conditions, as stated in Article 24 of the INT and Data Exchange NC, including Business Requirement Specifications (BRS), Implementation Guidelines and communication profiles (edig@s®). Furthermore, the ITC KG is working in collaboration with other European organisations (e. g., ENISA, ENCS, EC eDelivery/DEP, GIE, EASEE-gas-MWDWG, TSWG), on new developments and specifically with the EC eDelivery programme in developing a new version and state of the art AS4 communication protocol to ensure safe and secure communication in the gas sector by updating the ENTSOG AS4 profile. The group discusses questions and aspects related to the implementation and application of the requirements of INT NC related to the standardised data exchange and FUNC related issues regarding data exchange.
- The Cybersecurity Task Force (TF) is jointly managed by GIE and ENTSOG. The TF reviews how to best position the gas industry from potential cyber-attacks by reviewing topics such as: active input for NIS 2.0, cyber resilience act software certification scheme, create awareness for cybersecurity best practices and maintaining an open exchange with stakeholders regarding a resilience plan for vulnerable infrastructure.

- The Gas Quality and Hydrogen KG (GQ & H_2 KG) provides expertise, support, and proposals on ENTSOG activities related to gas quality while also building ENTSOG vision on the technical aspects of hydrogen injection and CO_2 transport. Additionally, it coordinates the cooperation with CEN, Marcogaz, EASEE-gas, and GIE. The GQ & H_2 prepares the TYNDP Gas Quality Outlook reports and the Gas Quality Monitoring report as per Regulation 2024/1789. The ENTSOG team and Members contribute with inputs and expertise to facilitate the ongoing processes related to gas, hydrogen and CO_2 quality standardisation in CEN. The GQ & H_2 also exchanges information between TSOs regarding gas quality topics.
- ENTSOG manages the LIO (Local Issuing Office) office "21" authorised by the ENTSO-E Central Issuing Office (CIO) to issue and maintain international EICs for gas and infrastructure entities in Europe. ENTSOG's LIO, together with other LIOs managed by several European gas TSOs, collaborate on EIC related topics. Furthermore, the ENTSOG LIO and the LIOs managed by the gas TSOs cooperate with the CIO managed by ENTSO-E for harmonising the EIC-related process rules and exchange of experience. Representing all gas TSOs' LIOs, ENTSOG participates in discussions of ENTSO-E's Gas Role Models/Harmonised Electricity Market Role Model harmonisation group and provides technical input for amending EIC functions and role models' definitions. The LIO Task Force discusses topics of relevance for the TSO community regarding EIC topics.

These groups (with the exception of the Cybersecurity TF and the LIO TF) meet monthly (and ad hoc, as required) and are composed of participants representing Member TSOs across Europe. The Cybersecurity Task Force also consists of GIE participants.

TRANSPARENCY

The Transparency Working Group (TRA WG) ensures compliance with the transparency requirements outlined in the TRA Guidelines and the Network Codes (TAR, INT, BAL and CAM) and is supported by the REMIT & UMM Kernel Group (KG). The KG follows the general REMIT developments and the activities of the available REMIT stakeholders' fora of ACER and the EC, including roundtables, user groups, expert groups, workshops, and public consultations.

The TRA WG meets monthly and REMIT KG at least twice per month and ad hoc as required and comprise participants representing Member TSOs across EU Member States.

ACTIVITIES

SECURITY OF SUPPLY AND REGIONAL COOPERATION

REGIONAL COORDINATION SYSTEM FOR GAS (RECO SYSTEM)

In 2017, Regulation (EU) 2017/1938 concerning measures to safeguard the security of gas supply came into force. It states that the regional cooperation should be complemented gradually with a stronger European perspective and overview, allowing recourse to all available supplies and tools in the entire internal gas market. Regional cooperation and coordination between TSOs play an important and significant role in the security of gas supply, handling emergencies, and helping to minimise negative effects.

To achieve these objectives, EU TSOs, under the umbrella of ENTSOG, established four specific Regional Cooperation (ReCo) Teams: *East, Northwest, South,* and *Europe*. Each ReCo Team represented a community of TSOs responsible for one of the supply corridors outlined in the Regulation defined as *'Union gas supply routes that help Member States better mitigate the effects of potential supply disruptions or infrastructure failures'.*

In 2024, ENTSOG and the TSOs decided to continue with the ReCo Team Europe, deactivating the ReCo *Teams East, Northwest*, and *South*. This change was driven by the increasing interlinking of gas transmission systems and since Russia's war in Ukraine in February 2022, TSOs began exclusively using the ReCo Team *Europe* platform. This approach was welcomed by TSOs given its efficiency

The ReCo Team Europe provides operational expertise on an ad-hoc basis to the concerned TSOs in case of a crisis or need to provide relevant information, via ENTSOG to other stakeholders such as the Gas Coordination Group (GCG), the EC, and the Member States.

Throughout 2024, the ReCo Team *Europe*, comprising TSOs from both EU and non-EU countries, held regular monthly calls to monitor gas market behaviour, gas flow patterns, underground storage facility utilisation, planned and unplanned maintenance works on transmission systems, and exchanged information concerning potential risks to the security of gas supply. The outcomes of these calls were communicated to the EC, ACER, the Energy Community Secretariat, and EFET.

Building on the experience gained in 2022 and 2023, ENTSOG and TSOs conducted a dedicated table-top exercise in March 2024 to test the gas system's flexibility and readiness to handle significant supply disruptions. The results of the exercise demonstrated that the TSOs' systems are well-prepared to address significant risks, despite some identified challenges. In November 2024, ENTSOG participated in the 'dry run' exercise organised by the EC to evaluate the EU's preparedness for various gas emergencies and the application of solidarity measures.

CHANGE IN GAS FLOW PATTERNS AND DIVERSIFICATION OF SUPPLY SOURCES

In light of the expiration of the transit contract via Ukraine on 1 January 2025, the ReCo Team Europe held an additional four calls in December 2024 to assess possible scenarios and changes in gas flow patterns, monitor physical flows and market behaviour, and consider uncertain of the situation. As a result, TSOs were well-prepared to manage a variety of scenarios after 1 January 2025.

In 2024, new LNG infrastructure facilities were commissioned, enhancing Europe's security of gas supply and the flexibility of the gas transmission system. These included:

- LNG Terminal Alexandroupolis (Greece)
- LNG terminal in the port of Mukran (Germany)
- TSOs connections to potential FSRU facilities Wilhelmshaven-2 and Stade (Germany)

After the incident on the Balticconnector in October 2023, Elering and Gasgrid Finland with support of Equinor successfully repaired the pipeline and it was operational in April 2024, with an increased technical capacity to 70.5 GWh/d.

As in previous years, TSOs implemented relevant developments and increased the technical capacities in the Zeebrugge area, at the IP Balassagyarmat (HU)/ Velké Zlievce (SK), Komotini-DESFA/ICGB (GR/BG) which was a new IP, and at the VIP France–Germany.

During 2024, the market actively injected gas into gas storage facilities, reaching an EU filling level of 95.2 % with 1,093 TWh in storage on 1 November 2024.

ENTSOG continued to closely monitor gas flow patterns and observed that gas flows from Norway were close to the maximum level, with fluctuations due to maintenance works, especially during September 2024, resulting in reductions of around 1,300 GWh/d on some days. Total gas supply from Norway accounted for 25–30 % of all total supply from non-EU sources.

The gas flows via LNG to the EU were fluctuating between in average 2,500–4,000 GWh/d and followed gas market dynamics. The LNG supply was the biggest supply source to the EU and represented 30–36 % of the total supply.

Gas flows from Azerbaijan via TANAP-TAP typically ranged from 300 to 390 GWh/d, with the majority destined for Italy and the remaining transported to Greece and Bulgaria, with possible further flows towards adjacent TSOs' systems.

Flows from North Africa towards Italy and Spain reflected market behaviour and capacity availability, fluctuating between 600–1,200 GWh/d.

Gas flow patterns between the UK and the EU followed the gas market activity, with predominant flows from the UK to Belgium via the Interconnector, and from the UK to the Netherlands via the BBL pipeline during April-October. Reverse flows to the UK were also observed, though at lower levels.

Regarding flows from the East Corridor, Gazprom's transit towards Slovakia and Moldova via Ukraine remained relatively stable at around 440–460 GWh/d, while flows via TurkStream ranged from 400–580 GWh/d. These figures were higher compared to 2023, resulting in a higher total Russian gas supply to the EU in 2024.

In 2024, Moldova continued its activities in managing gas supply from the EU, with regular direct flows from Romania and from other EU Member States via Ukraine.

TSOs successfully managed grid operations in 2024 despite various challenges, including unplanned maintenance on the Norwegian system, maintenance on LNG terminals, uncertainty surrounding the gas metering station at Sudzha on the Ukraine–Russia border, and the unavailability of the Balticconnector pipeline until April 2024. These efforts highlight the resilience of the European gas system.

ENTSOG SYSTEM OPERATION SECURITY OF SUPPLY ASSESSMENTS

In 2024, ENTSOG and TSOs continued to systematically analyse and monitor planned and unplanned maintenance works and to cooperate closely with each other in coordinating and synchronising the maintenance on their networks in order to minimise any disruption of transmission services.

Gas TSOs and the gas market succeeded in navigating many hurdles, to assist meeting consumers' gas demand, enabling transportation to and from underground gas storage facilities, ensuring a high storage filling level, and commissioning new infrastructure projects to satisfy the requirement for new supply sources.

SUPPORT TO THE EC IN TERMS OF SECURITY OF SUPPLY

The ENTSOG team continued cooperating closely with the EC and participated in the scheduled GCG meetings in 2024. The outcomes of the regular 'ReCo Team Europe' calls were communicated to the EC, ACER, and Energy Community.

On a weekly basis, ENTSOG provided operational and system-development expertise during the year, in particular with its observations of the gas flows' patterns, fluctuations of the gas flows and usage of TSOs capacities, gas storage filing levels, updates about commissioning of the infrastructure projects, information about events with risks to the security of gas supply, defined threats, and communicating findings during the tabletop exercise. Daily cooperation between ENTSOG and the EC took place at the end of December ahead of the expiration of the transit contract via Ukraine.

ENTSOG presented to the GCG and the EC their simulations, assessments, and reports as requested. More details on these can be found in the Chapter System Development, Support to Gas Coordination Group and European Commission on page 53.

Picture courtesy of Plinovodi

RECOMMENDATIONS ON TECHNICAL COOPERATION WITH THIRD COUNTRIES.

In 2018, ENTSOG adopted *"Recommendations relating to the coordination of technical cooperation between Community and third-country transmission system operators"* ("Third-country TSOs")[1].

The document describes the three key areas of technical cooperation: Security of Supply and the ReCo System, Expert Knowledge on Interoperability, and the External Contact Platform. Furthermore, the criteria to categorise third country TSOs have been developed and the corresponding groups identified: Energy Community and EFTA countries, countries with specific agreements to accommodate or implement EU legislation, and others. For each category, different recommendations for the key areas of cooperation are given.

ENTSOG and the TSOs followed the provisions of the document. Together with the Energy Community Secretariat, a dedicated meeting with third country TSOs was held in 2024 within the framework of the External Contact Platform to exchange expert knowledge and deepen further cooperation.

In 2024, ENTSOG invited TSOs from non-EU countries to participate in several workshops and conferences on the relevant processes and developments in the EU gas transmission sector. Non-EU TSOs (from the ReCo Teams) and Energy Community Secretariat also took part in regular 'ReCo Team Europe' calls.

ENTSOG and the Energy Community Secretariat continued to exchange information and support coordination between EU and non-EU TSOs.

1 in accordance with Article 8.3(c) Regulation (EC) No 715/2009

INTEROPERABILITY AND DATA EXCHANGE

INTEROPERABILITY AND DATA EXCHANGE NETWORK CODE

Europe continues adapting to the fast-changing situation on the gas market, improving cooperation and harmonisation on the main terms and conditions envisaged in the INT NC. With only a few minor procedures that are still in progress, all IPs are operated in accordance with the INT NC requirements.

Additionally, following the adoption of the Hydrogen and Decarbonised Gas Market Package in 2024, ENTSOG has undertaken efforts to implement the obligations outlined in the provisions governing the tasks and activities of ENTSOG and TSOs in interoperability areas such as gas quality, data exchange, security of supply, and solidarity.

UPDATES OF ENTSOG CNOTS FOR DATA EXCHANGE

In 2024, ENTSOG continued to maintain the ENTSOG common network operation tools (CNOTs) with special attention given to the ENTSOG AS4 communication profile.

The ENTSOG AS4 profile update:

The ITC KG monitors the adoption of its ITC CNOTS. An annual report is prepared and sent to the EC (by request of EC) on the number of TSO AS4 access points available and the volume of edigas XML exchanged throughout 2024. The report shows that over 2,000 access points were in use by TSOs and that the volume of edigas XML messages exchanged by TSOs remains extremely stable (compared to 44 million in 2023) with around 45 million edigas XML messaged sent and received by TSOs throughout 2024.

The report supports the statement that the TSO CNOTs (edigas and AS4) are well adopted and an integral part of a well-functioning gas market across Europe. The ITC KG continues to improve the availability of validation artefacts (e.g. tools and technical documentation) to the gas community and launched a prototype edigas XML validation tool in 2024 for production and roll-out in 2025.

The EC eDelivery Digital Europe Programme (DEP) completed its work on an update to their AS4 communication protocol 2.0 at the end of December 2024 (on which the ENTSOG profile is based) in order to improve AS4 core security features. On that basis, ENTSOG worked in conjunction with this activity to ensure that the ENTSOG profile also has the necessary security features to safeguard the gas sector's communication for the next five to ten years. The new ENTSOG AS4 version 4.0 profile was completed at the end of December for publication Q1 2025. The publication will provide not only interoperability guidance for the required AS4 functionality (i.e., which requirements are mandatory or optional) but also security guidance based on state-of-the-art best practices following ENISA recommendations and best practices implemented by the EC eDelivery programme.

Follow-up of EASEE-gas developments:

ENTSOG cooperated closely with EASEE-gas in 2024 on data exchange as a participant in the relevant EASEE-gas groups: The Message Workflow and Design Working Group and the Technology Standards Working Group.

As part of the ongoing collaboration between EASEE-gas and ENTSOG and in conjunction with GIE, ENTSOG organised and hosted the 4th edition of a joint workshop on data exchange and cybersecurity which included a hands-on tabletop cyber exercise run by ENISA.

OPERATION OF THE LOCAL ISSUING OFFICE (LIO)

Energy Identification Codes (EIC), governed by ENTSO-E, provide a unique identification of infrastructure objects and entities active within the Internal European Energy Market. EICs are widely used in Electronic Data Interchange to identify parties and objects in the processes related to data exchange, transparency and REMIT. ENTSOG operates a Local Issuing Office (LIO) responsible for the EIC scheme operations. In 2024, ENTSOG continued cooperating with ENTSO-E via the Joint Central Issuing Office CIO/LIO meetings and contributed by maintaining EIC codes on behalf of the ENTSOG TSOs. During 2024, the ENTSO-E CIO requested that the LIOs ensure that all EIC X codes had a valid and current VAT number and that all EIC codes had valid function codes and resulted in 137 cases being resolved by ENTSOG's LIO.

In addition, ENTSOG maintained its participation in discussions of ENTSO-E's Gas Role Models/ Harmonised Electricity Market Role Model Harmonisation Group and provided technical input for amending definitions of roles and EIC functions.

ANNUAL WORKSHOP ON DATA EXCHANGE AND CYBER SECURITY

In 2024, ENTSOG organised a two-day hybrid, annual workshop covering data exchange and cybersecurity topics. The workshop presenters consisted of experts from EC, ENTSOG, ENISA, GIE, EASEE-gas, service providers and several TSOs and shippers. These experts presented on a range of data exchange issues such as ENTSOG CNOTS 'in action', highlighting ENTSOG's new AS4 profile's updated security features and discussed the practical aspects of implementing edig@s® from different user perspectives.

On the first day (Data Exchange), the main theme of the session included AS4 and edig@s® xml rationale and benefits of implementation and the adoption readiness of these CNOTS for new gases. The second day was dedicated to Cybersecurity topics and included topics on the cybersecurity threat landscape, international cybersecurity perspectives, an introduction to the ENISA cybersecurity awareness package and a practical cybersecurity workshop. All presentations and summary notes from the workshop are available on ENTSOG's event webpage.

GAS QUALITY, HYDROGEN AND CO_2 ACTIVITIES

DEVELOPMENT OF REPORTS RELATED TO GAS QUALITY

Regulation 2024/1789 requests ENTSOG to publish every two years a Gas Quality Monitoring report addressing current and future developments on quality of natural gas and renewable and low-carbon gases, including blends. The first edition of the report was published by ENTSOG in December 2024.

ENTSOG also develops every two years a long-term gas quality monitoring outlook (Gas Quality Outlook – GQO), as per Article 18 of the Network Code on Interoperability and Data Exchange. In 2024, ENTSOG collected input data for the fifth edition of GQO, including through the TYNDP public consultation finalised in July 2024. The publication of the GQO is expected in 2025.

PUBLICATION OF ADDITIONAL GAS QUALITY TRANSPARENCY REQUIREMENTS

Regulation 2024/1789 introduces new Transparency obligations related to Gas Quality. Annex I of the Regulation states that measurements of methane, oxygen and hydrogen content blended in the natural gas system must be published by TSOs on a daily basis for all relevant points. Wobbe Index (WI) and Gross Calorific Value (GCV) are required to be published also. In the previous Gas Regulation only one of these is required to be published.

In 2024, ENTSOG developed the project to enhance the Transparency Platform (TP) to be ready to include these new gas quality parameters and to make them available to the public.

This required the adaptation of ENTSOG's systems to receive these new data from all TSOs and the preparation of data warehouses and databases to be able to receive, validate, process, store and visualise these values following all technical particularities.

COOPERATION WITH CEN AND MARCOGAZ AND EASEE-GAS

In 2024, ENTSOG continued its active cooperation with CEN, Marcogaz and EASEE-gas on the topics of gas quality, and renewable and low-carbon gases. Concerning CEN activities, ENTSOG was actively involved in CEN TC234 WG11 for the revision of the H-gas quality standard, EN16726.

Additionally, in 2024, ENTSOG was actively participating in the Gas Quality Harmonisation WG of EASEE-gas and the Gas Quality WG in Marcogaz.

HYDROGEN IN THE TRANSMISSION SYSTEM

In 2024, ENTSOG continued its focus on assessing the possibilities to inject hydrogen into the transmission system via discussions with ENTSOG Members and the ENTSOG team. These discussions were undertaken to further progress in assessing the tolerance for different levels of hydrogen concentration in the gas grid system and analyse the feasibility and verification of all pathways (hydrogen backbone, methane backbone, and hydrogen/methane blended networks).

In 2024, the EC launched a survey on hydrogen quality to develop a standardisation request for hydrogen quality in a dedicated Hydrogen Network. ENTSOG collected the view of TSOs and responded to the survey.

Furthermore, to support the cost-effective integration of renewable and low carbon gases such as biogas, biomethane, and hydrogen in the network in

accordance with consumers' needs and gas quality requirements, ENTSOG continued its work in analysing the possibilities of deploying smart grid solutions and digital tools for gas quality and hydrogen handling. Assessments include digital systems for online gas quality tracking and forecasting, sensor technologies for interactive and intelligent metering, among others. In this context, ENTSOG participated in some meetings of the Smart Gas Grid Thematic Area Group of the EC.

ENTSOG continued its dialogue with stakeholders along the gas value chain in the field of gas quality and hydrogen and hosted a workshop in November 2024.

ENTSOG is also part of the Supervisor Stakeholders' Group of the Clean Hydrogen Partnership, which met several times in 2024.

METHANE EMISSIONS REDUCTION

The new Methane Emissions Regulation entered into force on 4 August 2024. ENTSOG has actively supported the EC's initiative for the reduction of methane emissions by providing technical recommendations for the development of the Regulation and by sharing technical expertise to facilitate its implementation.

ENTSOG's work is undertaken within the Methane Emissions Joint Expert Group at which ENTSOG (along with Marcogaz and GERG) is providing technical support to GIE and Eurogas for the development of proposals.

Picture courtesy of Teréga

CYBERSECURITY

ENTSOG has collaborated with GIE on the Joint ENTSOG/GIE Cybersecurity Task Force to build a common understanding on the key areas of policy as identified by the EC regarding the new NIS 2.0 Directive, Cyber Resilience Act (CRA), and the Critical Entities Resilience Directive (CER) and a potential Network Code on cybersecurity for the gas sector.

ENTSOG also engaged with ENISA to provide gas TSOs in 2024 a 'train the trainer' programme which has been developed by ENISA. This was done to raise awareness on cybersecurity issues in the gas community by running cybersecurity hands-on workshops which will progress cybersecurity knowledge acquisition.

ENTSOG TRANSPARENCY PLATFORM (TP)

ENTSOG's Transparency Platform (TP) provides technical and commercial data on the gas transmission systems, regarding the relevant points such as interconnection points, and connection points of the transmission systems with storage facilities, LNG terminals, as well as aggregated entries and exits from and to distribution networks, final consumers, and production facilities.

The ENTSOG TP, launched on 1 October 2014, was developed to improve transparency, user-friendliness, and data publication capabilities. It is a powerful tool providing the means for ENTSOG's Members and Associated Partners to fulfil their data publication obligations[1]. Observers are also invited to publish data voluntarily on the TP. ENTSOG's Transparency Platform is a valuable resource for both internal and external users, providing comprehensive data from the gas transportation market across the European Union and generating a high number of user inquiries.

The Transparency Platform is available at this link: **https://transparency.ENTSOG.eu/**

RELEASED FUNCTIONALITIES AND IMPROVEMENTS

Technological Developments in Backend and Frontend Systems during 2024 included:

- Implementation of a publication schema for new gas quality parameters, including the methane, hydrogen, and oxygen content.
- Archiving of historically published data with timeframe beyond the scope of legal obligations.
- Publication of announcements on new relevant and decommissioned points.

ENTSOG TP as Inside Information Platform

Since 1 October 2014, a solution for publishing Urgent Market Messages (UMMs) has existed on the ENTSOG TP. In 2018, ENTSOG updated the format for the UMMs to comply with the changed layouts published by ACER. As of 1 January 2021, REMIT market participants shall publish inside information via Inside Information Platforms (IIPs), as introduced in the ACER Guidance. In response to this requirement, ENTSOG initiated the IIP assessment procedure, which was successfully completed in 2022. This requirement became mandatory with the entry into force of Regulation (EU) 2024/1106.

Publications of inside information via UMMs is open to ENTSOG Members, Associated Partners, Observers, Booking Platforms, and Market Area Managers. These users utilise a SharePoint form for creating new (versions) of the UMMs as well as an XML solution to transmit the information to the ENTSOG TP automatically[2].

As of 2023, ENTSOG Transparency Planform effectively operates as an approved by ACER Inside Information Platform (IIP)[2].

TP User support

TP user requests are addressed continuously, with questions being answered by ENTSOG and TSOs. In 2024, more than 600 questions were answered, demonstrating the platform's commitment to providing timely and accurate information to its users. Following user requests, the development of the TP continues to evolve, ensuring it meets the requests of the users.

1 See Chapter 3, Annex I, Regulation 2024/1789. Additional obligations for transparency publications are laid out in the Tariff, Capacity Allocation Management, and Interoperability Network Codes

2 https://www.acer-remit.eu/portal/list-inside-platforms

TP USAGE, STAKEHOLDER INVOLVEMENT AND DATA PUBLICATION

ENTSOG and TSOs work closely together to ensure the highest quality and comprehensiveness of the data published on the platform. To meet market expectations for data quality and transparency, an internal monitoring process has been established to facilitate the joint efforts of ENTSOG and its Members. This process is continuously evaluated and updated to address the constant changes in functionalities and publication requirements.

In addition to the TSOs' publications, ENTSOG also provides the EC and ACER with customised reports for specific tasks.

TP Usage statistics

Usage statistics for calendar year 2024 are included below:

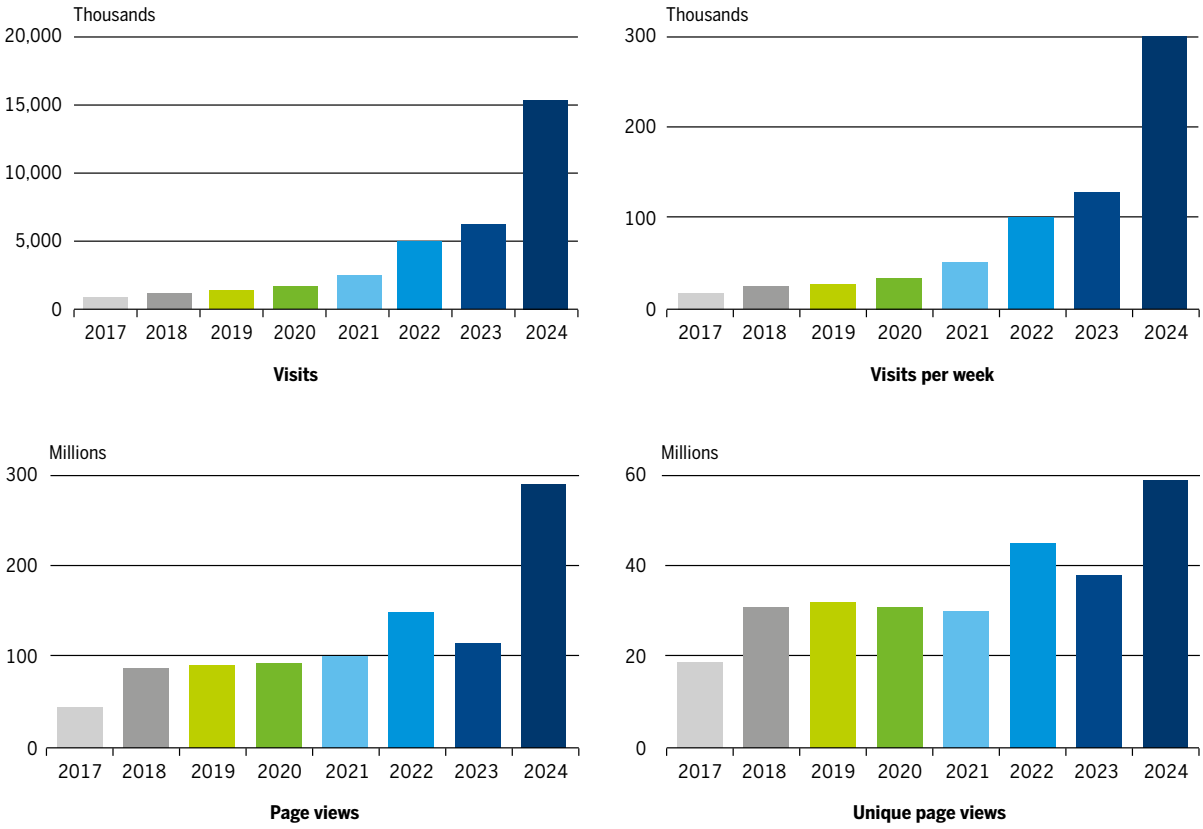

Figure 3 and 4: Visit and page view statistics

The number of visits has increased to a total of 15,375,177 in 2024 and to 295,677 for the average amount of visits per week. This represents a 138.36 % increase in visits compared to 2023.

The number of page views has increased to a total of 301,514,776 in 2024, which represents a 180.58 % increase compared to 2023. The number of unique page views has increased to 45,370,862 in 2024, reflecting a 19.77 % increase compared to 2023. It should be noted that API calls for fetching data from the TP GUI are also counted as page views.

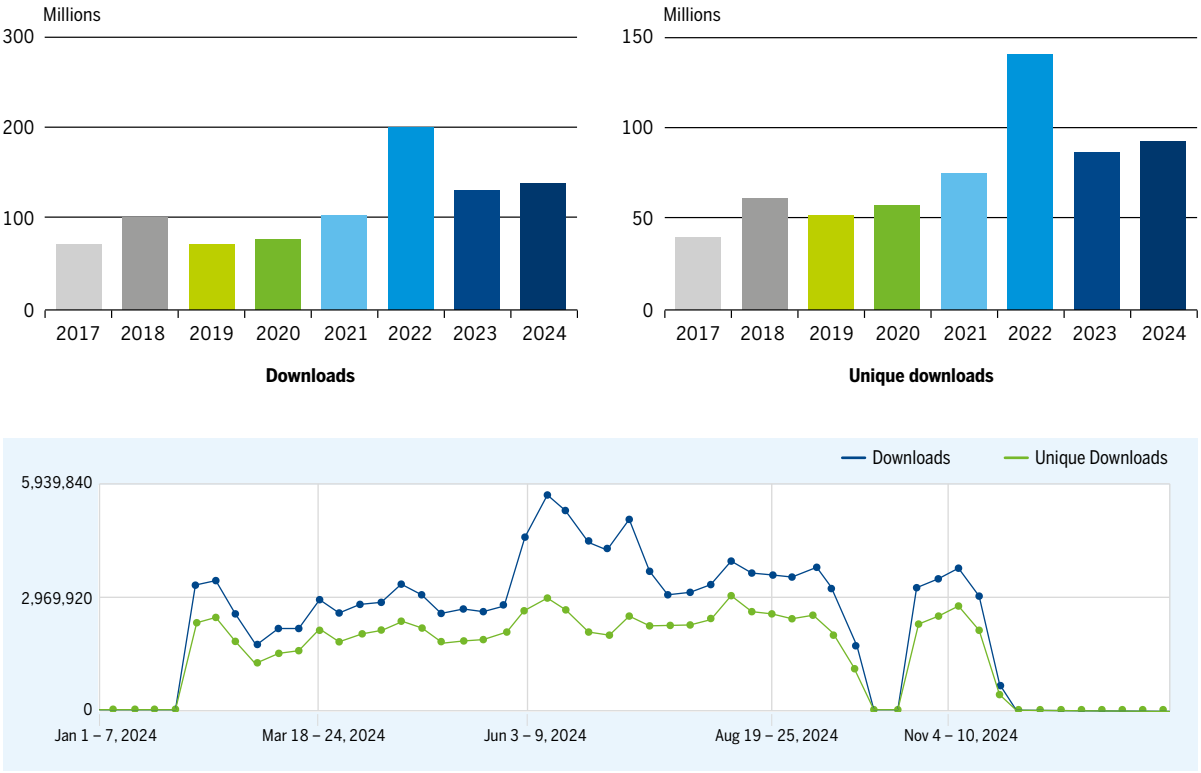

Figure 5 and 6: Downloads statistics

The number of downloads has increased to a total of 138,810,798 in 2024, which represents a 6.14 % increase compared to 2023. The number of unique downloads has increased to 91,017,144 in 2024, reflecting a 5.21 % increase compared to 2023.

Data from the TP is retrieved by users through both GUI-based interfaces and dedicated API calls. The ENTSOG's Transparency Platform continues to be a significant data source for a wide range of both internal and external users, reflecting a steady interest.

Picture courtesy of Fluxys

REMIT ACTIVITIES

Regulation (EU) 1227/2011 on Energy Market Integrity and Transparency (REMIT) and its amendment Regulation (EU) 2024/1106 (revised REMIT) published on 11 April 2024, established rules prohibiting abusive practices in wholesale energy markets and enhancing transparency regarding price-relevant (inside) information. REMIT Regulation mandates the monitoring of wholesale energy markets by ACER in close collaboration with National Regulatory Authorities (NRAs). The goal of REMIT is to detect and prevent market manipulations through robust cross-border market monitoring, facilitating the completion of a fully functioning, interconnected and integrated internal energy market.

EC Implementing Regulation (IR) (EU) 1348/2014 specifies the information that is required to be reported and outlines the rules to be followed by the market participants with regards to their REMIT reporting to ACER.

ENTSOG's ACTIVITIES AS RRM

Since 2015, ENTSOG has been a Registered Reporting Mechanism (RRM) in accordance with Article 11 of Implementing Regulation (EU) 1348/2014. On behalf of gas TSOs, ENTSOG reports **aggregated fundamental** data to ACER with regards to the capacity and use of facilities for the transmission of natural gas, including planned and unplanned unavailability of these facilities[1].

The ENTSOG reporting system was established in line with EC IR (EU) 1348/2014 and additional documentation from ACER regarding REMIT. Since 7 October 2015, ENTSOG has consistently provided ACER with a comprehensive set of aggregated fundamental data for each TSO publishing on the ENTSOG Transparency Platform. This data includes aggregated day-ahead nominations, aggregated final re-nominations, actual physical flow, technical capacity, available firm capacity, contracted firm capacity, total interruptible capacity, available interruptible capacity, contracted interruptible capacity, planned interruption of interruptible capacity, actual interruption of interruptible capacity, planned interruption to firm capacity, and unplanned interruption to firm capacity.

1 as defined in Article 9 (1) of Commission Implementing Regulation (EU) No 1348/2014

ENTSOG submits the necessary data to ACER's REMIT Information System (ARIS) exactly as it was received on the TP. For data reporting conducted by ENTSOG on behalf of gas TSOs, ENTSOG provides its members with segregated access for each TSO to report files submitted to ACER's Reporting Information System for Applying REMIT (ARIS), segregated access for each TSO to return receipts received by the ENTSOG Reporting system from ARIS, and a daily report for each TSO on the status of files reported to ACER.

Within the REMIT Reporting process, ENTSOG's duties include submitting data from ENTSOG TP to ARIS and rectifying and (re)submitting data in the event of technical reporting issues between ENTSOG and ARIS.

Given ENTSOG's responsibilities, the TSOs are tasked with ensuring complete, high-quality, and timely data publications on the ENTSOG Transparency Platform, keeping track of information provided by ENTSOG about data reported on behalf of TSOs to ARIS. If it is the case that ACER rejects TSO REMIT data for content or functional reasons, the affected TSO is required to resend the relevant information to ENTSOG TP, which will then be relayed to ACER through the ENTSOG Reporting System.

GAS TSOs' IMPLEMENTATION OF REMIT REPORTING

EC Implementing Regulation (EU) No 1348/2014 requires gas TSOs to report the following disaggregated information per market participant to ACER:

- Transaction data: natural gas transportation contracts within EU between two or more locations or bidding zones, concluded because of a primary explicit capacity allocation by or on behalf of the TSO, specifying physical or financial capacity rights or obligations.
- Fundamental data: day-ahead nominations, final re-nominations of booked capacities, specifying the identity of the market participants involved, and the allocated quantities.

The TSOs reporting obligations under REMIT commenced on 7 April 2016.

To assist the TSOs with their continuous obligations under REMIT, ENTSOG undertakes several initiatives, including conducting regular discussions on REMIT at the ENTSOG REMIT & UMM KG and ENTSOG Transparency WG meetings, and arranging ad hoc discussion sessions for ENTSOG's Transparency Team, TSOs, and ACER.

ENTSOG AND GAS TSOS' ENGAGEMENT IN REMIT REVISION ACTIVITIES

In 2024, ENTSOG and the gas TSOs liaised with the three co-legislators to provide feedback and recommendations in relation to the revision of REMIT regulation and related regulatory instruments.

ENTSOG and the gas TSOs were involved in activities related to the revision of REMIT, the revision of the REMIT IR, the new Delegated Act (DA), and the implementation of the revised REMIT. These activities included engagements such as trilateral discussion sessions with ENTSOG, gas TSOs, ACER, and DG-ENER, addressing key points arising from the revision process of the REMIT regulatory instruments and presenting proposals based on their expertise in the gas market. Additionally, ENTSOG actively participated in the Roundtable Meetings dedicated to the revision of REMIT IR, Delegated Act and REMIT fees for Registered Reporting Mechanisms (RRMs) and Inside Information Platforms (IIPs), organised by ACER and the EC , by raising questions and offering recommendations. ENTSOG made interventions during the 38th European Gas Regulatory Forum on the REMIT 2.0 update.

ENTSOG, on behalf of the gas TSOs, responded to ACER's public consultation on the revision of the Annex of the REMIT IR, which specifies data reporting structures. ENTSOG's response addressed questions related to the formats for reporting of gas transportation contracts, the format for reporting of Urgent Market Messages (UMMs) and the potential structure for data provision related to the transportation and storage contracts for natural gas and hydrogen.

Furthermore, ENTSOG, in collaboration with the gas TSOs, submitted response to the EC's consultation on proposed amendments to the EC decision on REMIT Fees. This paper outlined shortcomings of the current fee regime, in particular in relation to the calculation and application of fees for reported records of transportation contracts, and suggested recommendations for the fee structures for Registered Reporting Mechanisms (RRMs) and Inside Information Platforms (IIPs). In addition to these activities, the ENTSOG Transparency Team and the Transparency Working Group were involved in other engagements in 2024, including:

- ACER REMIT Expert Group meetings
- ACER RRM User Group meetings
- ACER ENTSOG TSOs' ad-hoc stakeholder discussions
- ACER Roundtables on inside information disclosure and REMIT reporting for AEMPs, IIPs and OMPs.

Picture courtesy of GAZ-SYSTEM

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SYSTEM DEVELOPMENT SCENARIOS AND INFRASTRUCTURE

The System Development business area covers ENTSOG activities related to scenario development, investment planning and infrastructure assessment for the EU energy system. The main deliverables are short and medium to long-term assessments such as the joint Scenario Report, the Ten-Year Network Development Plan (TYNDP) and Supply Outlooks. In addition, the ENTSOG maps show commitment to transparency and to providing stakeholders with easily accessible and high added-value information. All these deliverables aim at developing a vision of the integrated European energy market and in particular its infrastructure component. This vision is especially important in view of completing the pillars of European Energy Policy to achieve the European energy and climate targets and commitments of the Paris Agreement, the EU Green Deal, and the REPowerEU Plan.

WORK STRUCTURE

The activities within the System Development Area are managed via the Scenario Working Group (SCN WG) and the Investment Working Group (INV WG) and supplemented by the Network Model Kernel Group (NeMo KG).

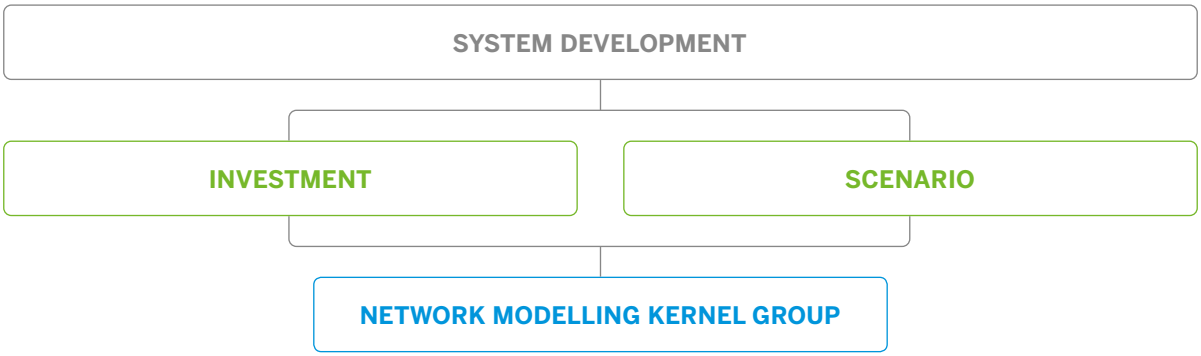


Figure 7: Investment and Scenarios Working Groups and associated KG

As shown above, the Working Groups (WGs) are supported in their objectives by the Network Modelling Kernel Group (NeMo KG), which was established to develop and enhance ENTSOG's modelling tool and perform the simulations for ENTSOG deliverables in accordance with defined Scenarios for TYNDP.

INVESTMENT

The Investment Working Group (INV WG) is responsible for developing regulatory deliverables such as: The Union-wide Ten-Year Network Development Plan (TYNDP), the Winter and Summer Outlooks and the implementation of ENTSOG Cost-Benefit Analysis (CBA) Methodology, including the joint gas and electricity projects CBA methodology, as part of the Interlinked Model. It is also responsible for non-regulatory deliverables such as: Winter and Summer reviews, and the System Capacity developed in collaboration with Gas Infrastructure Europe (GIE). To produce the above-mentioned deliverables, INV WG is supported by the NEMO KG, that produces and analyses simulation results.

The INV WG meet on a monthly basis (and ad hoc, as required) and comprises of participants representing Member TSOs across Europe.

SCENARIOS

The Scenarios Working Group (SCN WG) is responsible for developing the supply and demand scenarios for ENTSOG deliverables based on analysis of current situation and potential future trends. The SCN WG has been supported by the ENTSOG and ENTSO-E joint Scenario Building Working Group, gathering experts from both electricity and gas TSOs, and tasked with developing joint scenarios for the electricity and gas TYNDPs as the corner stone of their Interlinked Model between gas and electricity.

The SCN WG meets on a monthly basis (and ad hoc, as required) and comprises of participants representing Member TSOs across Europe.

ACTIVITIES

INVESTMENT AND SCENARIOS

TYNDP 2024

During the first quarter of 2024, ENTSOG finalised the Project Collection process by completing the check and validation phases of the TYNDP 2024 submission process, that followed initial submission phase. The TYNDP 2024 Project collection was completed in June 2024 with the publication of the TYNDP 2024 Annex A (List of Projects).

During the second quarter of 2024, ENTSOG progressed on the TYNDP 2024 and published the methodological documents, composed of three methodology/ guidance documents:

- TYNDP 2024 Annex D1 – Implementation Guidelines for PS-CBA analysis of hydrogen projects,
- TYNDP 2024 Annex D2 – Hydrogen Infrastructure Gaps identification methodology,
- TYNDP 2024 Annex D3 – Hydrogen and Natural Gas System Assessment methodology.

The publication of the TYNDP 2024 methodology/ guidance documents was followed by a public consultation process, and subsequently consideration of the stakeholders' feedback in the versions published in December 2024.

During the second half of 2024, ENTSOG prepared the draft TYNDP 2024 reports and Annexes, that were published in December 2024. This publication consisted of the following TYNDP 2024 deliverables:

- TYNDP 2024 Infrastructure Report,
- TYNDP 2024 Hydrogen Infrastructure Gaps Identification report,
- TYNDP 2024 Annex B (Maps),
- TYNDP 2024 Annex C (Hydrogen and Natural gas capacities).

These complementary publications allowed ENTSOG to identify regional hydrogen infrastructure gaps, within the assessed sets of hydrogen infrastructure assumed to be in place in 2030 and 2040. Moreover, ENTSOG analysed all infrastructure categories submitted to the TYNDP 2024, the main trends and evolution of submissions compared to previous TYNDPs processes.

ENTSOG COST BENEFIT ANALYSIS METHODOLOGY UPDATE

As required by Article 11 of the TEN-E Regulation (EU) 2022/869, ENTSOG continued work on the improvement of the single-sector CBA Methodology, in coordination with the EC and ACER. The single-sector CBA Methodology was finalised and submitted to EC for its formal approval on July 2024.

The methodology reflects specific provisions of the TEN-E Regulation and will be complemented by particular input data obligations for each TYNDP cycle (Annex D).

PROJECT COLLECTION FOR TYNDP 2024

During the first quarter of 2024, ENTSOG completed the TYNDP 2024 project collection activities. During the months of January and February 2024, ENTSOG performed the check and validation phases of the TYNDP 2024 submission process, by confirming that all submitted projects complied with the administrative and technical criteria defined by the TYNDP 2024 Guidelines for Project Inclusion (GPI). After verification, ENTSOG prepared the list of projects that are part of TYNDP 2024 (Annex A), rejecting projects that did not comply with the afore-mentioned criteria, following the procedure described in the GPI. TYNDP 2024 Annex A was published in June 2024.

SEASONAL SUPPLY OUTLOOKS AND REVIEWS

The objective of the Supply Outlooks (which are required by Regulation (EU) 2024/1789) is to assess the flexibility offered by gas infrastructures for each of the oncoming Summer and Winter seasons, by considering the latest supply and demand trends, which are shown in the corresponding review reports. Seasonal reviews are an ENTSOG initiative based on the internal analysis of the supply-and- demand trends used to support the TYNDP and Supply Outlooks. ENTSOG publishes these analyses to share the results with stakeholders.

In 2024, ENTSOG continued providing an additional support to the EC. The scope of the delivered Outlooks and Reviews has been defined with the intention to address beforehand how Europe could adapt in case of a full Russian gas supply disruption and how winter preparedness could be secured.

Summer Supply Outlook reports focused on the ability of the gas infrastructure to allow market participants to reach high storage levels at the end of the summer gas season, based on the actual storage levels at the beginning of the injection time horizon. The analysis also includes the Winter Overview (where consecutive 6 months are also investigated) and is completed using sensitivities targeting different stock levels under different supply situations.

The Summer Supply Outlook 2024 report identified that, on 1 April 2024, the EU gas stock level was in the higher range of the past 5 years with 663 TWh due to the decrease in gas consumption due to a relatively mild winter 2023/24 weather, the high prices effect and the dedicated measures introduced by the Member States. In addition, the gas infrastructure, including projects commissioned in 2023, allows for efficient cooperation among the Member States. However, under specific circumstances, some possible supply limitations and bottlenecks were identified.

The Winter Supply Outlook reports explore the evolution of the underground storage inventories across the winter gas season while ensuring the supply-and-demand balance during specific high-demand situations. The robustness of the report is complemented by a sensitivity analysis on the different climatic profiles of the winter and additional Summer Overview where possibilities for the winter preparedness were investigated. As the Ukraine-Russia transit contract expires in December 2024, this Winter Supply Outlook also included EU gas transit through Ukraine, Ukrainian UGS capacities that can be used by EU shippers, the Moldovan gas infrastructure, and the Moldovan gas demand.

The results of the Winter Supply Outlook 2024/25 analysis show on 1 October 2024, the EU gas storage facilities reached 94% on average which translates to 1,083 TWh. The high storage filling level at the beginning of injection period in 2024, the decrease in gas consumption over the years and the dedicated measures introduced by the Member States together with the individual user's behaviour contributed to the record volume of gas in storage at the beginning of the winter period. In the case of the Reference Winter, the European gas network enables the demand to be met and still to keep more than the 30% stock level target in all underground gas storage facilities by the end of the winter season. Under assumptions of demand and supply in the Reference Winter case, infrastructure enables to reach 52% of storage level on average in April 2025.

In the Winter Supply Outlook 2024/25, ENTSOG has undertaken an EU assessment Union-wide simulation of gas supply and infrastructure disruption scenarios, including scenarios of a prolonged disruption of a single supply source, fulfilling the new obligation defined in Regulation (EU) 2024/17898.

ENTSOG and ENTSO-E cooperated on their Winter Outlook reports, allowing the ENTSO-E Winter Outlook to reflect the ability of the power system to cope with gas security-of-supply situations that may affect gas-fired generation. In addition to the Seasonal Review reports, ENTSOG produces a regular update of the Seasonal Supply Outlook Monitoring dashboard where the stakeholders can track the factual storages evolution in Europe in comparison to the seasonal outlooks results.

These reviews establish the basis to define the input data and methodology of subsequent reports. In addition to the focus on the supply-and-demand adequacy, the reviews go further by analysing the trend of the gas demand for power generation as well as of providing an insight on gas prices and traded quantities at the main European hubs.

SYSTEM CAPACITY MAP 2025

The INV WG was involved in the work to publish the System Capacity Map 2025, which presents supply and demand trends alongside the latest capacity data.

The System Capacity Map also highlights how gas market changes have impacted the European gas system, reflecting the capacity changes and the addition of ad-hoc projects in response to the energy crisis.

This System Capacity Map 2025 was finalised in December 2024 and published in January 2025. ENTSOG publishes the System Capacity Map in collaboration with GIE on an annual basis.

ENTSO-E/ENTSOG CONSISTENT AND INTERLINKED MODEL

To achieve EU targets in the most efficient way, it is essential to obtain a holistic overview of the energy

system. The Interlinked Model is a key step in this regard, as it aims at ensuring that the interaction of gas and electricity sectors together is considered when assessing the value of infrastructure projects.

Based on the investigations carried out in the period of 2019-2020 and the recently adopted European regulations, ENTSO-E and ENTSOG have, in 2023, worked on the development of a consistent process for the inclusion of an 'infrastructure dual assessment' in TYNDPs as well as the methodology for its application. This work was published as a progress report in 2024 and consulted with European stakeholders.

The aim of this exercise had already implemented the main identified improvements to TYNDP 2022 and further made these available for the Project of Common Interest selection process. This will be achieved without impacting the timeline of the ongoing single-sector TYNDPs.

ENTSO-E/ENTSOG JOINT TYNDP SCENARIO REPORT

ENTSOG and ENTSO-E have joined their scenario building workstreams, building on their combined expertise and modelling capabilities as well as on the input received from industry stakeholders. This co-development approach results in a set of ambitious, technically robust and equally realistic scenarios. The joint scenarios outline the quantification of three markedly different storylines, and possible pathways towards a low-carbon energy system in line with EU targets.

Building on the positive stakeholder feedback received for TYNDP 2022, ENTSOG and ENTSO-E have further developed the scenario approach. All three scenario represent full energy system approach. 'National Trends+' can be considered as 'central scenario', the time horizon 2030 and 2040. From 2040 on (until 2050) two deviation scenarios, 'Distributed Energy' and 'Global Ambition', were developed. National Trends+ is based on the national energy policies, in particular anticipating the draft National Energy and Climate Plans (NECPs) to the extent possible based on an expected publication at end June 2023. This enables National Trends+ to capture each Member State's strategy to comply with the EU 2030 climate targets. In addition, it aims to ensure an in-depth assessment of sectoral interlinkages, fuel switches and the monitoring of all GHG emissions in line with the 1.5°C target of the Paris Agreement. Distributed Energy and Global Ambition reflect a storyline driven approach for the 2040 and 2050 time horizon.

THE DRAFT TYNDP 2024 SCENARIO REPORT WAS PUBLISHED IN MAY 2024.

The TYNDP 2026 scenarios process started in June 2024. To fully comply with ACER's framework guidelines, this scenario cycle will contain a Central Scenario (National Trends+) and two variants. Aligned with the approach of the TYNDP 2024 scenario process, the central scenario aims to be based on the NECPs and national policies. The variants, high- and low-economy variants, are developed as 'stress test' to support the robustness of the Central Scenario. The Central Scenario as well as the variants will comply with EU targets.

Find the complete report on our TYNDP-Scenarios-website:

2024.entsos-tyndp-scenarios.eu

SUPPORT TO REGIONAL GROUPS FOR 1ST PCI SELECTION PROCESS UNDER REVISED TEN-E

In 2024, ENTSOG actively engaged in the PCI/PMI Cooperation Platform activities and in providing its technical support to the Regional Groups, through its technical contribution to the activities of the Cooperation Platform. This Platform is composed of the Commission, ACER and the ENTSOs and aims at streamlining the work of Regional Groups.

ENTSOG has provided support to the second PCI/PMI selection process under the revised TEN-E Regulation by closely cooperating with the EC throughout the second half of 2024.

In preparation of the PCI/PMI project collection process and ahead of the start of the PCI/PMI project collection ENTSOG published the supportive documentation to facilitate promoters' submissions of hydrogen and electrolyser categories. In addition, ENTSOG adapted the project data portal to enable PCI/PMI submissions, by modifying the dedicated PCI/PMI section of the project submission questionnaire (upon EC request).

The ENTSOG data portal was opened for PCI/PMI submissions from 18 September 2024 until 18 November 2024. During this period, ENTSOG supported EC and PCI project promoters with the submission process. In addition, once the PCI/PMI project collection closed, ENTSOG provided a summary of the submitted information to EC, that was used by EC in the PCI/PMI public consultation process.

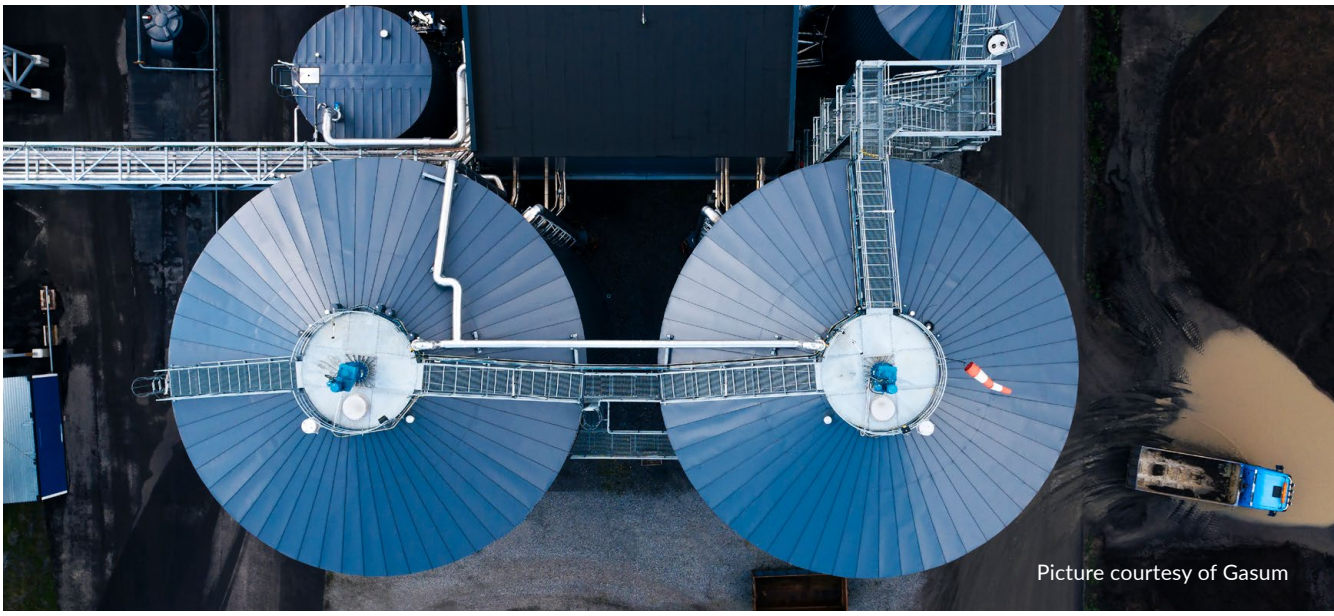
SUPPORT TO GAS COORDINATION GROUP AND EUROPEAN COMMISSION

The Gas Coordination Group (GCG) is a platform established by Regulation (EU) 944/2010, introducing measures of safeguarding the security of gas supply.

The role of the GCG is to exchange information and best practices, and to facilitate security of supply standards and to support supply-and-demand balance, especially in case of critical situations. Members include the EC, representatives of EU Member States, ENTSOG, and other international organisations, as well as industry.

In 2024, ENTSOG continued assessing the short- and mid-term impacts on gas market and transmission operations triggered by the invasion of Ukraine by Russia. ENTSOG presented results of its assessment, highlighting the rationale and assumptions, input data, simulation results and also the potential impact of numerous combinations of events on the results. ENTSOG delivered all ad hoc analyses for the EC and GCG, providing tools helpful to determine measures such as demand response, storage targets, and storage trajectories, among others.

In response to significant changes in the European gas transmission grid and market conditions since the publication of the previous ENTSOG Union-wide security of supply simulation report in 2021, ENTSOG conducted an early revision of the Union-wide gas supply and infrastructure disruption simulation in 2024 at the request of the GCG. Consequently, the methodology and assumptions were thoroughly reviewed by ENTSOG in collaboration with the GCG. Additionally, the composition of risk groups and the disruption scenarios were reassessed by ENTSOG and the GCG for this report. The ENTSOG Union-wide security of supply simulation report was finalised in December 2024 and published in January 2025.


Picture courtesy of Gasum

Picture courtesy of GAZ-SYSTEM

5

MARKET NETWORK CODES & GUIDELINES AND MARKET ASSESSMENT

The Market Team is responsible for providing expertise on the development and monitoring of the market-related Network Codes that enable the functioning of the internal European gas market. The Market Area also liaises with the Energy Community, providing support in their Network Code development and implementation activities. The Team also plays a role in addressing market aspects of industrial carbon management, demand aggregation, guarantees of origin, and other areas.

In addition to work on the Network Codes, the Market Area is responsible for the jointly managed ACER and ENTSOG Functionality Process, which addresses not only potential adjustments to the implementation of Network Codes, but also to include possible issues which might require future Network Code adaptations.

Work in 2024 was undertaken on the practical and innovative actions by TSOs to support the achievement of EU goals on climate neutrality and energy transition. The EU competitiveness, security of supply and sustainability objectives require assessment, with regard the potential impact on the functioning of the internal gas market.

WORK STRUCTURE

The work within the Market Area is organised within MAR WG and four Kernel Groups dedicated to specific topics.

Figure 8: Kernel Groups and associated with Market area

The MAR WG meets monthly (and ad-hoc, as required) and comprises participants representing Member TSOs across Europe.

The MAR WG is responsible for ENTSOG's activities related to balancing, capacity and tariffs. This includes all topics related to the CAM NC (including the CMP Guidelines), BAL NC and TAR NC, as well as any further regulation possibly upcoming in relation to these areas.

The work within the MAR WG is managed via their corresponding KGs, with more specialised tasks. The activities of BAL, CAP and TAR KGs are coordinated through the MAR WG.

One of the subgroups of the MAR WG is the GO Kernel Group, which deals with Guarantees of Origin. ENTSOG also co-chairs, alongside GIE, the 'GO Prime Movers' Group, coordinating actions on this topic alongside industry stakeholders.

The work areas addressed in the network codes and guidelines Kernel Groups are as follows:

CAPACITY

The Capacity KG (CAP KG) is responsible for ENTSOG's activities related to the allocation of existing and incremental capacity, with a focus on the implementation, application and functioning of the Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems (CAM NC - Regulation (EU) No 2017/459) and rules on congestion management established through the Commission Decision of 24 August 2012 on amending Annex I to Regulation (EC) No 715/2009 (repealed by Annex I Chapter 2 to Regulation (EU) 2024/1789 in February 2025) (CMP GLs). The CAP KG has also been responsible for ENTSOG's activities related to implementation and operational issues raised on the Functionality Platform that are connected to CAM NC or CMP GLs.

Furthermore, the CAP KG is responsible for the monitoring of CAM NC and the CMP GLs and developing monitoring reports on the implementation and effect of the CAM NC and CMP GLs. The CAP KG also analyses and provides feedback to ACER's monitoring reports on the same topics, where necessary.

Where requested, the CAP KG provides appropriate input to the update of Common Network Operation Tools (CNOT) – comprising Business Requirements Specifications (BRS) for the CAM NC and the CMP GLs document and Message Implementation Guideline (MIG).

BALANCING

The Balancing KG (BAL KG) is responsible for ENTSOG's tasks related to balancing activities in transmission systems, with a focus on the implementation, application and functioning of the Network Code on Gas Balancing of Transmission Networks (BAL NC – Regulation (EU) No 312/2014). The BAL KG is responsible for providing expert knowledge and guidance to ENTSOG members and external parties on balancing-related topics. One key activity, among others, is developing the report on the implementation and the effect monitoring of BAL NC.

Where requested, the BAL KG also provides appropriate input to the update of Common Network Operation Tools (CNOT) and contributes to the development of issues solution related to BAL in the Functionality Process.

TARIFFS

The Tariff KG (TAR KG) is responsible for providing expertise, monitoring, and development of the Network Code on Harmonised Transmission Tariff Structures for Gas (TAR NC - Regulation (EU) No 2017/460).

One key activity of the TAR KG is developing the report on the implementation and the effect monitoring of TAR NC – looking at the implementation status and progress of the TAR NC and its effects.

Overall, the TAR KG is active to inform and support proposals of the MAR WG on TSO tariffs and revenues, especially in the context of asset repurposing for the transition to hydrogen. As such, it monitors developments on tariffs in Member States and of stakeholders' proposals on asset repurposing and revenue regulations.

ACTIVITIES

In 2024, the MAR WG alongside other ENTSOG WG's, contributed in the development of policy options to enable the uptake of renewable and decarbonised gas in the European market.

The ENTSOG MAR team and ENTSOG Members were involved as experts for the online course 'EU Gas Network Codes' organised by both ENTSOG and the Florence School of Regulation on Market Codes: Capacity, Balancing and Tariffs NCs.

CAPACITY KERNEL GROUP

CAPACITY ALLOCATION MECHANISMS

In 2024, ENTSOG published the annual auction calendar for the gas year 2025/2026.

The CAP KG has actively participated in the CAM NC amendment process started by ACER in December 2023. The CAP KG developed positions to three public consultations managed by ACER. The CAP KG also prepared proposals for the amendments to CAM NC, thereafter submitted to ACER.

BALANCING KERNEL GROUP

In 2024, the BAL KG continued supporting ENTSOG members with the implementation of the BAL NC.

Based on ENTSOG's obligation set out in Article 8 (8) of the Regulation (EC) 715/2009 (and then by Regulation (EU) 2024/1789 in February 2025), to monitor the implementation and effects of the network codes and guidelines, in 2024 the BAL KG produced the 2024 edition of the Implementation and Effect Monitoring Report of the Balancing Network Code. ENTSOG also collected BAL data for the **ACER Gas Dashboard** and for the next edition of the BAL monitoring report planned for publication in 2026.

TARIFF KERNEL GROUP

In 2024, the TAR KG continued supporting ENTSOG members with the implementation of the TAR NC.

Based on ENTSOG's obligation set out in Article 8 (8) of the Regulation (EC) 715/2009 (and then by Regulation (EU) 2024/1789 in February 2025) to monitor the implementation and effects of the network codes and guidelines, the TAR KG worked on the preparations and developed the Implementation and Effect Monitoring Report, taking into consideration discussions with ACER. The report was published in June 2024.

In 2024, the TAR KG was involved in the upcoming implementation of Regulation (EU) 2024/1789 and Directive (EU) 2024/1788, especially in regard of tariff measures to support renewable and low-carbon gases.

JOINT NETWORK CODE FUNCTIONALITY PROCESS

The established Joint Functionality Process, co-managed by ENTSOG and ACER and supported by the EC, is aimed at reaching commonly recommended solution(s) on implementation and operational issues within the existing Network Codes and Guidelines. It provides stakeholders a possibility to raise and discuss issues as well as an opportunity to be involved in developing solutions, which aim at commonly recommended non-binding guidance.

The **Gas Network Codes Functionality Platform** enables stakeholders to raise implementation and operation issues via the web interface and gives an overview of all reported issues and their status. Since its introduction in 2016, the perceived limited scope – only Network Code implementation, functional or operational issues could have been raised on the platform – was outlined as a potential barrier to submission of Network Code related issues. Therefore, in the summer of 2017, in conjunction with ACER, the scope of the Functionality Process was broadened to allow any issue related to the Network Codes to be included. In addition, the number of potential Network Codes and Guidelines was also expanded to include the Transparency Guidelines and the TAR NC. In July 2018, the first issue solution was published on the Functionality Platform, related to Ex-post interruptible capacity discounts. In 2024, no new issues were posted on the platform. All previously submitted issues have been either successfully resolved or closed due to ineligibility.

MARKET ASSESSMENT

In 2024, the Market Area continued to evaluate relevant policy and legislative initiatives in the EU gas sector and examined practical and innovative TSO actions which could facilitate the energy transition whilst maintaining security of supply and promoting competition.

MAR WG provided updates to the ENTSOG Liaison Group, worked with INT WG, Legal Advisory Group and other relevant groups.

MARKET NETWORK CODES IMPLEMENTATION AND EFFECT MONITORING

ENTSOG is required to publish monitoring reports on implementation as well as on effects of the CAM NC, TAR NC, BAL NC and CMP GLs. The monitoring requirements differ across the Network Codes for the frequency of the reports' publications.

In the first half of 2025, the Implementation and Effect Monitoring Reports for the CAM NC and the CMP GL will be published.

For a general overview of these reports and their main findings, the following Executive Summaries are provided below.

CAM NC IMPLEMENTATION AND EFFECT MONITORING 2025 REPORT

The CAM NC Effect Monitoring analyses the impact of the CAM NC on the European gas market by means of three indicators. These indicators have been calculated for the GYs 2022/2023 and 2023/2024 and compared with historical data, when available.

By the analysis of the indicator CAM.1, a decrease in the share of bundled capacity allocated in relation to the total capacity allocated on the primary market has been recorded in comparison to the previous monitoring period. However, the trend from the beginning of the monitoring periods could be considered increasing.

Year	Product	Yearly	Quarterly	Monthly	Daily
2015/2016	Bundled firm capacity	25,369.20	1,054.10	6,408.70	9,056
	Total firm capacity	80,892.40	12,937.90	22,999.90	28,425
	Ratio	**31.36 %**	**8.15 %**	**27.86 %**	**31.86 %**
2016/2017	Bundled firm capacity	2,535,733	13,766	16,866	6,182
	Total firm capacity	3,358,315	17,944	30,855	36,751
	Ratio	**75.51 %**	**76.72 %**	**54.66 %**	**20.24 %**
2017/2018	Bundled firm capacity	121,026	24,611	56,076	13,868
	Total firm capacity	194,987	40,467	88,162	44,125
	Ratio	**62.07 %**	**60.82 %**	**63.61 %**	**31.43 %**
2018/2019	Bundled firm capacity	146,100	61,280	25,363	20,148
	Total firm capacity	241,222	75,777	34,956	37,908
	Ratio	**61.00 %**	**81.00 %**	**73.00 %**	**53.00 %**
2019/2020	Bundled firm capacity	192,521	18,843	17,630	19,330
	Total firm capacity	281,001	65,777	42,272	36,424
	Ratio	**68.51 %**	**28.65 %**	**41.71 %**	**53.07 %**
2020/2021	Bundled firm capacity	157,003	34,494	72,396	256,712
	Total firm capacity	233,495	61,853	84,233	272,316
	Ratio	**67.24 %**	**55.77 %**	**85.95 %**	**94.27 %**
2021/2022	Bundled firm capacity	451,439	146,436	117,790	835,380
	Total firm capacity	491,833	167,202	136,888	859,543
	Ratio	**91.79 %**	**87.58 %**	**86.05 %**	**97.19 %**
2022/2023	Bundled firm capacity	312,811	43,685	29,628	30,758
	Total firm capacity	343,193	59,770	39,629	52,861
	Ratio	**91.15 %**	**73.09 %**	**74.76 %**	**58.19 %**
2023/2024	Bundled firm capacity	163,558	22,790	16,550	23,583
	Total firm capacity	178,462	32,232	23,475	37,120
	Ratio	**91.65 %**	**70.71 %**	**70.50 %**	**63.53 %**

Table 6: CAM.1: Ratio of bundled firm capacity allocated over the total firm capacity allocated. (volumes of capacity in MWh/h/y)

Indicator CAM.2 shows that the share of bundled capacity relative to total firm capacity reallocated by secondary market trades has also decreased.

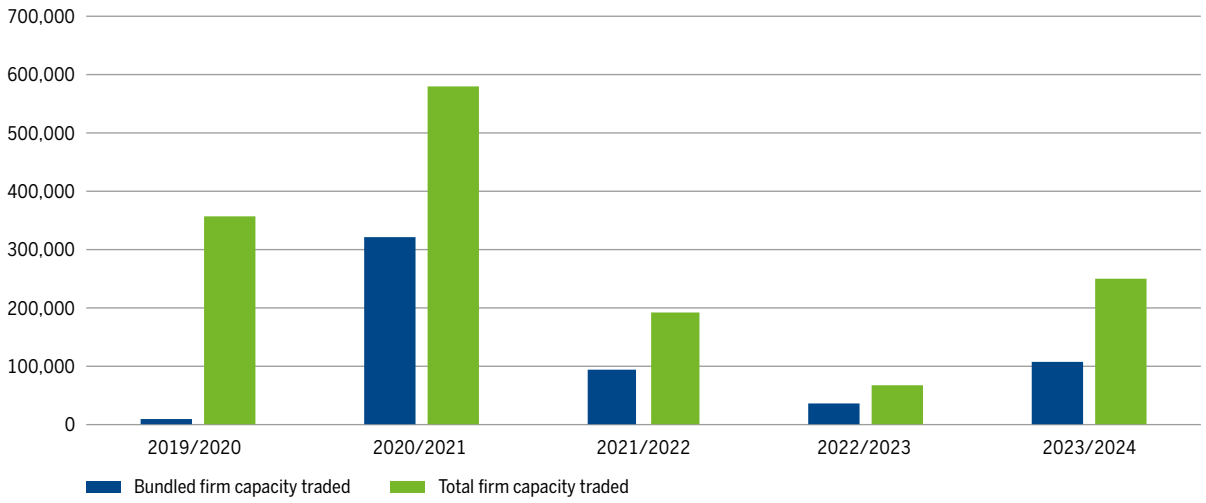


Figure 9: Bundled firm capacity traded on the secondary market related to total firm capacity traded on the secondary market in MWh/h/y

Gas Year	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024
Bundled firm capacity allocated through auctions	41,888.00	2,572,547.00	215,581.00	252,891.91	248,323.45	520,605.05	1,551,044.57	416,882.53	226,481.07
Bundled firm capacity allocated on the secondary market	511.40	13,369.00	1,835.00	10,339.54	9,520.33	321,719.88	96,979.58	35,470.48	110,304.08
Ratio	**1.22 %**	**0.52 %**	**0.85 %**	**4.09 %**	**3.83 %**	**61.80 %**	**6.25 %**	**8.51 %**	**48.70 %**

Table 7: Total bundled firm capacity allocated on the secondary market relative to bundled firm capacity allocated through auctions. Volumes of the capacity in MWh/h/y.


Picture courtesy of terranets bw

CMP GL IMPLEMENTATION AND EFFECT MONITORING 2025 REPORT

The CMP GL Implementation and Effect Monitoring report reflects the status of the CMP GL implementation end of 2024, and shows the effect of the CMP GL for the Gas Years (GY) 2022/2023 and 2023/2024. Information was collected by ENTSOG from European gas TSOs. ENTSOG has aimed at producing a report which can be considered supplementary to ACER's reports. ENTSOG's focus is to identify to what extent the main aims of the CMP GLs have been achieved.

The implementation monitoring shows that only one TSO did not implement the CMP GL measures by the end of 2024 and these measures are expected to be implemented by October 2025. In addition, this report shows that the CMP measure Firm Day Ahead Use It or Lose It (FDA UIOLI) has been applied by twenty TSOs, and the measure has had an effect when used.

The effect monitoring shows the gas years under analysis have a significantly higher level of congestion than the previous years. The gas year 2022/2023 shows the highest level of congestion, which was to be expected since the gas flows from Russia decreased. The gas year 2023/2024 shows a potential trend of decrease in congestion. Furthermore, the current ways of offering additional capacity through existing CMP mechanisms allow network users to access the market in situations where IPs are contractually congested. The reallocation of this capacity was relatively low, which indicates a low market interest.

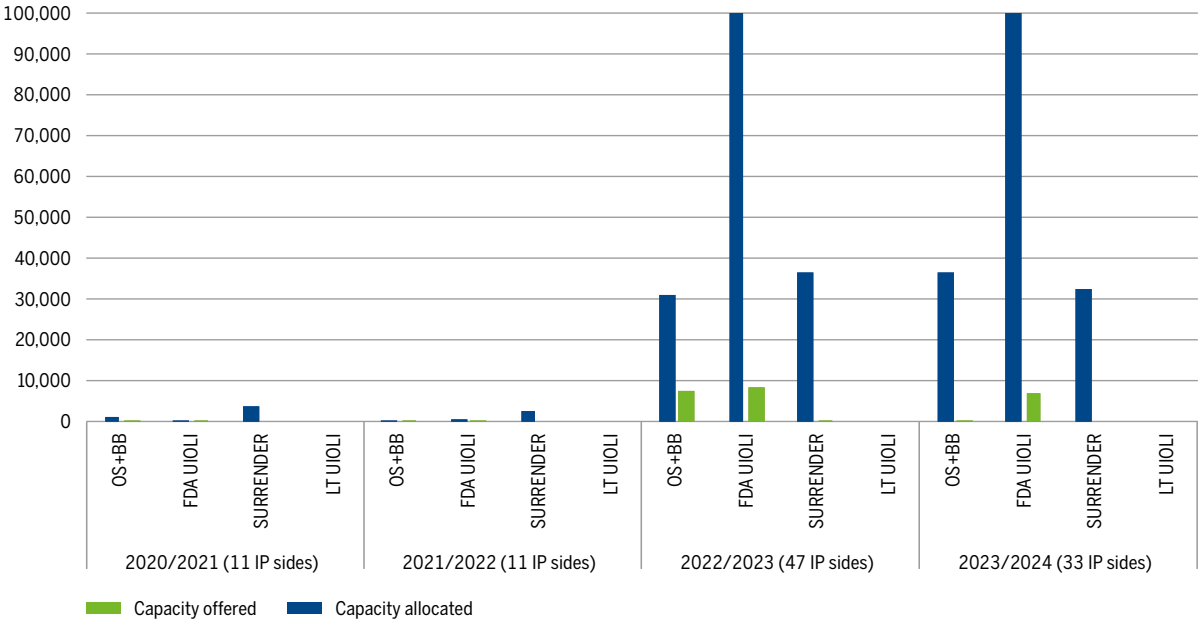


Figure 10: CMP capacity offered and reallocated in the last four gas years

ENTSOG REPORT ON INJECTION OF RENEWABLE AND LOW-CARBON GASES INTO THE GAS NETWORK (GAS YEAR 2023/2024)

PARTICIPANTS, DATA COLLECTION AND REFERENCE PERIOD

The requirements of Regulation (EU) 2024/1789 (Article 26(3i)) require to create a new yearly overview on injections of renewable and low-carbon gases into the natural gas network.[1] This report[2] commenced in 2024 and is included in this ENTSOG 2024 Annual Report.

For completion of this task, ENTSOG assessed biomethane and renewable hydrogen injections for the period of 1 October 2023 to 30 September 2024, within the gas year 2023/2024. As a clear definition of low-carbon gases was not available at the time of data collection (the Delegated Act on Low-Carbon Gases is not yet published) this data point was omitted in this 2024 edition and will be reported on as soon as an official definition exists.

For this report, all ENTSOG members were asked to supply data on injection of biomethane and renewable hydrogen into their gas networks for the given period. ENTSOG received data for all necessary Member States. In Member States in which there are several TSO countries, there was the option for one TSO to submit data representing all TSOs. thereby the whole Member State.[3]

Overview of injected volumes of biomethane into gas network for the period 1 October 2023 to 30 September 2024[4]

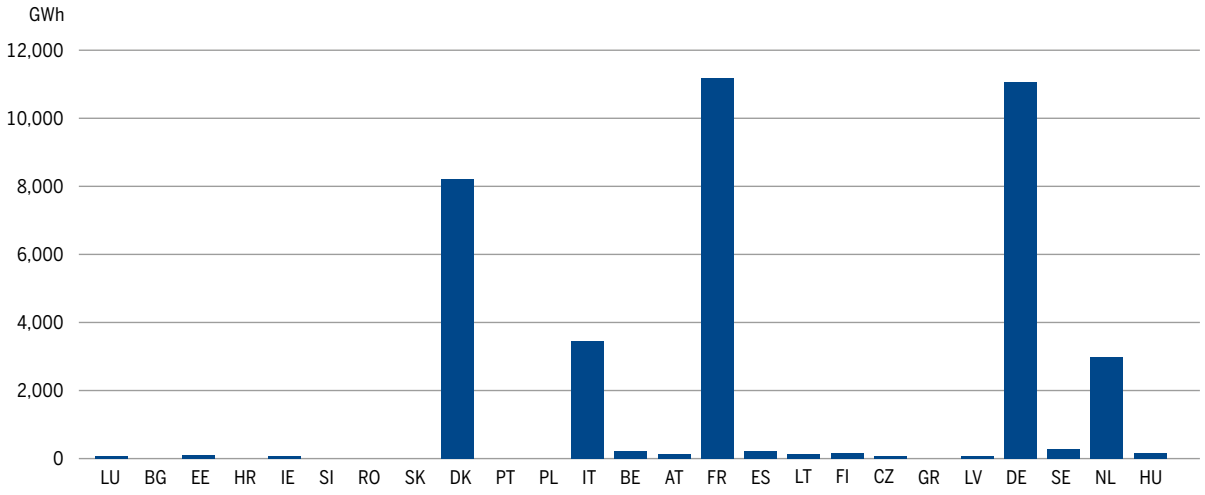


Figure 11: Injected volumes of biomethane into the gas network

1 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401789&qid=1725869478495

2 Members were asked to provide data of injections into the TSO/DSO system (see Recital 137 (EU) 2024/1788). ENTSOG provides data as is – in line with data provided by the respective TSOs in the Member States.

3 No data was collected for Malta and Cyprus – as they are isolated from the European gas market and do not have a network. Malta is expected to be connected to the European market in approximately 2030. Cyprus is developing gas infrastructure with no detailed commissioning date.

4 TSOs from Hungary, Ireland Luxembourg stated that propane may be added to the biomethane to stay in the gas quality range. The other TSOs reported pure biomethane being injected or did not provide further data.


Picture courtesy of GAZ-SYSTEM

Overview of injected volumes of renewable hydrogen injected into gas network for the period 1 October 2023 to 30 September 2024[1]

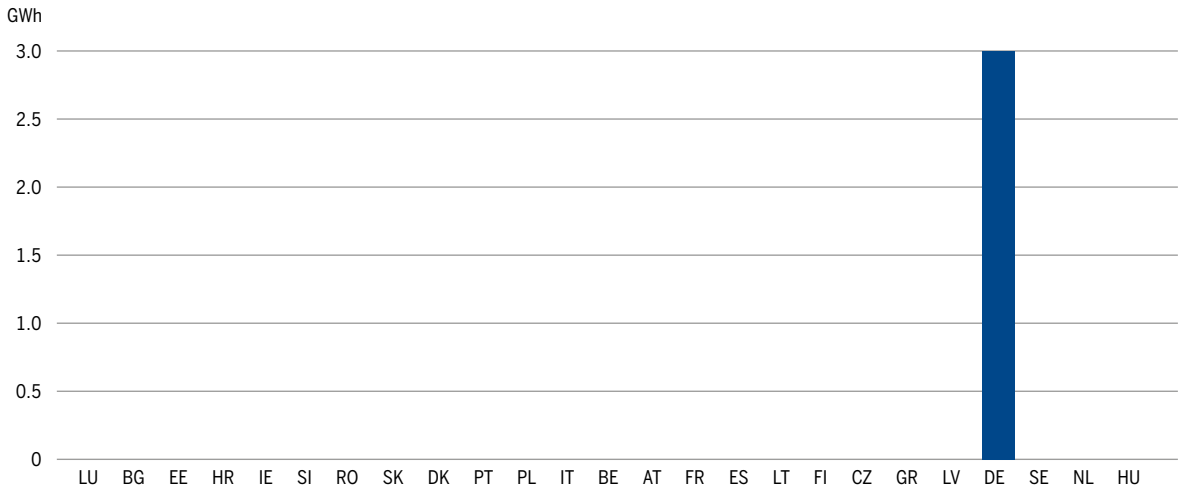


Figure 12: Injected volumes of renewable hydrogen into the gas network

Biomethane injected (GY23/24)	37,778 GWh
Renewable hydrogen injected (GY23/24)	3 GWh
Overall volume of renewable gases injected (GY23/24)	37,781 GWh

CONCLUSION OF ASSESSMENT ON INJECTION OF RENEWABLE AND LOW-CARBON GASES INTO THE GAS NETWORK (GAS YEAR 23/24)

The Member States with the most advanced markets concerning injection of renewable gases are Denmark, France, Italy, Germany and the Netherlands. The assessment shows that these national markets had injections of renewable gases of more than 2000 GWh per year, according to the received data.

Eight Member States did not report any renewable gas injections, according to the submitted information to ENTSOG. The only market/Member State with injections of renewable hydrogen achieving gigawatt hours is Germany, with 3 GWh.

TSOs from other Member States have referenced test and pilot injections, however, data is not yet available or volumes are negligible at this point.

ENTSOG will monitor the advancements and developments of these injections. The next report will update these first findings and show the changes and advancement of decarbonisation of gas networks, with respect to the injection of renewable and low-carbon gases.

1 The Portuguese ENTSOG member REN reported a pilot project studying the injection of renewable hydrogen into the DSO network. However, no injection data is available at the moment of drafting this report. The Austrian ENTSOG member Gas Connect Austria mentions test pilot projects injecting renewable hydrogen into the Austrian TSO/DSO network, however with neglectable volumes at this point.

Picture courtesy of GAZ-SYSTEM

6

STRATEGY, POLICY AND COMMUNICATION

In 2024, as Europe continued its efforts to diversify supply sources and accelerate the energy transition, ENTSOG gas TSO members worked to decarbonise the gas grids and progress with the development of infrastructure repurposing for renewable and low carbon gases. The SPC Business Area's major focus was to facilitate stakeholder dialogue and value chain cooperation, particularly on the relevant legislative developments.

These included the implementation of the Hydrogen and Decarbonised Gas Market package with its delegated acts, monitoring activities related to the Net-Zero Industry Act (NZIA) in the frame of the EU Industrial Policy, the EC's ICM Strategy, storage filling obligations under the Security of Supply Regulation as well as the impact of the published Regulation (EU) 2024/1106 on wholesale energy market integrity and transparency (REMIT).

Furthermore, SPC engaged in dialogue with the hydrogen industry and other stakeholders as part of the Transmission and Distribution Roundtable of the Clean Hydrogen Alliance, coordinating two relevant workstreams: the "Learnbook on Hydrogen Corridors Implementation" and the "Learnbook on Hydrogen Infrastructure Financing". Both of these reports were published on the EC's website, working in close cooperation with Round Table members and with DG GROW.

SPC was also actively facilitating updates of the joint Hydrogen Infrastructure Map with storage, terminal and distribution associations with two updates of the map delivered in Q2 and in Q4 2024.

Based on its appointment to the Industrial Carbon Management Forum, ENTSOG took part in the work streams of ICM WG Infrastructure, CCU and CO_2 Standards, presenting expertise, technical developments, as well as initial positions and inputs to the CCUS value chain organisational aspects.

To promote Energy System Integration, SPC coordinated with a wide range of stakeholders, including ENTSO-E and Hydrogen Europe to promote the integration of all energy carriers. The business area monitored numerous EC studies, consultations and stakeholder workstreams including dialogue ahead of Madrid, Florence and Copenhagen Fora and ICM Forum. The Business Area coordinated all the external communications of ENTSOG, including management and preparation for public participation related to the future of the European infrastructure.

SPC also facilitated the informal cooperation of TSOs with the emerging hydrogen and CCUS value chains, by providing inputs, maintaining cooperation and communications to all stakeholders. It was mainly addressed in the format of the Future of Gas Grids Panel, with different activities held throughout 2024.

ENTSOG SPC developed and managed relevant partnerships with research centres, for example: Florence School of Regulation, Copenhagen School of Energy Infrastructure, New Energy Business School and national/international think tanks. SPC also cooperated with DSOs to ensure TSO-DSO exchange of information.

ENTSOG hosted and co-hosted various events, including its Annual Conference in December and GRIDTech 2024 and contributed to many of the EC/stakeholders hosted events, e.g., Madrid, Copenhagen Forum, Florence Forum, ICM Forum, the fifth PCI Energy Days and European Sustainable Energy Week (EUSEW) 2024.

In 2024, ENTSOG also monitored the political processes related to European elections and renewal of the European Parliament's and Commission's mandate. Stemming from the EU Strategic Agenda 2024–2029, from the Letta and Draghi Reports, and from the Mission Letters of the newly appointed college of European Commissioners, the SPC business area provided Members with guidance and in-depth analysis on relevant files related to gas grids repurposing and CO_2 transpor/CCUS.

The business area continuously supported managerial activities by provision of information sharing of resources, networks and relevant knowledge to feed into the internal strategic debate. SPC oversaw promotion of ENTSOG activities to its Members and the external environment, by involving relevant stakeholders, by contributing to consultations, participating in conferences and fora as discussion partner or speaker, but also by maintaining a close dialogue with media representatives.

Finally, the SPC Business Area coordinated the ENTSOG Annual Report and the ENTSOG Annual Work Programme, with input from all ENTSOG business areas.

WORK STRUCTURE

The ENTSOG EPR WG is responsible for coordinating ENTSOG's activities related to EU policy developments – legislative actions, policy communications, action plans announced by the European Commission, European Parliament resolutions and other initiatives, as requested by the ENTSOG Board.

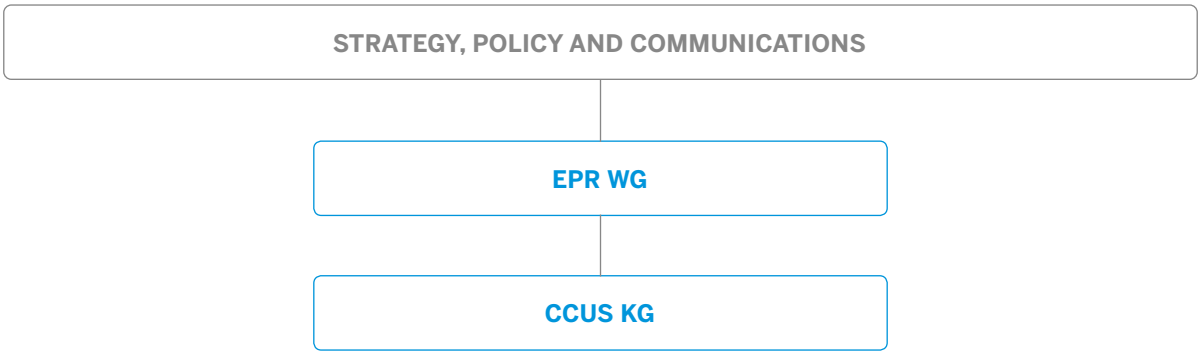


Figure 13: Working and Group Kernel Group associated with SPC area

Both the EPR WG and CCUS KG meet monthly, with ad-hoc meetings convened as needed. The EPR WG is managed and coordinated by the SPC business area, in close cooperation with all ENTSOG business areas. Some ad-hoc activities were addressed to the EPR WG, as determined by the Board and/or GA.

The CCUS KG is a collaborative group composed of all ENTSOG business areas. It is responsible with providing expertise, support, and proposals related to CCUS, under the coordination of SPC.

ACTIVITIES

Until January 2024, the GHP Task Force coordinated ENTSOG's activities related to work on the parts of the European Green Deal relevant for gas infrastructure.

As from February 2024, the GHP TF was replaced by the EU Policies and Regulations Working Group (EPR WG). The EPR WG was responsible for developing proposals for ENTSOG's positions in relation to the European Green Deal implementation, EU's long term climate targets, Hydrogen and Decarbonised Gas Market Package implementation, EU's CCUS strategy and other relevant related regulatory developments.

The EPR WG steered the works of the Carbon Capture, Utilisation, and Storage Kernel Group (CCUS KG), also launched in February 2024.

TOPICS THAT THE EPR WG ADDRESSED IN 2024 INCLUDE:

- Implementation timelines of the Hydrogen and Decarbonised Gas Market Package
- Industrial Carbon Management Strategy and preparation for the planned EU package of measures for CCUS
- EU 2040 greenhouse gas reduction targets
- EU institutional setting following the June 2024 European Parliament elections
- EU Strategic Agenda 2024–2029 and political guidelines of the new EC
- Methane Leakage in the Energy Sector
- Delegated acts for assessing GHG emissions savings from low-carbon fuels
- Letta report on the future of the Single Market and Draghi report on the future of European Competitiveness
- Rotating EU Presidencies of Spain and Hungary in 2024
- Soil monitoring law
- EU energy security architecture
- Pact for Stakeholder Engagement in Grid Development
- Stakeholder Reference Group
- REMIT
- EU Investors DialogueEU Clean Transition Dialogue

In addition, the EPR WG monitored the evolving narratives of electricity, hydrogen, and CO_2 industry stakeholders and NGOs on the expected goals for the future energy system, including the voice of particular EU Member States and scenarios/technology/innovation experts. It also provided regular updates to the ENTSOG GA, ENTSOG Board and cooperated with other relevant WGs, specifically MAR WG.

ENTSOG conducted the analytical work and communicated with stakeholders via ENTSOG's Future of Gas Grids Panel and within the EC-led Investors Dialogue and Clean Hydrogen Alliance. Together with the co-chairs of the Transmission and Distribution Round Table within the Clean Hydrogen Alliance, ENTSOG finalised its work on the "Learnbook on Financing of Hydrogen Infrastructure", published in September 2024, and the "Learnbook on Implementation of Hydrogen Supply Corridors", published in November 2024.

Within the scope of ENTSOG's Advisory Panel for Future of Gas Grids, SPC fostered exchanges on several aspects of best practices to transition gas grids to reach the targets identified in the REPowerEU Plan – 20 million tonnes of renewable hydrogen and 35 bcm of biomethane by 2030. The WG provided regular updates to the ENTSOG GA, ENTSOG Board and cooperated with other relevant WGs.

In addition, it provided information material for TSOs in their discussions on gas regulatory framework held at national level and reported to Members on all ENTSOG bilateral, multilateral and public engagement.

KEY ACTIVITIES OF THE EPR WG FOR 2024

1. Strategy proposals:

- Continued strategic focus regarding the implementation of the Gas Regulation and of the Gas Directive (Hydrogen and Decarbonised Gas Market package).
- Providing a set of recommendations in view of the publication of the EU Clean Industrial Deal.
- Feeding the debate of ENTSOG's Strategy Meetings.
- Net zero goals within the framework of the EU Industrial Policy.

2. Policy Updates:

- Monitored key energy and climate policy/ regulatory developments put forward by EU institutions.
- Planning, technical, market and financial considerations for CO_2 transport.
- Monitored and engaged where relevant to EU analytical works (EC studies and stakeholder engagement processes
- Assessment of impact to market participants due to Regulation (EU) No 2024/1106 on wholesale energy market integrity and transparency (REMIT).

3. External engagement:

- Engagement in the EC's Clean Hydrogen Alliance's Roundtable on Clean Hydrogen Transmission and Distribution including support with the publication of "Learnbook on Financing of Hydrogen Infrastructure" and "Learnbook on Implementation of Hydrogen Supply Corridors".
- Continued engagement in ENTSOG's Advisory Panel for Future Gas Grids.
- Continued engagement in the Stakeholders' Reference Group.
- Engagement in the European Commission's Pact for Engagement.
- Coordination with hydrogen project promoters, e. g., TSO/DSOs/LSOs and SSOs as well as demand and production stakeholders on the Hydrogen Infrastructure map.Co-hosting GRID-Tech 2024 (with Eurogas and GIE) to exchange views with storage, LNG, transmission and distribution stakeholders
- Hosting the ENTSOG Annual Conference and 15-Year Anniversary: Supporting a Competitive, Secure and Sustainable Europe, facilitating exchanges between Members and stakeholders on the role of grids under the announced European Clean Industrial Deal.

4. Communication proposals:

- Provided recommendations on ENTSOG's priorities in dialogue with the EC, Parliament, and ACER.
- External and internal communication in response to stakeholder interest and queries.
- Engaged in dialogue with industry, gas and other key EU stakeholders.

5. Information sharing:

- Provided information material for TSOs in their discussions on gas regulatory framework held at national level.
- Reported to Members on all ENTSOG bilateral, multilateral and public engagement.
- Provided Members with regular security of supply updates across the gas withdrawal seasons.

Picture courtesy of Gasum

7

ENTSOG
MANAGEMENT SUPPORT

The management team has five support groups which provide compliance, financial and other services across the association. These are Legal, Financial, HR, IT and Administration.

ACTIVITIES

In 2024, the Management Support Team continued to provide support to the business areas and management in Brussels, and work with ENTSOG members. Support is through the Legal, HR, Finance, and IT functions to ensure there is a robust platform for the activities and deliverables of ENTSOG's business areas. They are also responsible for organisation of the meetings of the GA and the Board, as well as those for the Liaison Group, the Legal Advisory Group, and the Financial Committee.

LEGAL

The Legal Team, either internally or together with the Legal Advisory Group (LAG) which meets on a monthly basis, contributes to the work and deliverables of all the ENTSOG business areas. This includes the interpretation of Network Codes and other legal texts applicable to ENTSOG and the TSOs as well as the support to the other business areas for addressing Network Codes Functionality Platform issues. Other work undertaken includes development of regulatory input for any relevant legislative frameworks.

In 2024, the Legal and Corporate Team facilitated the secretariat of the EU-UK Gas TSOs TF, created in 2021. This was done in accordance with the Working Arrangements Agreement approved by the decision-making bodies of ENTSOG and of the UK TSOs to comply with the 'Brexit' Trade and cooperation agreement concluded between the EU and the UK. This TF ensures a ongoing dialogue between the UK TSOs and ENTSOG.

In 2024, the Legal and Corporate Team was also involved in cooperation under the umbrella of the External Contact Platform (ECP). The ECP was created by ENTSOG and the Energy Community Secretariat to strengthen the cooperation between ENTSOG and other non-EU gas transmission gas companies. The scope focuses on coordination and technical cooperation between ENTSOG and other non-EU gas transmission system operators, as framed by Regulation 715/2009 and thereafter by Regulation (EU) 2024/1789. The Legal and Corporate Team also assisted the General Director in some bilateral contact with other non-EU delegations.

Finally, the Legal and Corporate Team also ensured the internal day to day way of working of ENTSOG by contributing to the organisation of the GA and Board meetings and assisting the HR, administration and communication services as well as the management.

HR AND FINANCE

ENTSOG Human Resources continued with a well-prepared recruitment process, so that the relevant resources and competences were in place to perform the requested activities. ENTSOG has a strong focus on the resource allocation as well as the relevant hand-over processes to ensure the performance of the organization vis-à-vis the required deliverables.

With regards to financial reporting, ENTSOG created and implemented clear and efficient accounting procedures and controls in 2024. ENTSOG's Financial Statement for 2024 is included in this report, the approval of which is supervised by an internal Financial Committee.

IT

In 2024, ENTSOG embarked on a series of IT projects aimed at enhancing efficiency, scalability, and collaboration across its operations. The list of the main IT projects for 2024 include the following:

- Streamlining and fine-tuning of the Azure cloud infrastructure supporting ENTSOG's diverse projects.
- TP Upgrade to newer version of technologies: the database behind the TP was upgraded to the latest version, on-going TP backend and frontend upgrade.
- Developing Geographical Information Systems (GIS) software for the System Development projects (built on ESRI ArcGIS).
- ENTSOG continued to update the H_2 map developed using ESRI ArcGIS, enhancing spatial analysis.
- On-going SharePoint upgrade to the latest version.
- PDWS (data warehouse) and TP Performance enhancements.
- Developing the Projects Data Collection Portal for TYNDP and PCI.
- Developing ReCo, the new/updated collaboration tool for emergency situations.
- Code review and upgrade of the Dept tool for Tariffs to align with current business needs.
- Development of the PLEXOS simulation tool for System Development team.
- Improvements to office IT software and hardware.
- Moving reports and visualisations to Microsoft Power BI.
- Usage of Azure Data Factory for various ETL needs for processing data.
- Upgrading the RRM system so that it uses a secured VPN connection with ACER ARIS system used for REMIT purposes.

Beside the above listed projects, the IT team also have worked on recurrent projects in 2024– the TYNDP 2024, Project Submission Portal, Capacity Transmission Map, and Summer/Winter Outlook/Review data collections.

8

RESEARCH AND DEVELOPMENT AT ENTSOG

Each year, ENTSOG aims to improve and progress its way of working, by assessing its tools, methodologies, and approaches, some of which are summarised in the sections below.

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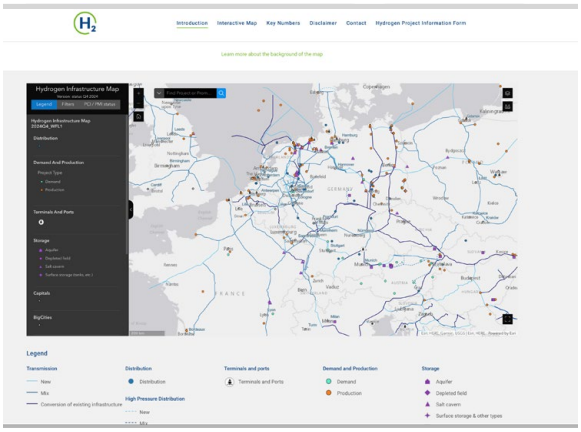
In 2024, ENTSOG kept working closely with its Members to develop innovative products and services to facilitate the future role of gas in the overall European energy mix and to meet energy and climate targets. There will be challenges such as maintaining resilient and diverse security of supply, dealing with fluctuating gas quality, growing renewable, low-carbon and decarbonised gases content, framing the proper conditions for connecting low carbon, decarbonised and renewable gas production, planning for hydrogen, biomethane and CO_2 being used in gas grids or designing new data flows between TSOs and DSOs. Nevertheless, gas systems offer long-distance transportation, long-term energy storage, decarbonisation potential, competitive and cost-saving options through repurposing of existing gas infrastructure and short-term demand management support tools.

JOINT HYDROGEN INFRASTRUCTURE MAP



In April and November 2024, ENTSOG together with GIE, CEDEC, Eurogas, GEODE, GD4S and in cooperation with European Hydrogen Backbone Initiative, updated their joint Hydrogen Infrastructure Map. The map showcases hydrogen infrastructure projects and was prepared based on the mandate received at 36th European Gas Regulatory Forum.

Since the map was first published in December 2022, the number of projects displayed have almost tripled – the latest update at the end of 2024 displayed approximately 600 projects across the hydrogen value chain, approximately two thirds of those projects representing hydrogen transmission and production. Frequent map updates are essential to reflect the good advancements being made by hydrogen project promoters to decarbonise their activities and to ensure that it is a 'living' map comprising the most up-to-date status of the hydrogen projects network.

Link to the map

EUROPEAN CLEAN HYDROGEN ALLIANCE – LEARNBOOKS ON HYDROGEN SUPPLY CORRIDORS AND HYDROGEN INFRASTRUCTURE FINANCING

During 2024, ENTSOG, as a facilitating organisation to the Transmission and Distribution Roundtable of the European Clean Hydrogen Alliance (ECH2A) supported the roundtable with the publication of two reports. The Learnbook on Implementation of Hydrogen Supply Corridors builds on the experience gained from the Learnbook on Hydrogen Supply Corridors which identified six supply corridors (based on RePowerEU Plan). It includes the latest project information on the current planned hydrogen supply corridors across Europe.

The Learnbook on Hydrogen Infrastructure Financing illustrates from an investor's perspective how hydrogen infrastructure financings could be carried out and which financing sources exist or could be established for this purpose. It is aimed at project promoters and policymakers but is also directed at other stakeholders, notably financiers.

Both of these publications are promoted by the EC's DG GROW. ENTSOG continues to support the activities of ECH2A.

DEVELOPMENT OF REGIONAL COORDINATION SYSTEM FOR GAS (RECO) 2.0 PLATFORM

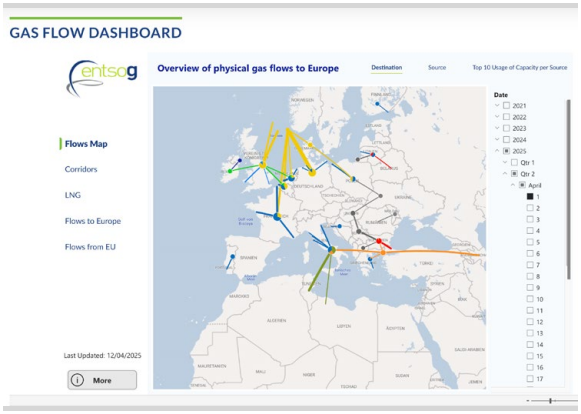
ENTSOG continued its work in 2024 on developments and improvements of the Regional Coordination System for Gas (ReCo) 2.0 platform providing visualisation of a relevant range of data on an EU level to monitor the security of gas supply and to support the TSOs' dispatching centres and ReCo Teams during normal and emergency conditions.

The ReCo 2.0 platform provides TSOs with the most relevant information to contribute to a more efficient and secure management of the system. The platform is used by ENTSOG and TSOs during the ReCo Team Europe calls, and on a daily basis, to monitor gas flow patterns, gas demand fluctuations, and to identify any risks to the security of gas supply.

GAS FLOW AND STORAGE DASHBOARD UPDATES

In order to have a more detailed overview of the gas market situation, ENTSOG developed data dashboard to assess the European gas market behaviour, usage of gas storage facilities, and gas flow patterns, which were published on ENTSOG's website for stakeholders' use. The information presented in the dashboard is sourced from ENTSOG's Transparency Platform and GIE's AGSI Transparency Platform. Data are presented in an aggregated form based on the interconnections points, gas supply corridors, and risk groups as defined in the Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply, to ensure coherence with the terminology most often used by participants of the European gas sector.

In 2024, ENTSOG finalised the project to improve and automate the ENTSOG European Gas Flow Dashboard with the update of all pages of the dashboard. As a last step of the project, and to reflect the beginning of a new gas year, on 1 October 2024, a public webinar was



organised at which ENTSOG presented recent updates to the tool. The webinar provided information on the addition of new features, enhanced usability, improved robustness and more frequent data updates.

Link to the dashboard

PRE-NORMATIVE RESEARCH PROJECT – ENTSOG IN ADVISORY BOARD

ENTSOG is a member of the Advisory Board of the PilgrHYm project, a pre-normative research project funded by the European Union under the Clean Hydrogen Partnership. The project was still ongoing in 2024 and ENTSOG participated in its capacity of member of the Advisory Board. The project aims to develop protocols and guidelines for repurposing existing gas pipelines for hydrogen use and brings together more than twenty actors from the gas value chain. The project will conduct a comprehensive testing program on small-scale laboratory specimens that represent the EU gas grids. This approach will address safety concerns, regulatory gaps, and research needs related to the compatibility of current pipelines with hydrogen.

ENTSO-E/ENTSOG CONSISTENT & INTERLINKED MODEL DEVELOPMENT

Regulation (EU) 2022/869 (Article 11(10)) requires that by 24 June 2025 ENTSO-E and ENTSOG will jointly submit to the Commission and ACER a consistent and progressively integrated model to provide consistency between single sector methodologies based on common assumptions including electricity, natural gas and hydrogen transmission infrastructure as well as storage facilities, liquefied natural gas and electrolysers.

ENTSO-E and ENTSOG in 2021 and in 2022 have worked on the development of a consistent process for the inclusion of an 'infrastructure dual assessment' in TYNDPs as well as of a methodology for its application. In 2024 the interlinked modelling developed an electricity hydrogen integrated model which explored the impact of cross sectoral planning on the cost benefit analysis during the TYNDP 2024 process.

9

ENTSOG BOARD AND TEAMS


Picture courtesy of GAZ-SYSTEM

ENTSOG **BOARD**

During 2024, the ENTSOG General Assembly approved the following changes within ENTSOG's Board:

- Replacement of GRTgaz[1] representative **Thierry Trouvé** with **Pierre Duvieusart**;
- Replacement of GAZ-SYSTEM representative **Artur Zawartko** with **Elżbieta Kramek**;
- Replacement of Bulgartransgaz representative **Vladimir Malinov** with **Kiril Ravnachki**;
- Replacement of Energinet representative **Torben Brabo**, with **Jeppe Danø**;
- Replacement of Net4Gas representative **Andreas Rau**, with **Michal Slabý**.

Listed below are ENTSOG Board members, as of **31 December 2024**.

1 In 2025, GRTgaz is renamed to NaTran

Bart Jan Hoevers, President
Gasunie Transport Services B.V.

Jeppe Danø
Energinet

Pascal De Buck
Fluxys Belgium S.A.

Con O'Donnell
Gas Networks Ireland

Pierre Duvieusart
GRTgaz

Elżbieta Kramek
GAZ-SYSTEM

Cristina Iancu
Transgaz S.A.

Gaetano Mazzitelli
Snam Rete Gas S.p.A.

Luis Ignacio Parada
Enagás S.A.

Kiril Ravnachki
Bulgartransgaz

Olli Sipilä
Gasgrid Finland

Michal Slabý
NET4GAS s.r.o.

Christoph von dem Bussche
GASCADE Gastransport GmbH

ENTSOG **TEAMS**

MARKET TEAM

From left to right: Laurent Percebois, Karolina Golonka, Claude Mangin, Alexandra Kiss, George Wüstner; Above: Manfred Cadez, Peter Hlusek, Boudewijn van der Molen

SYSTEM DEVELOPMENT TEAM

From left to right: Alexandra Kiss, Axelle De Cadier De Veauce, Mads Boesen, Isabell Kolonko, Hugo Calisto, Kacper Żeromski, Arturo de Onis Romero-Requejo, Aisling Wall, Pierre Marani, Alexander Kättlitz, Simona Marcu, Diana Fathelbajanova; Above: Maria Castro, Rafail Tsalikoglou, Dante Powell, Thilo von der Grün

MANAGEMENT

Bart Jan Hoevers (President), right
Piotr Kuś (General Director), left

SYSTEM OPERATION TEAM

From left to right: Panagiotis Panousos, David Gil, Diana Volkova, Alexandra Kiss; Above: Viktoria Medvedeva-Tšernobrivaja, Douglas Hill, Anton Kolisnyk, Lorella Palluotto, Elnaz Safi

STRATEGY, POLICY & COMMUNICATION TEAM

From left to right: Roberto Francia, Sara Piskor, Carmel Carey, Koralia Ioannou, Mauro Barbosa

MANAGEMENT SUPPORT TEAM

From left to right: Elisa Asensio, Sahar Aitlhou, Agata Musial, Karolina Golonka, Piotr Kuś, Mauro Barbosa, Rebecca Hilltout, Bogdan Gugescu; Above: Maria Dhénin, Hubertine Soares, Nicolas Van der Maren

ENTSOG **FINANCIAL STATEMENT 2024**

The Financial Statement 2024 was approved by the ENTSOG General Assembly on 29 April 2025.

Values EUR	Code	2024 01.01.–31.12.2024	2023 01.01.–31.12.2023
BALANCE SHEET AFTER APPROPRIATION			
ASSETS			
FORMATION EXPENSES	20		
FIXED ASSETS	21/28	77,338.42	83,600.00
Tangible fixed assets (explanation 6.1.2)	22/27	76,838.42	83,100.00
Furniture and vehicles	24	55,722.36	66,554.51
Other tangible fixed assets	26	21,116.06	16,545.49
Financial fixed assets (explanation 6.1.3)	28	500.00	500.00
CURRENT ASSETS	29/58	2,334,813.70	2,506.194.28
Amounts receivable within one year	40/41	115,864.61	131,639.96
Trade debtors	40	115,864.61	78,530.40
Other amounts receivable	41	–	53,109.56
Cash at bank and in hand	54/58	2,214,370.01	2,339,083.89
Deferred charges and accrued income	490/1	4,579.08	66,260.15
GL accounts not in the standard Belgian schema	AXX		
TOTAL ASSETS	20/58	2,412,152.12	2,620,584.00

Values EUR		Code	2024 01.01.–31.12.2024	2023 01.01.–31.12.2023

EQUITY AND LIABILITIES

CAPITAL AND RESERVES		10/15	**1,213,160.70**	**1,439,590.88**
Funds of the association or foundation (explanation 6.2)		10	**619,892.00**	**619,892.00**
Allocated funds and other reserves (explanation 6.2)		13	**300,000.00**	**300,000.00**
Accumulated profits (losses)	(+)/(–)	14	**293,268.70**	**519,698.88**
PROVISION AND DEFERRED TAXES (explanation 6.2)		16		
AMOUNTS PAYABLE		17/49	**1,198,991.42**	**1,180,993.12**
Amounts payable within one year (explanation 6.3)		42/48	**507,927.41**	**764,269.47**
Trade debts		44	**444,335.80**	**693,568.81**
Suppliers		440/4	**444,335.80**	**693,568.81**
Taxes, remuneration and social security		45	**63,591.61**	**70,700.66**
Taxes		450/3	**–71,543.11**	**–68,670.31**
Remuneration and social security		454/9	**135,134.72**	**139,370.97**
Accruals and deferred income		492/3	**691,064.01**	**416,723.65**
GL accounts not in the standard Belgian schema		BXX		
TOTAL LIABILITIES		10/49	**2,412,152.12**	**2,620,584.00**

Values EUR		Code	2024 01.01.–31.12.2024	2023 01.01.–31.12.2023

INCOME STATEMENT

Operating income and charges				
Gross operating margin	(+)/(–)	9900	**1,363,260.40**	**1,223,865.61**
Turnover		70	**9,557,384.96**	**9,136,549.13**
Raw materials, consumables, services and other goods		60/61	**8,194,124.56**	**7,912,683.52**
Remuneration, social security costs and pensions	(+)/(–)	62	**1,569,998.51**	**1,436,364.21**
Depreciation of and other amounts written off formation expenses, intangible and tangible fixed assets		630	**54,819.86**	**47,351.34**
Other operating charges		640/8	**5,983.19**	**4,175.73**
Operating profit (loss)	(+)/(–)	9901	**–267,541.16**	**–264,025,67**
Financial income (explanation 6.4)		75/76B	**52,578.22**	**22,267.26**
Recurring financial income		75	**52,578.22**	**22,267.26**
Financial charges (explanation 6.4)		65/66B	**6,576.42**	**5,811.35**
Recurring financial costs		65	**6,576.42**	**5,811.35**
Profit (Loss) of the financial year before taxes	(+)/(–)	9903	**–221,539.36**	**–247,569.76**
Taxes on the result	(+)/(–)	67/77	**–4,890.82**	**–28.24**
Gain (loss) of the period	(+)/(–)	9904	**–226.430,18**	**–247,598,00**
Profit (loss) of the financial year available to be appropriated	(+)/(–)	9905	**–226.430,18**	**–247,598,00**

Values EUR	Code	2024 01.01.–31.12.2024	2023 01.01.–31.12.2023

PROCESS PROFIT / LOSS

Profit (loss) to be appropriated	(+)/(–) 9906	**293,268.70**	**519,698.88**
Profit (loss) of the financial year available to be appropriated	(+)/(–) (9905)	**–226,430.18**	**–247,598.00**
Profit (loss) carried forward from the previous financial year	(+)/(–) 14P	**519,698.88**	**767,296.88**
Withdrawal from equity: funds, allocated funds and other reserves	791		
Addition to allocated funds and other reserves	691		
Profit (loss) to be carried forward	(+)/(–) (14)	**293,268.70**	**519,698.88**

PRESS RELEASES AND STAKEHOLDER WORKSHOPS/EVENTS

PRESS RELEASES 2024

11 Jan	ENTSOG and GIE publish their joint System Capacity Map 2024
11 Mar	Call for stakeholder submissions: New and updated project information for Hydrogen Infrastructure Map
16 Apr	ENTSOG publishes its Summer Supply Outlook 2024 (with Winter 2024/24 overview) and Summer Supply Review 2023
07 May	ENTSOG and ENTSO-E publish their joint electricity and hydrogen Interlinked Model 2024 progress report for public consultation
15 May	ENTSOG publishes its Annual Report 2023
21 May	ENTSOG publishes its Balancing Network Code Implementation and Effect Monitoring Report
22 May	ENTSO-E and ENTSOG release their Joint Draft Scenarios for TYNDP 2024
30 May	Updated Hydrogen Infrastructure Map now identifies PCI/PMI status projects
31 May	ENTSOG releases third episode of its ENTSOG Talks podcast series focusing on tariff-setting for EU transmission networks
11 Jun	ENTSOG publishes its Tariff Network Code Implementation and Effect Monitoring Report
18 Jun	ENTSOG publishes the list of projects to be included in its Ten-Year Network Development Plan 2024
19 Jun	ENTSOG publishes draft guidance documents for TYNDP 2024 and opens stakeholder consultation
11 Jul	ENTSOG opens public stakeholder consultation on its draft Annual Work Programme (AWP) 2025
25 Sept	Call for new and updated projects information for update of Hydrogen Infrastructure Map
30 Sept	European Clean Hydrogen Alliance publishes 'Learnbook on Financing of Hydrogen Infrastructure'
16 Oct	ENTSOG publishes its Winter Supply Outlook 2024/25 (With Summer 2025 Overview) and Winter Supply Review 2023/24
07 Nov	European Clean Hydrogen Alliance publishes 'Learnbook on Implementation of Hydrogen Supply Corridors'
11 Dec	Updated Hydrogen Infrastructure Map shows the progression of hydrogen production and transmission networks
12 Dec	ENTSOG announces the ENTSOG President, General Director and Board Members for the new term of 1 January 2025 until 31 December 2027
13 Dec	Stakeholders at ENTSOG's Annual Conference discuss an optimistic, pragmatic and collaborative future for the gas grids

18 Dec	ENTSOG publishes draft Hydrogen Infrastructure Gaps Identification Report and supporting materials for TYNDP 2024 and opens stakeholder consultation
19 Dec	ENTSOG publishes the first edition of its Gas Quality Monitoring Report 2025
20 Dec	ENTSOG publishes the Capacity Allocation Mechanisms (CAM) Network Code 'Capacity Auction Calendar' for 2025/2026
20 Dec	ENTSOG publishes its Annual Work Programme 2025

ENTSOG STAKEHOLDER CONSULTATIONS, EVENTS AND WORKSHOPS 2024

Feb–Apr	FSR/ENTSOG online 7th Gas Network Codes course
14 Mar	12th Meeting of Advisory Panel for Future Gas Grids
11 Apr	Guarantee of Origin (GO) Prime Movers Union Database (UDB) Workshop
17 Apr	Crisis Management Communication Guide Course – Actions to be taken in the event of a Cybersecurity Attack
04 Jun	ENTSO-E & ENTSOG online public webinar on the Interlinked Model 2024 Progress Report
12 Jun	ENTSOG, CCS Europe and EuLa joint online session: European Sustainable Energy Week (EUSEW) 2024
24 Jun	Webinar: TYNDP 2024 Guidance documents for system and project-level assessment
03 Jul	Guarantee of Origin (GO) Prime Movers Union Database (UDB) Workshop – 2nd Workshop
04 Jul	Workshop – Closing off the 2024 and kick-off of the 2026 TYNDP Scenarios cycle
01 Oct	Webinar: Updates to the ENTSOG European Gas Flow Dashboard
03 Oct	Webinar: Guidance on ENTSOG Data portal for 2nd PCI/PMI submission of hydrogen infrastructure projects
29–30 Oct	Workshop on Data Exchange and Cybersecurity
7 Nov	13th Meeting of Advisory Panel for Future Gas Grids
15 Nov	Winter Outlook 2024–2025: joint ENTSO-E and ENTSOG presentation
27 Nov	ENTSOG Gas Quality Workshop 2024
02 Dec	GRIDTech 2024 – Competitiveness and Decarbonisation: The Role of Gas Grids
11 Dec	ENTSOG Annual Conference and 15-Year Anniversary: Supporting a Competitive, Secure and Sustainable Europe

LIST OF **ABBREVIATIONS**

ACER	Agency for the Cooperation of Energy Regulators
AEMP	Associations of energy market participants
AR	Annual Report
API	Application Programming Interface
ARIS	ACER's REMIT Information System
AS4	Applicability Statement 4
AWP	Annual Work Programme
BAL KG	Balancing Kernel Group
BAL NC	Balancing Network Code
BRS	Business Requirement Specifications
CAM NC	Capacity Allocation Mechanism Network Code
CAP KG	Capacity Kernel Group
CBA	Cost-Benefit Analysis
CEDEC	European Federation of Local and Regional Energy Companies
CEN	European Committee for Standardisation
CDEST	Common Data Exchange Solution Table
CIO	Central Issuing Office
CMP GL	Congestion Management Procedures Guidelines
CNOT	Common Network Operational Tool
COP 21	The 2015 United Nations Climate Change Conference held in Paris
DAR	Demand Assessment Reports
DSO	Distribution System Operator
EASEE-gas	European Association for the Streamlining of Energy Exchange – gas
EC	European Commission
ECH$_2$A	Learnbook on European Hydrogen Supply Corridors
ECP	External Contact Platform
EEA	European Economic Area
EFTA	European Free Trade Association
EIC	Energy Identification Code
EnC	Energy Community
ENCS	European Network for Cyber Security
ENISA	European Union Agency for Cybersecurity
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSOG	European Network of Transmission System Operators for Gas
ETR	Energy Transition
EU	European Union
Fit for 55	Set of proposals to revise and update EU legislation
FSR	Florence School of Regulation
FUNC	Gas Network Codes Functionality Platform
GA	General Assembly
GY	Gas Years
GCG	Gas Coordination Group
GD4S	Gas Distributors for Sustainability
Geode	Association of European independent distribution companies of gas and electricity
GIE	Gas Infrastructure Europe
GHG	Greenhouse Gases

GHP	Gas and Hydrogen Package
GIS	Geographical Information System
GO	Guarantee of Origin
GO KG	Guarantee of Origin Kernel Group
GQ & H_2	Gas Quality and Hydrogen
GUI	Graphical User Interface
IAs	Interconnection Agreements
IMR	Monitoring Report
INT WG	Interoperability Working Group
INV WG	Investment Working Group
IP	Interconnection Point
IIP	Innovative Projects Platform
JRC	Join Research Centre
KG	Kernel Group
LAG	Legal Advisory Group
LIO	Local Issuing Office
LNG	Liquefied Natural Gas
MAR WG	Market Working Group
MIG	Message Implementation Guideline
MS	Member State
NC	Network Code
NeMo KG	Network Model Kernel Group
NRA	National Regulatory Authority
OMP	Organised Market Places
PCI	Project of Common Interest
PLEXOS	Energy Analytics and Decision Platform
ReCo	Regional Coordination System for Gas
RED III	Revision of recast Renewable Energy Directive
REMIT	Regulation (EU) No 1227/2011 on wholesale energy market integrity and transparency
REPowerEU	A plan of EC for saving energy, producing clean energy and diversifying our energy supplies
RFNBOs	Renewable Fuels of Non-Biological Origin
RRM	Registered Reporting Mechanism
SCN WG	Scenario Working Group
SoS	Security of Supply
SSO	Summer Supply Outlook
SPC	Strategy, Policy and Communication
TAR	Tariff
TAR KG	Tariff Kernel Group
TAR NC	Tariff Network Code
TEN-E	Trans-European Networks for Energy
TF ILM	Task force Interlinked Model
TP	Transparency Platform
TRA WG	Transparency Working Group
TSO	Transmission System Operator
TYNDP	Ten-Year Network Development Plan
UMM	Urgent Market Message
VIP	Virtual Interconnection Point
WG	Working Group
WI	Wobbe Index

COUNTRY CODES (ISO)

AL	Albania
AT	Austria
AZ	Azerbaijan
BA	Bosnia and Herzegovina
BE	Belgium
BG	Bulgaria
BY	Belarus
CH	Switzerland
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
DZ	Algeria
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
LY	Libya
MA	Morocco
ME	Montenegro
MK	North Macedonia
MT	Malta
NL	Netherlands, the
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
RS	Serbia
RU	Russia
SE	Sweden
SI	Slovenia
SK	Slovakia
TM	Turkmenistan
TN	Tunisia
TR	Turkiye
UA	Ukraine
UK	United Kingdom

ADDITIONAL **NOTE**

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Missed by all

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